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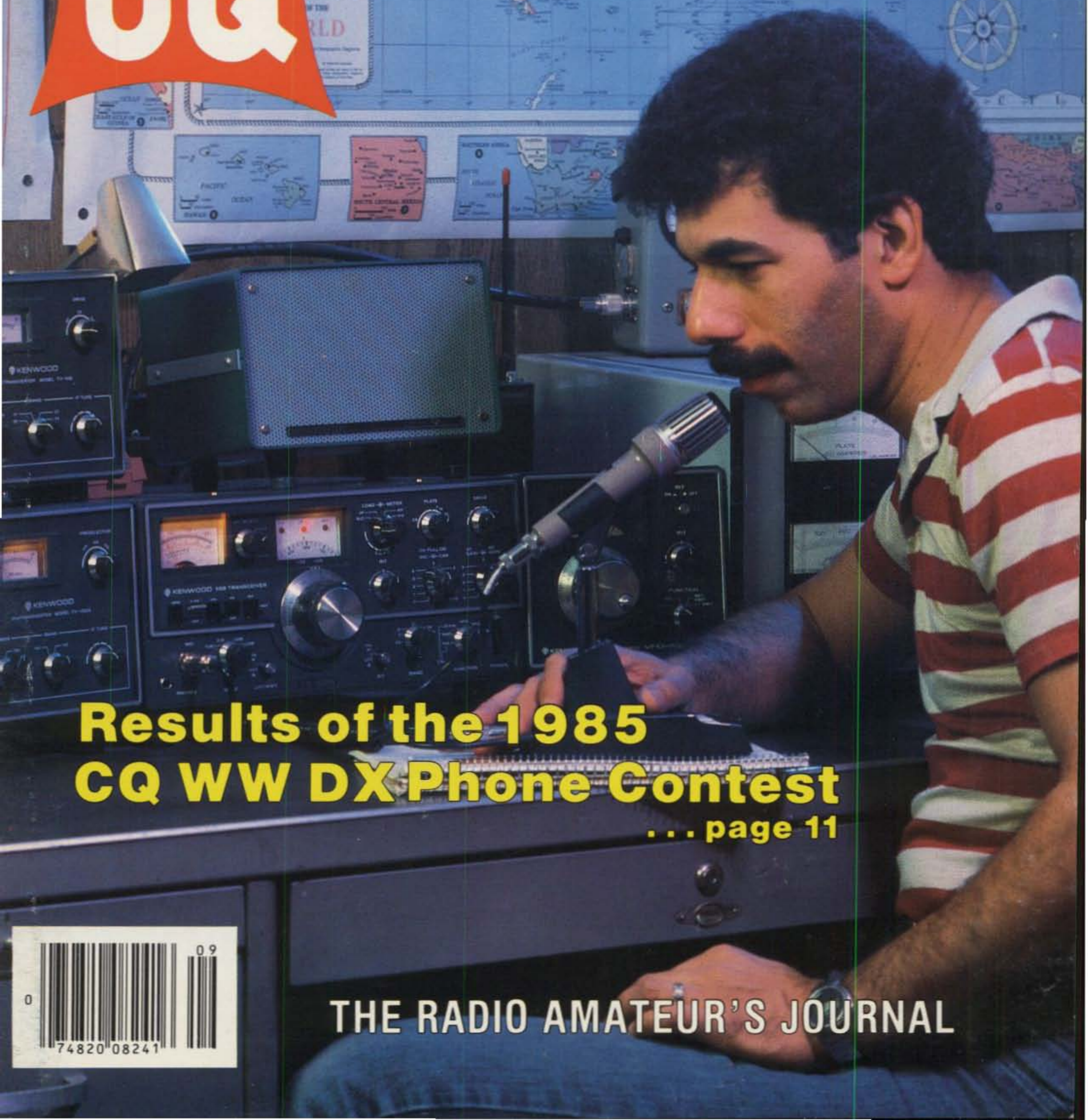
Amateur Radio

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CQ



**Results of the 1985
CQ WW DX Phone Contest**

... page 11



THE RADIO AMATEUR'S JOURNAL

KENWOOD

...pacesetter in Amateur radio

Here Now
TM-3530A
220 MHz

Power-Full...70 Watts!

TM-2570A/2550A/2530A/3530A

Sophisticated FM transceivers

Kenwood sets the pace again! The all-new "25-Series" brings the industry's first compact 70-watt 2-meter FM mobile transceiver. There is even an auto dialer which stores 15 telephone numbers! There are four versions to choose from: The TM-2570A 70-watt, TM-2550A 45-watt, TM-2530A 25-watt and the TM-3530A 220 MHz, 25-watt.

- First 70-watt FM mobile (TM-2570A)
- First mobile transceiver with telephone number memory and auto-dialer (up to 15 seven-digit phone numbers)
- Direct keyboard entry of frequency
- Automatic repeater offset selection — a Kenwood exclusive!
- Extended frequency coverage for MARS and CAP (142-149 MHz; 141-151 MHz modifiable)
- 23 channel memory for offset, frequency and sub-tone
- Big multi-color LCD and back-lit controls for excellent visibility

- Front panel programmable 38-tone CTCSS encoder includes 97.4 Hz (optional)
- 16-key DTMF pad, with audible monitor
- Center-stop tuning — another Kenwood exclusive!
- Frequency lock switch
- New 5-way adjustable mounting system
- Unique offset microphone connector — relieves stress on microphone cord

Large heatsink with built-in cooling fan (TM-2570A)



- High performance GaAs FET front end receiver
- HI/LOW Power switch (adjustable LOW power)
- TM-3530A covers 220-225 MHz
- Digital Channel Link (optional)

DCL Introducing... Digital Channel Link

Compatible with Kenwood's DCS (Digital Code Squelch), the DCL system enables your rig to automatically QSY to an open channel. Now you can automatically switch over to a simplex channel after repeater contact! Here's how it works:

The DCL system searches for an open channel, remembers it, returns to the original frequency and transmits control information to another DCL-equipped station that switches both radios to the open channel. Micro-processor control assures fast and reliable operation. The whole process happens in an instant!



Optional Accessories

- TU-7 38-tone CTCSS encoder
- MU-1 DCL modem unit
- VS-1 voice synthesizer
- PG-2K extra DC cable
- PG-3A DC line noise filter
- MB-10 extra mobile bracket
- CD-10 call sign display
- PS-430 DC power supply for TM-2550A/2530A/3530A
- PS-50 DC power supply for TM-2570A
- MC-60A/MC-80/MC-85 desk mics.
- MC-48 extra DTMF mic. with UP/DWN switch
- MC-42S UP/DWN mic.
- MC-55 (8-pin) mobile mic. with time-out timer
- SP-40 compact mobile speaker
- SP-50 mobile speaker
- SW-200A/SW-200B SWR/power meters
- SW-100A/SW-100B compact SWR/power meters
- SWT-1 2m antenna tuner

Actual size front panel

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Complete service manuals are available for all Trio-Kenwood transceivers and most accessories. Specifications and prices are subject to change without notice or obligation. Specifications guaranteed on Amateur bands only.

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HF Superiority!

TS-930S All band transceiver with general coverage receiver

Throughout the contest and DX world, the TS-930S is recognized as THE HF rig to own—with the most outstanding performance per dollar ratio!

- Easily modified for HF MARS and CAP operation.
- Excellent receiver dynamic range.
- All solid state, 28 volt final amplifier for lowest inter-modulation distortion.
- Power input rated at 250 watts on SSB, CW, FSK, and 80 watts on AM.
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- SSB slope tuning—Another Kenwood First!
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TS-430S Compact all band transceiver with general coverage receiver

Kenwood engineering brings you "Digital DXterity"—QSY from band to band, mode-to-mode, and frequency-to-frequency with ease!

- Easily modified for MARS operation

- Superb interference reduction
- Superior solid state design
- 8 memories store mode, frequency, band. Each channel may be used as a separate VFO
- Programmable scanning
- Dual digital VFOs
- VOX, semi break-in CW with sidetone



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SWR/Power Meters



SW-200A/SW-200B/SW-2000

Base station SWR/power meters

SW-200A supplied with SWC-1, SW-200B supplied with SWC-2, SW-2000 supplied with SWC-3

Selectable Peak-reading/RMS, SWR/POWER meters cover 1.8–150 MHz (SW-200A), 140–450 MHz (SW-200B), 1.8–54 MHz (SW-2000) in range of 0–20/200 W (SW-200A/B), 0–200/2000 W (SW-2000) full scale for base station use.

SPECIFICATIONS

• Impedance: 50–52 Ω • Frequency range: 1.8–150 MHz (SW-200A), 140–450 MHz (SW-200B), 1.8–54 MHz (SW-2000) • Power measuring range: 0–20/200 W (SW-200A/B), 0–200/2000 W (SW-2000) • Accuracy: Less than ±10% of full scale • Sensitivity: Less than 2 W (SW-200A/B), 20 W (SW-2000) • Power supply: 12 VDC 100 mA • Dimensions: 193 (7.6) W x 62 (2.4) H x 79 (3.1) D mm (inch).



SW-100A/SW-100B

Compact SWR/power/volt meters

1.8–150 MHz (SW-100A), 140–450 MHz (SW-100B) in range of 150 W full scale for mobile use.

SPECIFICATIONS

• Impedance: 50–52 Ω • Frequency range: 1.8–150 MHz (SW-100A), 140–450 MHz (SW-100B) • Power measuring range: 0–150 W • DC VOLT meter: 0–20 V • Accuracy: Less than ±10% of full scale • Meter illumination: 12 V 50 mA • Dimensions: display 92 (3.6) W x 64 (2.5) H x 36 (1.4) D mm (inch), coupler 62 (2.4) W x 50 (2.0) H x 30 (1.2) D mm (inch).



SWC-1/SWC-2/SWC-3/SWC-4

Optional couplers

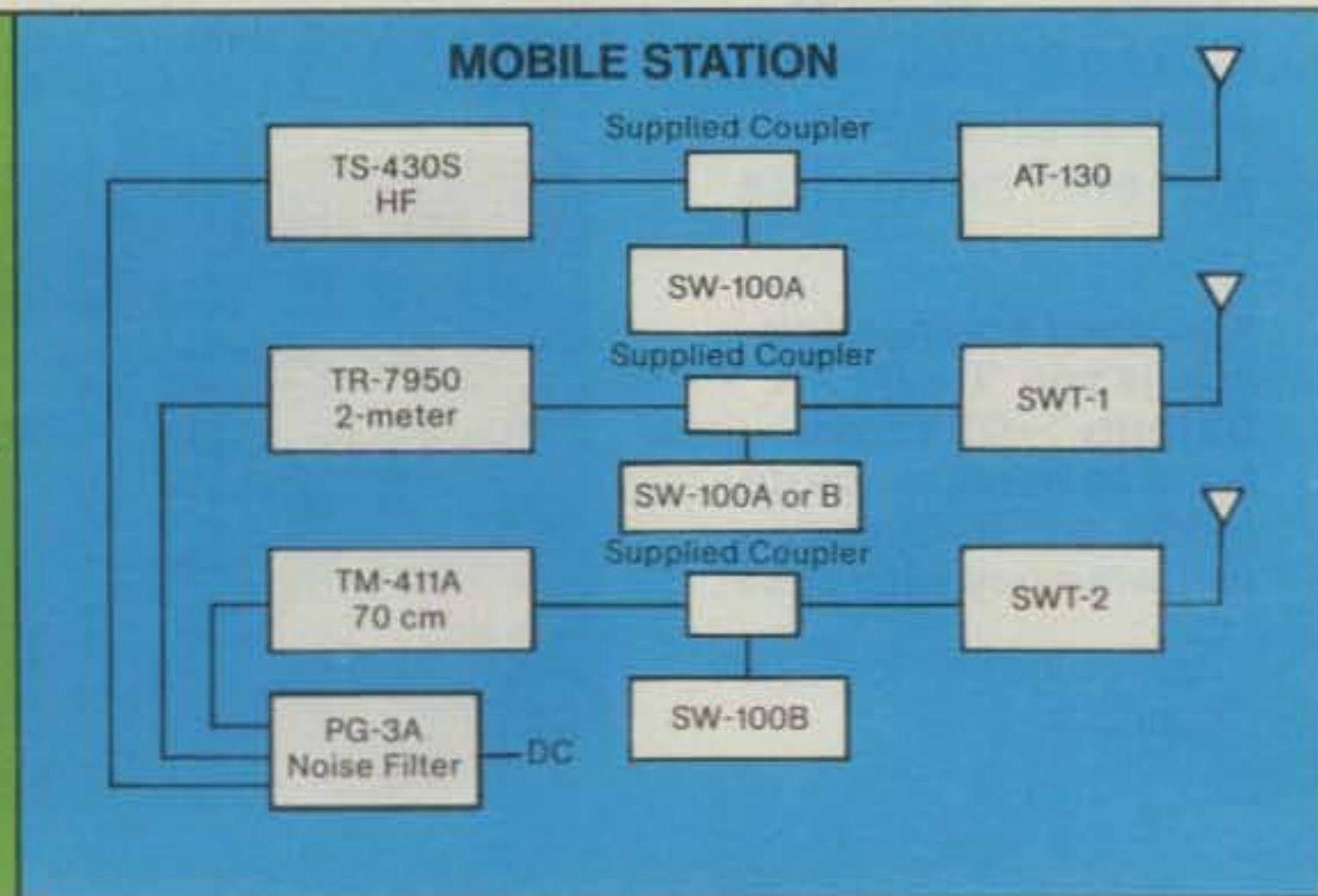
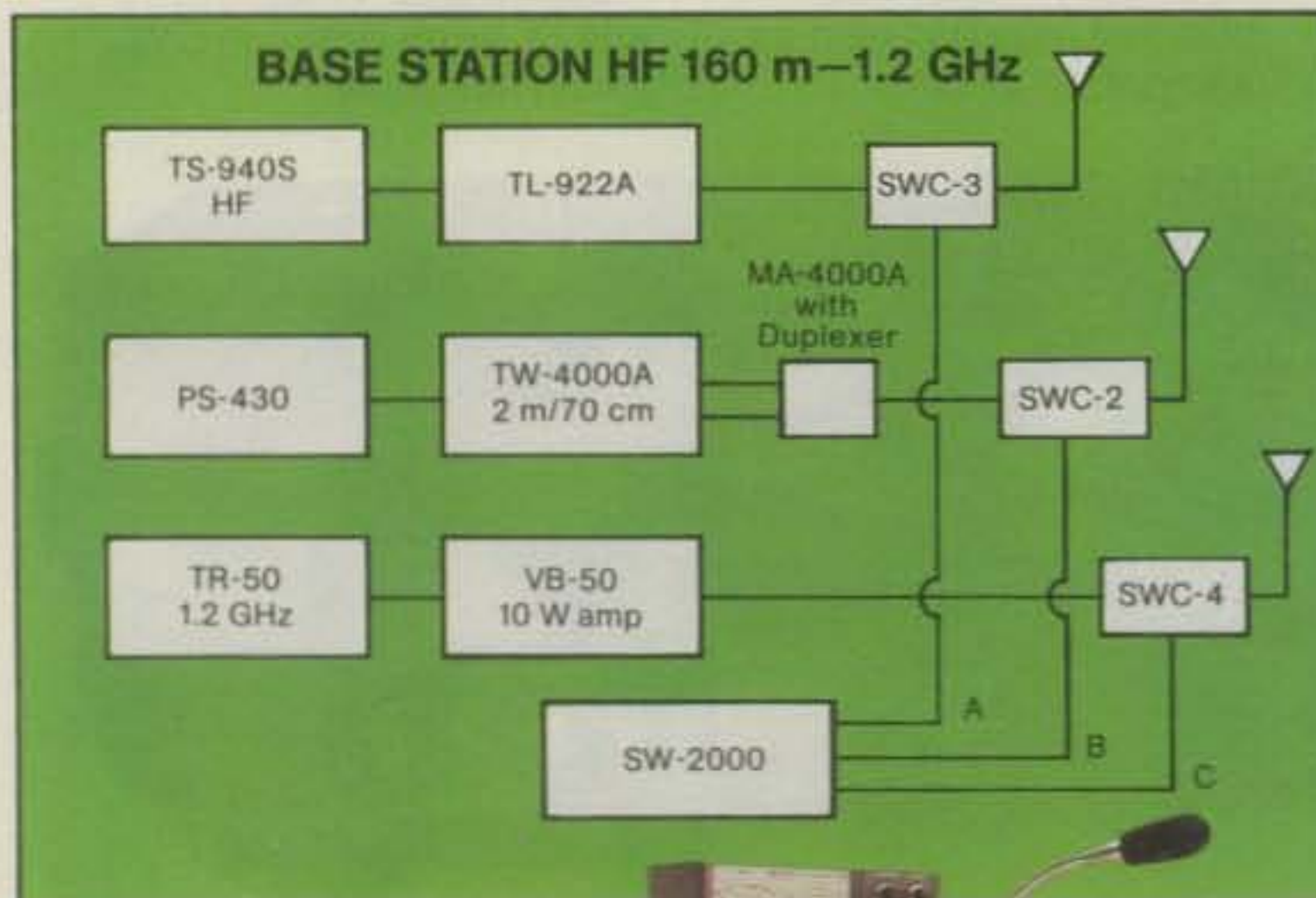
SWC-1 (1.8–150 MHz): Coupler for SW-200A/B, SW-2000 } SO-239 connectors
 SWC-2 (140–450 MHz): Coupler for SW-200A/B, SW-2000 }
 SWC-3 (1.8–54 MHz): Coupler for SW-2000 }
 SWC-4 (1200–1300 MHz): Coupler for SW-200A/B, SW-2000—Type N connectors



SWT-1/SWT-2

Compact antenna tuners

• Frequency Range: SWT-1 (144–148 MHz), SWT-2 (430–450 MHz) • Input Impedance: 50 Ω (unbalanced) • Output Impedance (Matching range): 25–100 Ω (unbalanced) • Insertion Loss: Less than 0.3 dB • Max. Input Power: FM/AM 100 W, SSB 200 W (PEP) • Connector: SO-239 • Dimensions: 68 (2.68) W x 32 (1.26) H x 50 (1.97) D mm (inch) (Projections not included).



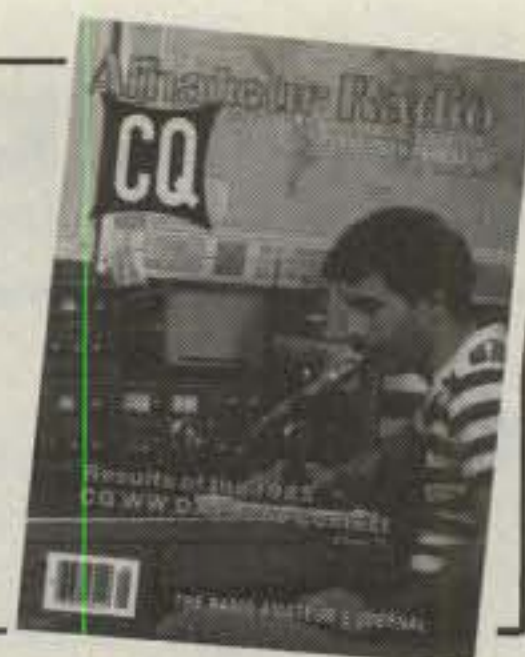
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The Radio Amateur's Journal



ON THE COVER: Rich Ball, WA2ZPX, of Ridgebury, New York, is shown trying to work a rare one. Photo by Larry Mulvehill, WB2ZPI.

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SEPTEMBER 1986

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Zero Bias

AN EDITORIAL

One of the underlying philosophies of the Novice class of amateur radio license is to provide an atmosphere for the newcomer to *begin* a period of training in amateur radio. It is assumed that this newcomer has little training and no expertise in amateur radio. Curiosity, determination, and a desire for something more has gotten him this far. We as mentors and peers are supposed to take this person further on. A Novice is a beginner who sees amateur radio with a beginner's eyes—idealistically.

The Novice period, then, is the time for our newcomer to be exposed to all areas of amateur radio, to be tutored and educated in those aspects which form what we call expertise. There is an element of time implied in this process, a time to learn. Since there is no minimal time required between upgrading, the Novice period can be as short as one wants or until one has the capacity to upgrade. The concept of a learning period really doesn't fit in with what happens.

The Novice period of our newcomer's amateur radio life is that period which is best gotten through quickly. In practice, it should be used strictly to build a fast enough Morse code speed to get your butt out of some very restrictive operating spectrum as soon as possible. At the same time, our new Novice should be taking another class (where possible) and memorizing license manuals. Time shouldn't be wasted on trying to understand the material; most of it will not relate to anything the Novice will need to know once he upgrades. Upgrading is the important thing, not knowledge. A few lucky people have the capacity to take all the exams in one day, winding up as an Extra class amateur by lunchtime.

The above is what happens more often than not and is presented as an unfortunate ideal. Having a Novice class license is a stigma, and Novices are really not welcome at some clubs or on the air. The historic furor over a no-code license and the very mild, by comparison, furor over the Novice Enhancement proposals seem to be a stubborn streak of atavism on the part of the people who never saw the need for a Novice class of license in the first place. It's not a place to learn; it's a place to get out of.

Under these conditions, the last thing you would also want to include is fun. The potential for fun might keep more and more Novices hanging in and possibly upgrading after a while. The word that amateur radio can be a lot of fun also might reach people who never heard about it, and they might want to try it, too. Enhancing something makes it more attractive. On the other hand, having a lot of Novices might make some people nervous, especially if they're enhanced. Some of these Novices may not spend their days worry-

ing about upgrading so fast and actually might enjoy more of amateur radio while learning a bit more. The upgrading would follow at its own pace.

If the Novice is to learn about amateur radio, he must be exposed to amateur radio. Voice privileges are part of what amateur radio is about. How do you learn about procedure and the general rules of the road except by doing? Factitiously, of course, you have to realize that hundreds of thousands of people are in class or studying for their Novice now so they too can get in on some really neat CW practice. Whether you believe that CW is absolutely necessary or just a necessary evil, it's hard to make someone new also believe it. When it's all you've got to offer, no wonder the Novice license is a place from which to escape as soon as possible. Other privileges added to the Novice class of license can only enhance a basic education.

The down side of this is that learning also implies teaching, and that too has become more of an ideal than a reality. Let's face it: some Novices do drop out of amateur radio in spite of having teachers, encouragement, and other ideal surroundings simply because it wasn't what they thought it would be. Most, however, do drop out for the simple reason of neglect—the neglect of instructors not following through after the Novice was licensed, the neglect of an amateur radio club not willing to share its expertise, and the neglect of a fellow amateur to make time available or offer to help. I think that includes most of us.

In hindsight, sure it's easy to get a new Novice on the air. It may be easy for you or me, but what about our brand new Novice? You can tell him to check out the local fleamarket for some older rig or old receiver and transmitter and try to pick them up at bargain prices. How does he know it works, and if it works does he know how to use it? Next time you're looking for something to read, read what you have to know in order to get a Novice license. Does it contain data on fixing up equipment, aligning receivers, finding faults, and making repairs from parts in your junkbox? Does the average newcomer have some basic test equipment? You have to admit that a lot of this knowledge and equipment comes about after a bit of time is spent learning what to do with it. So once again if we're real lucky, someone helps out the new Novice and helps him select, buy, repair, set up, and use this gear. After all, this is tradition. Generally this gear is far less than ideal, but it does do the job and it does encourage you to see how much fun you can have doing things the hard way. After all, for the most part the new Novice has spent relatively little money—a couple of hundred dollars at most. Tradition also

has it that if you get cracking on CW as soon as possible, you can upgrade also as soon as possible and dump that gear off on another new Novice down the line, hopefully not losing too much money.

If we are to look at the Novice license as only a code practice oscillator that beeps back, enhancing it might seem odd. If you see the Novice license as a great doorway to amateur radio where one can actually try out various modes and bands while using some of the latest equipment, then the potential is limitless. Presently we are offering new people a chance at a license that is very limited in scope, has very little respect or value, does not really relate to any of the wonderful things that amateur radio has to offer, while encouraging them to get out of what is an undesirable situation as soon as possible. Rather than a learning experience or a safe place to try out things, it seems to equate with a time in purgatory. It doesn't seem to be a very attractive sales tool.

Upgrading for the sake of upgrading is meaningless, if the only skill that's improved is CW speed. CW is not all that amateurs do. It's the same as graduating more and more kids from high school and finding that more and more of them can't read or write. In a rush for quantity we tend to forget just what it is we're trying to do. The original Novice license was a radical departure from the then accepted norms. It was an exciting time in amateur radio and people were attracted to it. The traditionalists fought it as giving away the whole store to the masses. History has shown it was a very much needed shot in the arm for the service.

Ideally the Novice period is like any schooling period, no matter the time involved. It's not designed to be a permanent home or a place where one just keeps taking courses. At some point amateur radio, like real life, must be experienced on its own. The purpose of the education is to prepare the student to do that. We shouldn't bemoan the fact that the student can't read after graduation if we haven't taught or motivated him to learn. Dangling a carrot is one thing; tasting it is a completely different thing.

As we all know, it's hard enough to get people sufficiently interested in amateur radio to get them as far as the Novice license. That should be the first clue to a problem area. Why should they think that having a Novice license is a wonderful opportunity to learn about amateur radio? They're either dropped at this point, being told in effect to fend for themselves. The dwindling numbers who stay in and persevere should be congratulated, but we will sorely miss the almost 40,000 Novices who dropped out in the last 3½ years.

73, Alan, K2EEK

TOO GOOD TO BE TRUE?



PAKRATT™ Model PK-64

shown with enhanced
HFM-64 option installed

★ MORSE ★ BAUDOT ★ ASCII ★ AMTOR ★ PACKET ★

FIRST FIVE MODE DATA CONTROLLER

The Pakratt model PK-64 by AEA is the world's first computer interface that offers Morse, Baudot, ASCII, AMTOR and Packet all in one box (hardware and software included) at a price many competitors charge for Packet alone (from \$219.95 Amateur net). Do not let the low price fool you; coming from any other company but AEA it WOULD be too good to be true. The PK-64 works with virtually any voice transceiver. The Pakratt is the easiest of any to hook up and have operating in just a few minutes.

In Packet mode, the PK-64 offers virtually all the features of every other Packet controller on the market, plus many important features left out by others due to cost constraints. For example, we have included a hardware HDLC, true Data Carrier Detect (DCD), multiple connect with up to ten stations simultaneously and full implementation of version 2.0 of the AX.25 protocol.

Because the PK-64 was designed specifically for the Commodore 64 (or C-128 and SX-64) computer, we have been able to do many things not economically feasible with general RS-232 interface controllers. For ex-

ample, the Pakratt includes true split screen operation with on-screen status indicators and an on-screen tuning indicator.

ENHANCED HFM-64 MODEM OPTION

The standard PK-64 will operate all modes with a phase-lock-loop (PLL) detector roughly equivalent to all popular packet modems in the marketplace (except we have included extra filtering). The enhanced HFM-64 modem option offers true independent dual channel filtering with A.M. detection (like the famous CP-100 Computer Patch™). The enhanced HFM-64 option also offers a hardware LED tuning indicator (like the CP-100) and a front panel variable threshold control for setting maximum sensitivity under various band conditions. We recommend the HFM-64 option for anyone keenly interested in weak-signal heavy-QRM HF operation. For anyone desiring to operate FM RTTY with the standard North American tone pair or CW receive, the HFM-64 is required. The HFM-64 is field installable with no soldering or test equipment required.

WORKS WITH THE POPULAR C-64 COMPUTER

AEA designed the PK-64 around the

low-cost C-64 because of the special architecture features making it especially suited to Amateur Radio applications. The C-64 should not be viewed as a mainframe, but rather a very economical accessory to your data communications system. Many owners of expensive computers such as IBM, TANDY, APPLE, KAYPRO, ATARI, etc., are now buying the low cost C-64 and dedicating it to their operating position. They simply cannot find software for their machine that even approaches the power and user friendliness of the PK-64. Plus, think of the convenience of having only one controller and keyboard to go from one mode to another without having to re-do cabling!

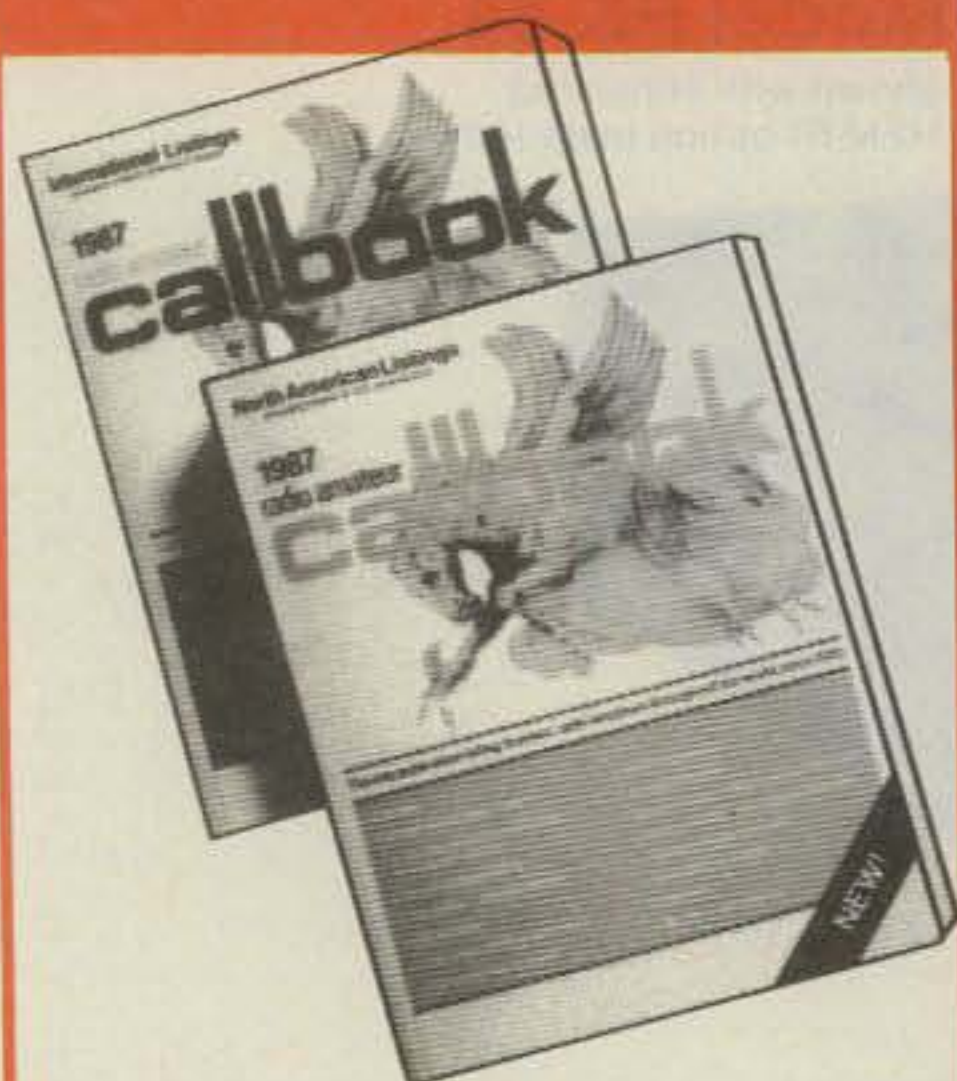
The PK-64 is so complete that all you need to do is wire up a microphone connector to the end of a cable (provided) and you are ready to go. There is no need to track down special terminal software, cabling or even a power supply. It all comes with the PK-64. So do not be the last on your block to own the most exciting new product in years. See the PK-64 at your favorite dealer or write for our specification sheet now.

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AEA Brings you the
Breakthrough!

1987 CALLBOOKS



The "Flying Horse" sets the standards

Continuing a 66 year tradition, there are three new Callbooks for 1987.

The North American Callbook lists the calls, names, and address information for licensed amateurs in all countries from Canada to Panama including Greenland, Bermuda, and the Caribbean islands plus Hawaii and the U.S. possessions.

The International Callbook lists the amateurs in countries outside North America. Coverage includes South America, Europe, Africa, Asia, and the Pacific area.

The 1987 Callbook Supplement is a new idea in Callbook updates; it lists the activity in both the North American and International Callbooks. Published June 1, 1987, this Supplement will include all the new licenses, address changes, and call sign changes for the preceding 6 months.

Publication date for the 1987 Callbooks is December 1, 1986. See your dealer or order now directly from the publisher.

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| incl. shipping to foreign countries | 30.60 |
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incl. shipping within USA | \$13.00 |
| incl. shipping to foreign countries | 14.00 |

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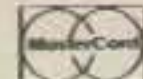
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CIRCLE 154 ON READER SERVICE CARD

Our Readers Say:*

Hassle-Free Repair

Editor, CQ:

How often have you purchased an item which later developed a problem and getting it fixed was an even bigger problem? Well, rejoice!! There is a manufacturer who stands behind its equipment.

I was pleased with Mirage amplifier performance. One day after a long-winded QSO, the power amp on a B3016 two meter amp quit in a puff of smoke. The amp is used at home with a blower to keep it cool, which, considering its good heatsink, is unnecessary but helpful for long key-down times. I sent in the unit, which was a couple of years old, for repair. Needless to say, I was surprised to have it returned promptly and NO CHARGE marked on the invoice. I had expected a long exchange of purchase receipts, letters, charge card info, and the like. What a nice surprise to have a warranty repair done quickly and without a quibble.

I use three of their amps, two at home and one mobile, and have found them to be well made and long lasting even in the 100% duty cycle of ATV operation. I would recommend Mirage to anyone who wants a quality product.

Henry B. Ruh, KB9FO
Chicago, IL

A Net For Kids

Editor, CQ:

I've got a net going just for kids! I'd appreciate it if you could say something about it in your magazine. It's on 21, 150 CW starting with a series of V's. I'll ask for A's, B's, etc. Come with your call. Then I'll acknowledge you. Then go with name, age, class!

Jon Millington, KB6IQW (age 13)
Santa Monica, CA

Tropo Opening To Hawaii

Editor, CQ:

I wanted to drop you a quick note and let you know our experiences in the latest tropo opening to Hawaii. The band opened on Friday the 13th at around 8:00 p.m. local time. Although we could hear other people successfully working Hawaii, we could not hear the Hawaiian

*CQ encourages its readers to send in for publication letters expressing your opinions, ideas, etc. We will print them as space permits, and we reserve the right to choose material as we see fit. Please address all correspondence to "Our Readers Say" care of CQ.

station. My Home QTH is in a valley and apparently the signal was going overhead and could not be worked. Brad Smith, WJ6A, lives about a mile from me, and although his 2 meter beam has more gain and also the advantage of a GaAsFET preamp, he had the same problem. We decided it was time to do some hill-topping if we were going to get to work the tropo station in Hawaii. At approximately 9:05 p.m. we worked Paul, KH6HME, who was on a mountaintop on the island of Hawaii. We made contact using an ICOM 211, a 160 watt amplifier, and a 4-element beam. The location we used was on the western side of Mt. Helix about half the way to the top at about 700 feet MSL.

This was our first attempt at working a tropo opening, and although it appears we may not be able to work from our Home QTH's, it also shows how easy it is to put together a portable station and be successful at working the long stuff from the right location.

Dale L. Holden, N6ABU
Brad Smith, WJ6A
Santee, CA

We've Lost One

Editor, CQ:

I'm a Novice and have been licensed for over 2½ years. I operated on CB for over 18 years before becoming a ham. It took me that long to find and get into a class. I've been studying to upgrade now for 6 months. I work when all of the tests are given. I'm a security guard.

Recently I tried to get a special test date. I was told that I'd be contacted. I've never been contacted. I'm tired of all the politics and am going to sell out and go back to SSB, CB.

Every time I pick up the statistics on ham licenses it makes me sick! There are more getting out than coming in. It looks like that is the way that the old hams want it. They don't want to help anyone upgrade or fix it so that everyone interested in upgrading can. Since they feel that way, they can have it!

I own the following equipment: Kenwood TS520, 10-40 meter vertical, 2 meter HT, 2 meter 5-element beam, C64 computer, CW and RTTY interface, monitor, MC 50 mic, monitor scope, and power/SWR meter. I've got all I need for General class privileges. I'm sick and tired of just working CW and listening to phone conversations. There is a hamfest coming up and I'm going to sell out at it! Thank you, fellow hams, for your cooperation.

Tony E. Byrum, KA0VFN
Oklahoma City, OK



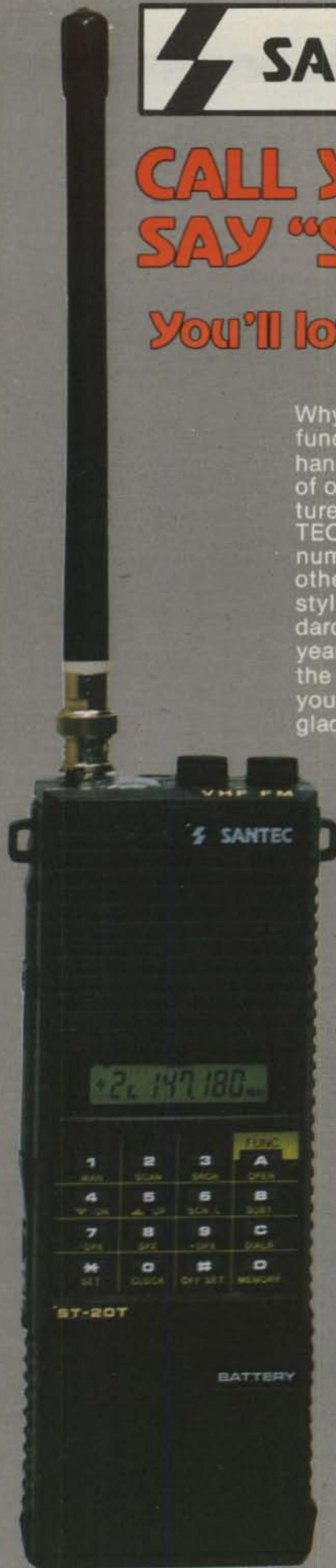
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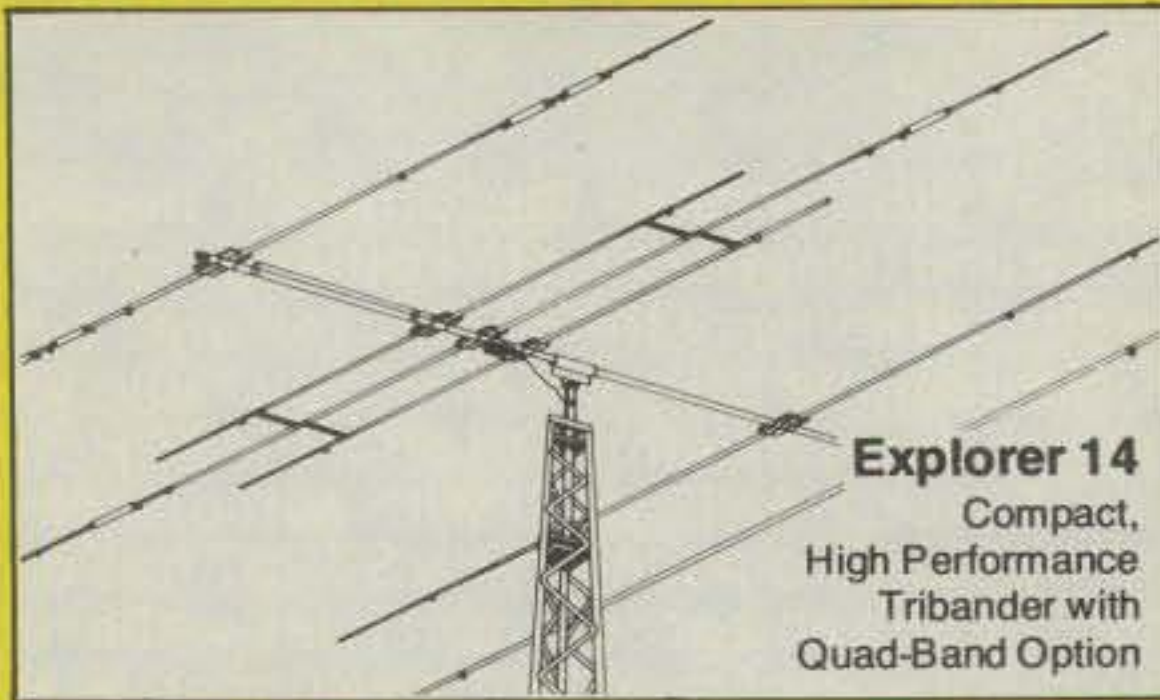
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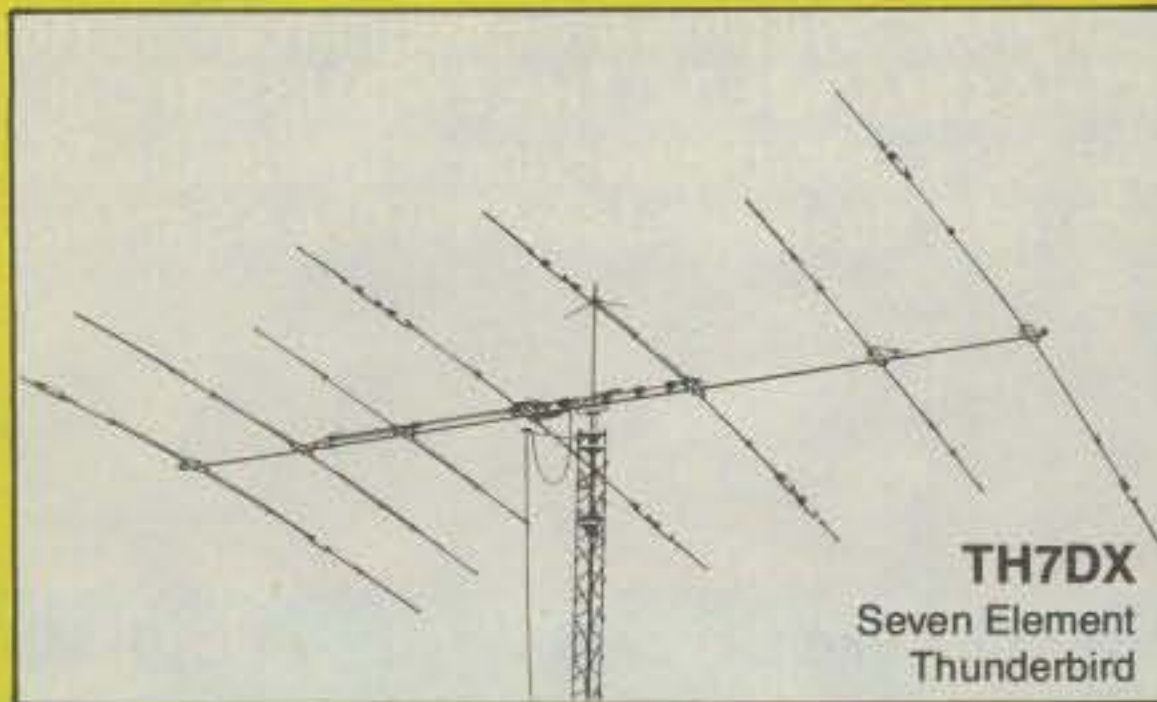
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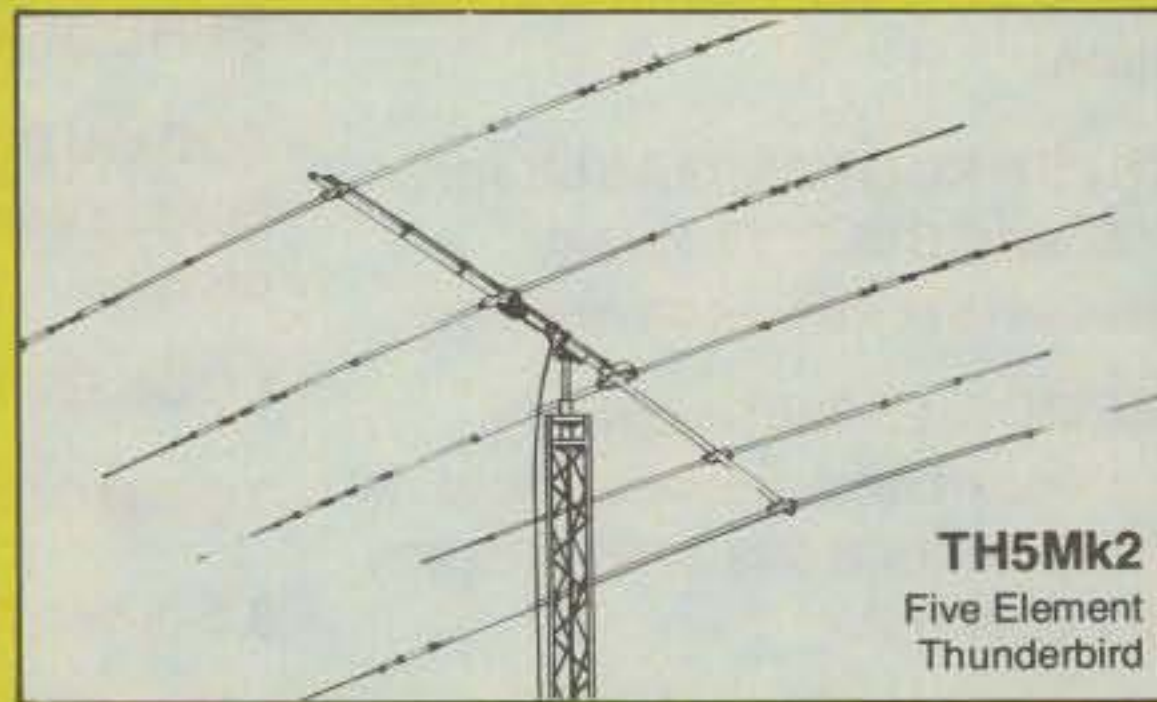
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Announcing

• **GB9DB For Gloucester ARS** - To celebrate the 900th anniversary of the Domesday Book, the Gloucester ARS will use the call-sign GB9DB for the month of September 1986, beginning on September 6th at 1200 GMT on HF and VHF. The station will be kept running on various days during September from Glos-cat, Oxstalls Campus, Oxstalls Lane, Gloucester, Great Britain. QSL cards will be available, and incoming cards should be sent via the Radio Society of Great Britain or direct to G4AYM.

• **Bear Bryant Special Event Station** - The West Alabama ARS of Tuscaloosa, AL will sponsor a Special Event Station in honor of college football coach Paul "Bear" Bryant, using the call WD4DAT on September 6th from 1300Z to 2300Z on the lower 25 kHz of the General 80, 40, 20, and 15 meter bands. To receive a certificate send an SASE with your QSL card to WAARS Special Event, P.O. Box 1741, Tuscaloosa, AL 35403, or the Callbook address of WD4DAT.

• **Valparaiso, Indiana N9RD** - The Porter County ARC will operate N9RD from 1500Z to 2300Z on September 6 to celebrate the annual Orville Redenbacher Popcorn Festival. Phone 7.250, 14.250, 21.350, and satellite (if available.) For a QSL send SASE to KD9BG, 757 Ransom Road, Valparaiso, IN 46383.

• **Whippany, New Jersey** - AT&T Bell Labs Whippany ARC will operate W2TW Sept. 6 from 1300Z to 2200Z commemorating their 30th anniversary. Operation will be in the lower portions of the 10-80 meter General phone bands. A 2 meter station will operate (FM) 147.63/147.03 W2TW repeater, and 144.210 SSB. For a QSL send SASE and QSL to WB2QOQ, Rick Anderson, 243 Mountain Ave., Murray Hill, NJ 07974.

• **K2BR From Miss America Pageant** - Southern Counties ARA will operate K2BR during the week of September 7-14 from the Miss America Pageant, Atlantic City, New Jersey. Frequencies: phone 25 kHz inside lower General class band edge; CW 65 kHz inside lower band edge; Novice 7.125 MHz, 21.150 MHz. QSL SASE via SCARA, Box 121, Linwood, NJ 08221.

• **W0LBR From Dubuque, IA** - The Great River ARC will operate W0LBR to celebrate Dubuque Riverfest and Arboretum Days on Sept. 13 and 14 from 1500Z to 2100Z each day. Frequency will be 7115 ± 5 kHz in the Novice band only. QSL W0LBR, Cliff Stanton, 1260 Madera, Dubuque, IA 52001. WB0QMA will also operate in the lower 20 kHz of the General 40 and 80 meter bands (QSL to Gene Chappel, WB0QMA, 1795 Hale St., Dubuque, IA 52001).

• **WA9ISV From Robinson, IL** - The Crawford County ARC will operate WA9ISV on Sept. 13-14 1600-0200 GMT to commemorate the centennial of Robinson, Illinois. Operation on: 40M-7.250, 20M-14.250, 15M-21.350 ± QRM. Local area hams may use 2M-147.96/36 repeater for their contacts. Send QSL and business-size SASE (9¼" x 14½" if you don't want certificate folded) for certificate (also SWL) to CCARC, 310 E. Magnolia St., Robinson, IL 62454.

• **N6KM From Glen Ellen, CA** - The Valley of the Moon will operate Special Event Station N6KM to commemorate writer Jack London. Operation will be from Jack London State Park, Glen Ellen, California for two weekends, September 13, 14 and 20, 21 from 1500 UTC Sat. to 0200 UTC Mon. in the general phone band on 21.360 MHz on 15M, 14.275 MHz on 20M, and 7.225 MHz on 40M, ± QRM. A certificate will be available for a QSL card and \$1.00 sent to VOMARC, 358 Patten Street, Sonoma, CA 95476. For certificate unfolded, send 9" x 12" SASE.)

• **Borehamwood & Elstree ARS Special Event** - The Borehamwood & Elstree Amateur Radio Society in association with the B.B.C. will set up a Special Event station at Elstree on the 20-21 September to celebrate the 50th anniversary of High Definition Television Transmission in the world. They will be operating SSB, CW, and possibly RTTY on 2, 10, 15, 20, 40, and 80 meters subject to propagation. Transmissions will begin on September 20th at 1200 GMT and continue until September 21st at 2000 hours GMT with the call-sign GB2TV. A special QSL card will be available. Contact I. Rosenberg, G4XEW, 11 Parkside Dr., Edgeware, Middlesex, HA8 8JU, England.

• **West Virginia Special Awards Day** - The Logan County, West Virginia ARC will operate K8RFBK for a special Awards Day on September 20th from 10-6 EST on phone 7.250. For a certificate send QSL and contact to K8RFBK via the Callbook (SASE).

• **WBQLY From Boardman, Ohio** - The Mahoning Valley ARA will operate WBQLY September 28 from Boardman Park during the Rotary Octoberfest Celebration. Suggested frequencies are phone sections of 40 and 20 meter bands, and 145.01 packet. For a special QSL certificate, send a standard-size SASE to MVARA Octoberfest Station, P.O. Box 2950, Youngstown, OH 44511.

• **The following hamfests, etc. are slated for Sept.:**
Sept. 5-7, 1986 ARRL National Convention, San Diego, CA. Contact Walt Hicks, W6UZL, 2671 Elyssee St., San Diego, CA 92123 (619-292-7918).

Sept. 6, **Uniontown ARC Gabfest**, Uniontown, PA. Contact UARC Gabfest Committee, John T. Cermak, WB3DOD, 36 Steel St., P.O. Box 433, Republic, PA 15475 (412-246-2870).

Sept. 6, **Windsor Hamfest**, Windsor, ME. Contact Dot Young, W1TGY, 47 Longwood Ave., Augusta, ME 04330 (207-622-1385).

Sept. 6, **Saratoga County Races Hamfest**, Ballston Spa, NY. Contact NB2R via Callbook.

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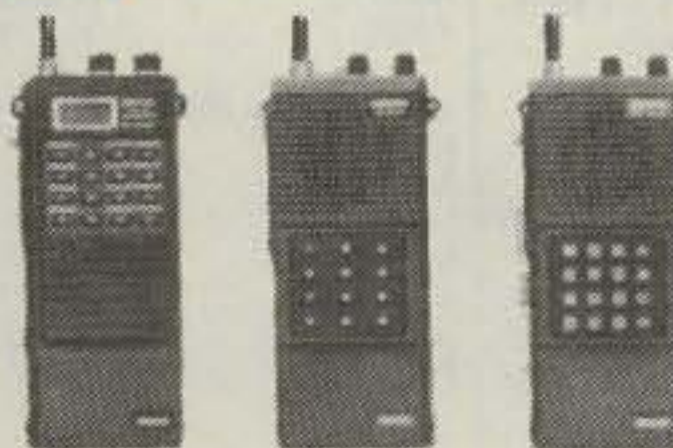
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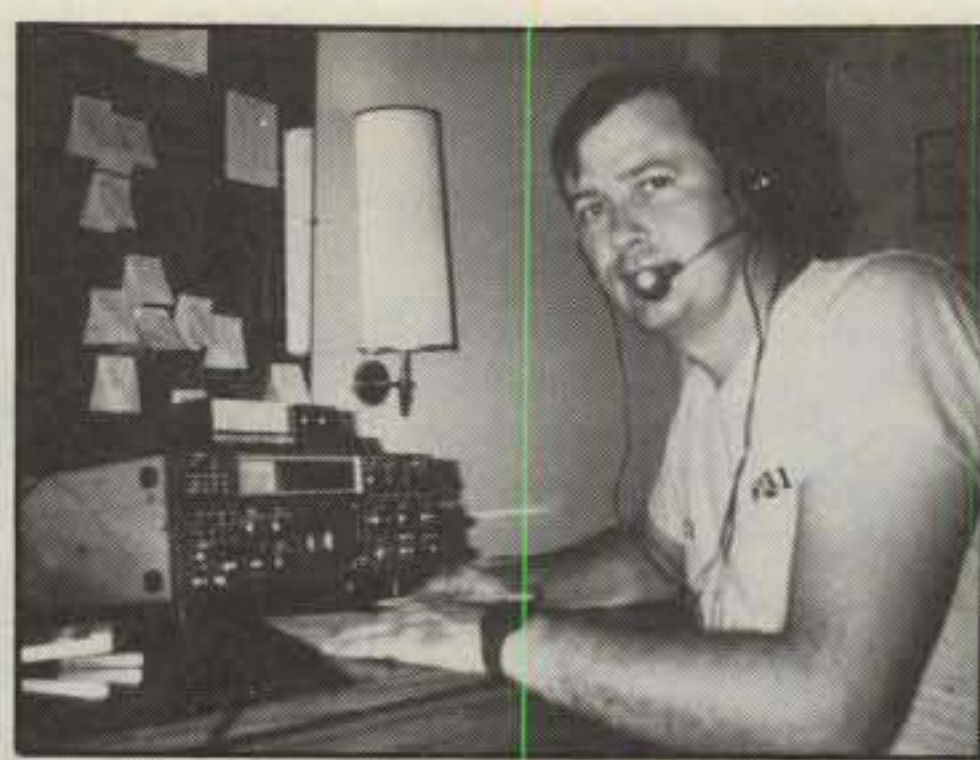
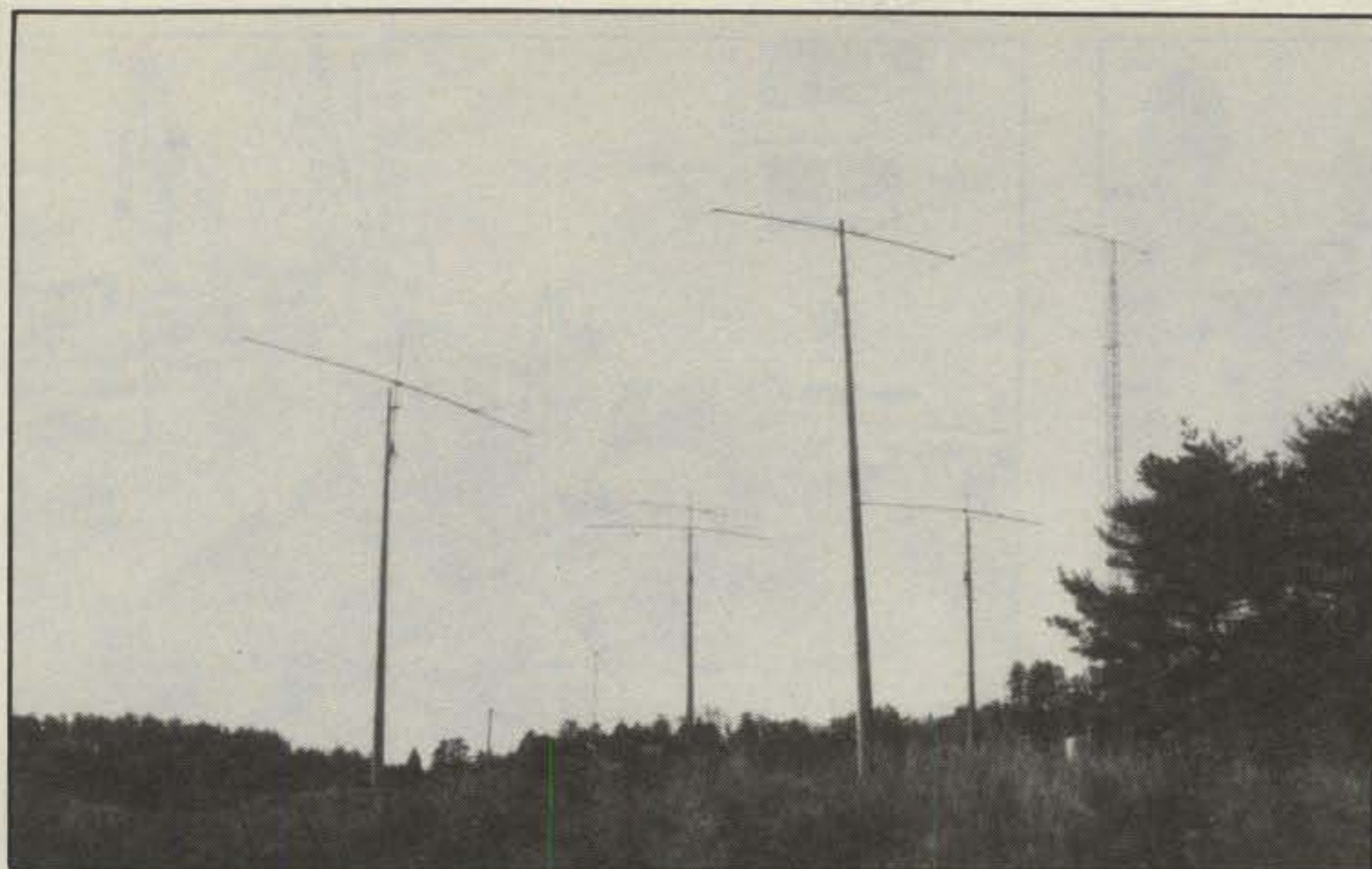


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Ralph, NQ4I, is shown here at 8R1Z. Ralph finished third worldwide in the all band category this year in a very close race.

Here's the antenna farm at JE2YRD, the #1 JA2 Multi-Single team this year.

1985 CQ WORLD-WIDE DX CONTEST PHONE RESULTS

BY LARRY BROCKMAN*, N6AR/4, AND BOB COX**, K3EST

Al is not quite sure what is wrong. It almost seems like backlash in his receiver, though. Every time he tunes across 7179, the needle on his S meter pins and stays there no matter which way he turns the knob. Not only that, it all sounds the same 5 kHz either side. Why does the SU station on 7070 say he's listening there anyway? All that's there is that AM station. "... Listening seven one seven *nize*, seven one seven *nize*, QRZ." In any event, Al just can't find that W3 station the SU answered in that mess. If he could *just* find that frequency, he'd get him for sure. This is no time for backlash, anyway. It's time to concentrate.

Actually, things haven't gone well for Al all night. It's 4 hours into the contest, and there are only 10 QSOs in the log. That new 3-element 40 looked so elegant piercing the sky at 60 feet. Al felt sure it would do the trick. Why, hadn't he worked everything on 40 phone the last several weeks? Everything was set, too. But the trouble began at 0000Z, right off the bat. First, there was that HZ, then the 4S7, the UF6, and that darned ST2, all with good signals. Al had called each of them for a half hour, thinking for sure they would hear his big signal above 7150 right through all the QRM and QRN. If *only* they would listen up. Al had yelled "listen up" a few times down on the low end; sneaking out of the band was OK for some-

thing like that anyway, you know. How else were those turkeys going to know how well they were being heard in the States? Al just couldn't understand that rude remark the K8 made on the repeater about the FCC. "Who needs it?" he thought. "I tried to do them all a favor, and this is the thanks I get."

But there's the SU again; "... Listening seven one seven *five*." What was that, 7175? "Not 20 minutes shot listening in the wrong spot, please no," thinks our hero. But the dial goes down to 7175 in a zip. Good grief! There's the W1 the SU just answered. Quick as a flash, our hero zeroes in on the W1. Now he's got the SU for sure.

Some time later Al is fit to be tied. Maybe he'd better listen up on 7175 again just to be sure. "... Thanks for that SU multiplier, OM. You're 5905, 5905 from N2 ump-de-ump," and the S meter falls gracefully to S3. What a break; a clear shot at the SU! But even as our hero is thinking of his "clear shot," the receiver meter takes an incredible jump. "ssSSSWISHHHHH garble garble." What a pile-up! Our buddy Al is determined to prevail now. He screams into the microphone the melodious sounds of his call—over and over again. Indeed, Al has entered into a "contest stupor." Red-faced, jaw-snapping, hoarse and single-minded, our hero showers the mike with an incredible level of decibels of sound.

Then, an imposing-looking female figure hovers over Al and taps him on the shoulder. Al glances up and motions her to "bug off." His gestures are met with more assertive tapping.

As he looks up again he perceives that distinctly hostile scowl, the one he doesn't dare ignore. "Yes, *dear*," he says impatiently. "Al," she says, "the neighbor is on the phone for the fifth time tonight about TVI. He wants to watch the Ed Sullivan reruns on Channel 2 and . . ."

Cheer up, Al, there's always next year, especially for the 40 meter crossband effort. For all the non-Als out there, cheer up, too. Think how much better off you are than our friend Al. You actually managed to get through the contest in one piece and submit a score. Now the time has come to report the results, big winners and little winners alike.

The All Band Results

In one of the most hotly contested races in the history of the CQ WW, three South American stations battled it out for the top Single Operator, All Band spot, with only 350,000 points separating them out of 10 million. However, Rich Smith, N6KT, pulled it out for the third consecutive year with a fantastic 9.6 million, followed by Bill, N1GL, at P43A (9.4 M) and Ralph, NQ4I, at 8R1Z (9.3 M). Congratulations to all three gents on sunspot high-style scores in the middle of the sunspot low.

John Dorr managed to break the top 10 worldwide from the U.S.A., while shattering the old record of 3.7 M that Al6V set in 1983 with a masterful 4.0 M. John thus recaptures the top U.S. spot he once held. He was followed by K1DG and W3BGN, who were only 27 K apart from each other, but almost 1 M below

* 12041 Walker Pond Rd., Winter Garden, FL 32787

** 3039 Campbell Place, Davis, CA 95616



Here's the crew at ZY5EG, third in the World in Multi-Single.



One of the truly faithful Brazilian single operators—PP2ZDD.

John. The difference was John's 20 and 15 meter QSO count, both of which ran over 1000 QSOs per band. Incidentally, all 10 top W scores were located in the northeast U.S.A. (W1, W2, W3), with Midwest and West Coast scores way down.

The Multi-Single category continued to flourish with more activity than ever. This year P44B amassed an impressive 11.3 M points to take the World high, followed by I5NPH at 9.7 M. Randy's KH6XX team set a new Oceania record at 7.6 M. The stateside honors go once again to KX4S with a fine 4.6 M effort, the new U.S.A. record. They were followed by Austin Regal's N4WW team at 3.8 M.

The "big station" category winner was the 18-member HC8X team with an impressive 22 M score. They were followed by two seasoned North American teams at VP2VCW and VP9AD (19.6 and 18.0 M, respectively). N2AA took the U.S.A. honors with 10.4 M. Their 733 multipliers were tops in the World, by the way. W3LPL was second at 8.1 M and only 9 multipliers off the N2AA pace.

Our QRP section winner was Angel, WP4G, with a fine 342 K, followed by K3WS at 315 K and K7RI with 271 K. Those are all tough QSOs at this time of the sunspot cycle. Congratulations to all the QRPers for their patience and perseverance.

Single Band Categories

For the low band enthusiasts 1985 was a banner year, as might have been expected. Thirteen new world, U.S.A., or continental single band records were set, mostly on 160, 80, and 40 meters. In fact, there were no records set this year on 15 or 10 meters, yet conditions were a real treat on the high bands compared to the normal day-to-day activity heard this year, a real boon for the contest crowd.

On 160 it was Wally, LZ2CJ, who took the World high, finishing just shy of 90 K. He was followed by VE3NNR with a distant 47 K, but that was good enough to set a new North American record, one held for the last 10 years by Herb, KV4FZ. KH6CC was third with a fine 45 K, also a new Oceania mark. Indeed, the old mark of 5 K was just demolished. AA1K/3 took the top U.S.A. honors with 24 K, nosing out K1ZM at 20.5 K.

Eighty meters was alive with activity from well before sunset to well after sunrise. These fine conditions were used to advantage by Yuri, VE3BMV, who set new World and North American records with 383 K. Yuri was fol-

lowed by WB7RFAV2 (339 K). T32AF's third-place finish was enough for a new Oceania record, and 4N3E's sixth-place score of 162 K set the new European mark. Bob, W6RJ, captured the U.S. high for the second year running with a fine 135 K.

Interspersed with all the usual garbage of teletype, jammers, AM broadcast, and the Woodpecker, 40 meter phone offered its yearly DX super challenge. VP2ET managed to pull out of it with a new World and North American record-setting pace of 850 K. He was followed closely by TI2CC at 823 K. Meanwhile, JA5BJC's 311 K set a new Asian record. Perennial multi-multi station W7RM was given an all band breather this year, as W7WA manned the 40 meter single band phone position. His resulting 243 K set an all-time U.S.A. record, beating the old 218 K standard set by N7DD just 2 years ago. With 31 zones, 71 countries, and 823 QSOs, the real possibilities of 40 meter phone shine forth for all the aspiring W crowd. Imagine, 800+ contacts on 40 phone crossband!

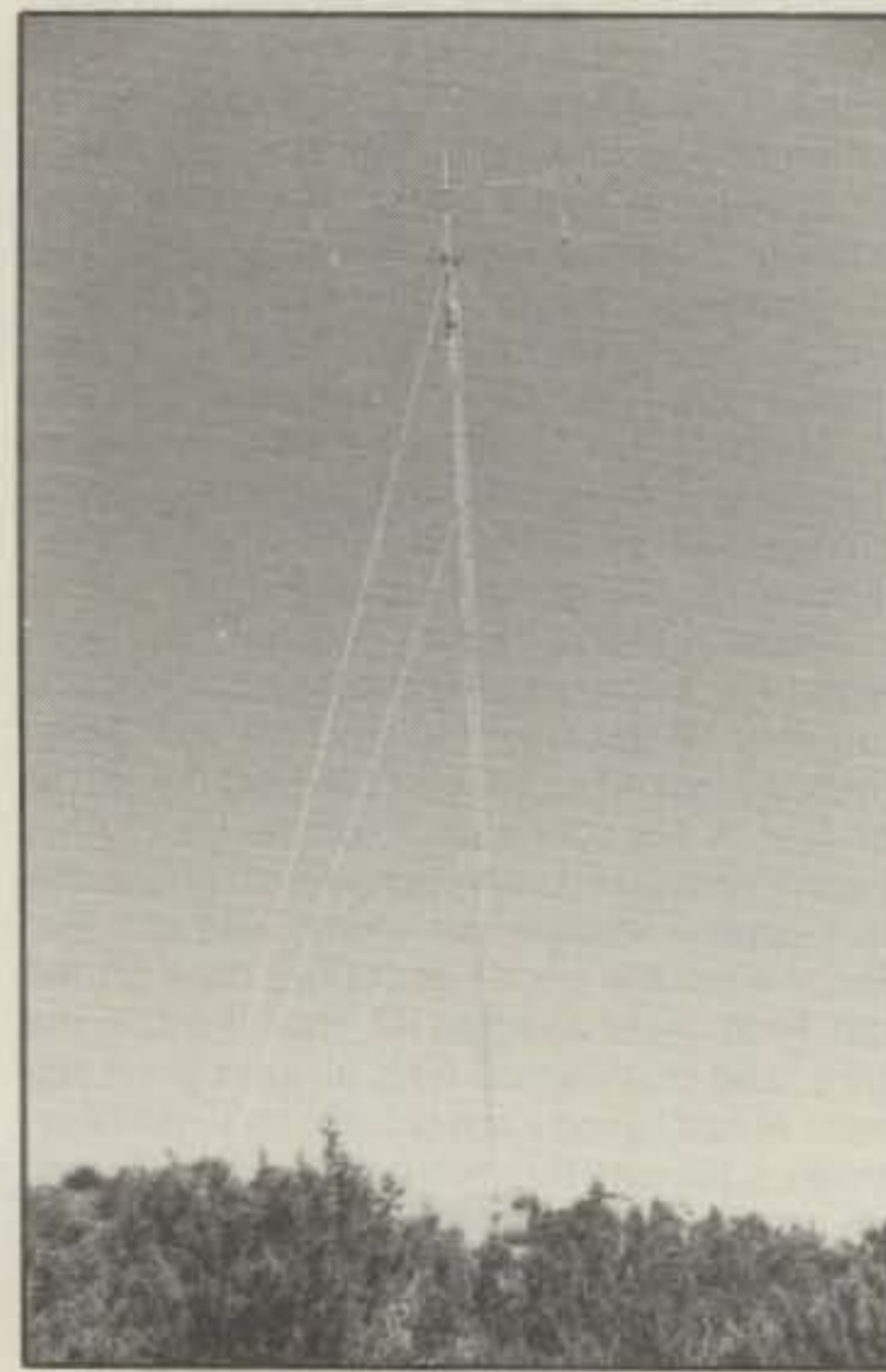
The premier DX band, 20 meters, offered almost 24-hour openings and topped the single band activity for this year. YZ9A's 1.29 M set a new European standard on 20, narrowly edging out G3FXB, who scored 1.22 M. However, it was K1OX and his third place worldwide that surprised everyone. Ted managed to post the first and only 7-figure score from the U.S.A. single band with an incredible 1.13 M. Congratulations, Ted, on breaking that barrier for the first time on any band or mode.

Carlos, TI2CF, took the World top spot on 15 meters with 1.34 M, the highest single band score in the 1985 contest. He was followed by KG6DX, LU6FDR, and CE6EZ, all of whom broke 1 M. K2EK ended as the U.S. master with 851 K, hotly pursued by Jeff, N8II. Many of the W's from east to west commented that Saturday's European opening to the States was the finest they had ever heard (see QRM), a surprising development for this time in the sunspot cycle.

The 10 meter band was a shadow of its peak form from previous years, but compared to the norm this year, it was a crackerjack. Latin America absolutely dominated the World on 10 with all 6 of the top scores in the World. TI2KD won the overall category with 549 K, just a tad above rivals LU1E and CX4HS. In fact, all the other top scores were in South America. KG1E ran away with the U.S. high with 71 K in 69 countries. And yes, both Japan



That big signal on 80 from Antigua this year was manned by none other than WB7RFAV2.



Lots of planning and effort went into the new antennas at Jim Stevenson's, KM6B. Although first in 6-land, Jim finished down in the Single Operator category as the East Coast swept the top 10.

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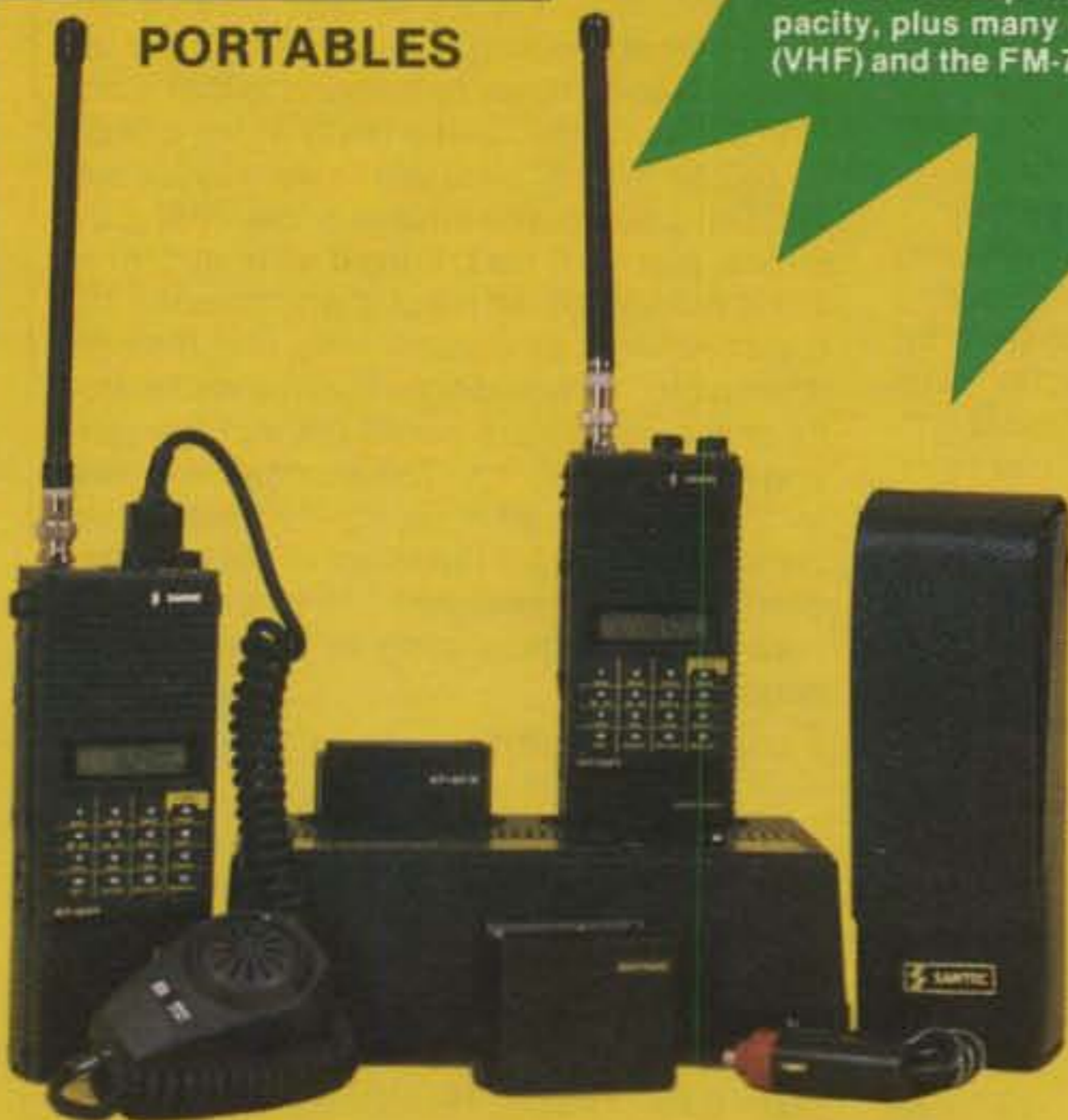
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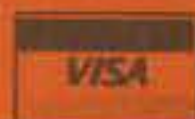
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and Europe were worked by Stateside stations on 10 at the bottom of the cycle.

Some Special News

This year marked the first ever serious participation in the contest from mainland China. Kan, JA1BK, assisted the Chinese in planning and organizing a contest effort, resulting in the operation of special call BT1BK for the duration of the contest. We are honored and delighted to see the activity. Not only that, four other BY stations were worked on SSB, and even more activity was heard on CW, as we will report next month. This was a welcome and long overdue addition to the contest sport. Congratulations to the participants on a fine first-time effort, and we hope to see more next year.

On an unrelated matter, we are pleased to announce that John Dorr, K1AR, has agreed to handle all inquiries about certificate problems occurring over the last few years. John will also work on early forwarding of certificates for the 1985 contest. Our goal is to get the certificates in the mail about the time the results come out in print. Please direct any questions on certificates to John at his home QTH, 2 Baldwin St., Windham, NH 03087.

A Matter of Ethics

Every year the CQ Contest organization receives a dozen or so inquiries or complaints about contest operating practices. Some folks think some types of practices are unethical and want us to pass a rule prohibiting them. Others want us to pass a rule that clarifies what we do or do not allow. Some interpret an existing rule in a particular way and want us to act in a decisive manner on a complaint they have. Our rules are already fairly complicated, and we are reluctant to keep adding to them. Further, rules are sometimes hard to enforce when the complaints are singular and the complainant possesses little if any hard evidence. Yet the collage of correspondence we have gotten on these types of issues deserves a response. We will try to present our case here.

Some of the issues identified on operating ethics are as follows: use of nets or lists during a contest, use of a repeater alert system for the single operator category, use of telephones to line up contacts either before or during the contest, out-of-band operation or operating in a section of the band not allowed by your license, not having a proper license, asking people to "listen up," excess power, accepting help from others with maintenance problems during the contest, logging help, guest operators, hogging the DX window on 160 or 80, trying to "steal" someone's run frequency, asking someone to pass on a DX station when they are running on a frequency, passing information over the air on openings or stations active elsewhere on the band or on another band, rubber clocking in Multi-Single, operating two transmitters simultaneously in Multi-Single, not logging reports or other data, logging all reports as 59 or 599, using a Multi-Operator station for multiple single band entries, sending two entries in for the same station in different categories, etc. Let's go on record as saying that the good operators know where to draw the line. They know what is ethical and what isn't. We don't have a rule that covers all of these cases, and we don't have a way to enforce rules to the letter of the law without a lot of information to back up a complaint. We depend on your honesty to keep the contest clean.

On the other hand, perhaps it wouldn't hurt

to be more specific about some of these ethical areas. Certainly anything that is a direct violation of the license, rules, or law is unethical. That means excess power, operating out of the band (even for one contact), operating in the Extra class segment with a General or Advanced ticket, operating without a bona fide license, rubber clocking, using a spotting repeater consistently and claiming single operator status, not logging the report actually sent or received, using two transmitters simultaneously in Multi-Single. These things are all unethical. We may not be able to prove them. We may not even suspect they were done. But they are unethical and are a form of cheating.

Other areas—such as operating in lists or nets, accepting any kind of help during the contest, using telephones to line up contacts during the contest, hogging the 80 meter JA window, using the 160 meter DX window, etc.—are also unethical when done by intent, or to an excess degree. What does that mean? Well, if you operated for an hour on 80 meter phone and basically ran a net operation during the contest the whole while, that's unethical. If it happened once or twice that someone wanted to sneak in on your run frequency and work something, that's another matter. Somehow you should be able to tell where to draw the line.

Incidentally, it would be just as unethical to sit in the middle of the 5 kHz JA window on 80 meters with a big signal all night long and run JA's for 6 hours running, thereby making it nearly impossible for anyone else to work the JAs. Yet there is absolutely nothing in the rules to cover that case, nor can there be. It's just a matter of common sense.

Enforcing ethical conduct is much more difficult. We cannot act on hearsay or isolated complaints. We also can't legislate hard and fixed penalties. Yet we sometimes can perceive that something is wrong. Often our approach is to be ready to respond to that suspicion the next time. That's really all we can do. So please, we ask all of you to watch your own act. Deep down, you already know what is unethical and what isn't. Even if an unethical effort is rewarded (like the guy who uses the 160 meter window all contest long and then finishes high), we would hope that the vast majority of the contesters would respect the spirit and intent of the rules. The windows are there for the benefit of all of us, not for a select few. General respect for the intent of the rules and gentlemen's agreements are what keep our hobby from degenerating to the the citizen band mess.

Parting Comments

We would like to welcome John Kiesel, KE7V, to the CQ DX Contest Committee. John joined us this year as a replacement for Terry Baxter, N6CW, who faithfully served us for a good many years. Our thanks to Terry for his dedication and help. Of course, we shouldn't forget the other members of our committee—John Battin, K9DX; Rick Craig, N6ND; Dave Donnelly, K2SS; John Dorr, K1AR; Ed Moody, N3ED; Fred Morris, AD6C; Jan Perkins, N6AW; Glenn Rattmann, K6NA; Jim Sullivan, W7EJ; Gene Walsh, N2AA; John Yodis, K2VV; and Doug Zwiebel, KR2Q. These folks spend weeks on end pouring over all the logs, running checks, duping logs, and tabulating all the results. We are indeed indebted to them.

And now, the time has come to prepare for the 1986 CQ WW Phone Contest. Our friend Al is all set again. Best of luck to everyone.

73, Larry, N6AR, and Bob, K3EST



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President

BAND-BY-BAND BREAKDOWN—TOP ALL BAND SCORES

Number groups indicate: QSO's/Zones/Countries on each band.

WORLD TOP SINGLE OPERATOR—ALL BAND

Station	160	80	40	20	15	10
PJ2FR	117/10/19	614/20/67	1206/25/88	1265/22/77	1926/27/83	1204/20/59
P43A	46/11/22	501/20/66	768/23/71	1372/34/88	2567/33/101	574/19/62
8R1Z	161/9/22	284/15/38	747/23/76	1312/32/100	2050/28/96	1226/21/83
EA9IE	2/2/2	235/19/57	458/26/84	1628/35/98	1633/30/105	100/20/57
J87DX	31/5/13	304/16/57	753/27/90	1195/29/94	1339/29/97	997/20/69
Y24UK	—	484/17/66	353/21/79	1953/31/90	1670/32/98	194/17/39
6Y3M	113/10/25	689/19/52	1002/27/85	1518/28/84	1500/25/71	194/17/39
OH1RY/C56	5/3/3	362/16/24	512/20/58	637/22/70	1294/22/81	803/23/56
CE3FIP	6/3/5	192/16/24	238/21/40	1056/30/97	990/25/74	787/21/68
K1AR	27/8/19	168/24/80	97/22/67	1073/34/116	1007/28/109	98/13/36

USA TOP SINGLE OPERATOR—ALL BAND

Station	160	80	40	20	15	10
K1AR	27/8/19	168/24/80	97/22/67	1073/34/116	1007/28/109	98/13/36
K1DG	42/12/29	151/20/69	124/24/68	811/29/104	743/24/100	76/19/41
W3BGN	58/15/40	150/17/62	87/22/51	999/32/102	663/25/89	77/14/36
W3GRF	23/7/15	138/19/69	135/25/72	626/35/108	773/28/107	77/14/36
K3ZD	25/9/17	290/24/75	95/22/49	1061/27/91	362/28/94	52/15/37
N2LT	20/8/11	107/18/60	93/23/61	744/32/92	776/25/101	49/14/30
W2RQ	21/7/12	161/21/71	95/22/53	933/30/96	444/25/99	48/13/34
N2FB/3	26/11/16	145/20/66	81/22/48	765/24/88	689/27/92	46/15/28
KE2C	20/6/12	108/21/61	64/21/46	487/34/105	694/29/113	113/16/55
AK1A	6/4/4	81/17/49	58/21/45	1089/33/100	665/22/75	18/8/13

WORLD TOP MULTI-OPERATOR SINGLE TRANSMITTER

P44B	61/11/25	532/16/59	1158/27/88	2046/30/108	2281/26/86	807/22/63
ISNPH	37/8/30	612/26/87	700/30/106	2171/39/126	1678/34/101	102/23/76
ZY5EG	10/10/9	28/18/27	622/30/83	1192/33/121	2679/31/122	785/24/70
KH6XX	126/11/15	233/22/31	1649/31/67	838/34/90	2545/33/68	266/18/37
KP4BZ	134/9/26	950/19/68	260/20/73	1827/27/96	2259/28/108	116/17/53
YZ1EXY	42/8/36	400/19/71	434/23/88	1739/38/128	1489/37/112	187/25/71

USA TOP MULTI-OPERATOR SINGLE TRANSMITTER

KX4S	34/14/30	208/24/30	222/30/101	1167/34/134	769/31/118	41/15/40
N4WW	41/14/37	224/26/83	162/26/80	855/35/111	852/32/113	74/19/60
K3TUP	27/14/22	186/24/80	116/29/82	934/35/112	893/27/116	48/16/47
K4VX/Ø	28/13/23	110/23/66	196/30/84	829/32/111	937/31/127	49/16/47
KS9K	26/11/21	123/24/75	153/28/89	958/34/110	718/29/114	30/12/30
W8UA	21/9/16	129/24/75	139/28/81	808/37/115	826/30/118	76/14/44

WORLD TOP MULTI-OPERATOR MULTI-TRANSMITTER

HC8X	132/12/21	871/20/59	1989/26/93	2610/35/135	4213/35/141	1388/22/78
VP2VCW	672/13/36	1464/21/87	1718/28/100	3734/36/118	3601/31/99	953/20/76
VP9AD	680/10/28	1583/21/75	1682/28/93	3652/37/127	3259/32/124	450/20/65
VP2MW	733/14/33	1257/23/79	2296/27/100	3129/29/109	3086/25/90	1072/15/45
N2AA	182/16/52	666/27/96	445/31/106	2026/36/138	1670/28/135	182/16/52
I03MAU	192/9/40	576/18/60	1325/31/97	2205/36/122	1756/35/117	450/22/64

USA TOP MULTI-OPERATOR MULTI-TRANSMITTER

N2AA	182/16/52	666/27/96	445/31/106	2026/36/138	1670/28/135	182/16/52
W3LPL	105/9/41	469/26/92	359/30/102	1562/36/134	1282/30/135	200/19/60
N5AU	105/20/44	278/26/76	356/30/100	1490/36/141	1348/33/130	215/20/64
NR5M	53/12/26	255/23/68	247/31/82	1222/37/130	1249/33/127	268/21/61
A08P	113/20/47	280/25/81	217/29/82	1289/33/126	946/28/118	142/16/47
N4RJ	80/17/37	358/25/87	276/31/96	804/35/124	1021/33/133	149/18/52

DX QRM

Propagation was just as poor as it was last year, but I enjoyed working the contest very much... *LU1E* (Opr. *LU3AJW*). How does one handle a pileup when the family cat sits on the dupe sheet?... *PP2ZDD*. Last few hours the throat gave out... *CX8BBH*. Was a pleasure having good conditions once again... *AL7CQ*. No JA runs, short stateside runs... *KL7RA*. I never thought I could make 2000 contacts with 100 watts!... *DF9ZP/VP9*. Power went out Saturday 1330Z, came back on at 1730Z. Had a lot of catching up to do... *PJ2FR*. Lots of competition this year within North America... *J87DX*. I hope I don't get beat this time... *VP2ET*. We had to make a new dipole in a short time with bad weather conditions... *TA1C*. I need more power and better conditions... *JA7YFB*. The 14 MHz Yagi was put together the first day in the dark... *JA3YCT*. Wish we could move Bermuda 1000 miles further south for the contest... *VP9AD*. If 10 meters had been open, we would have thought we were riding a sunspot peak... *VE7ZZZ*. Working so many Europeans and Africans on the low bands is lots of fun for West coast hams... *8P9AG*. Antenna theory doesn't work on a mountain top—80, 40, and 160 antennas failed us... *3D6DX*.

Having BT1BK call us in a pileup of JA's!... *VE4AA*. We claim the lowest score for the most operators... *VE3JW*. All contacts made while travelling on highway 401 from a flea market... *VE3FEA/m*. We hope to repeat this FUNNY experience in the 1986 contest... *CE8DX*. This is the first time to join the WW contest from China... *BT1BK* (*Welcome, and hope to see you often—ed.*). Contesting is on the way up in VK... *VK2KL*. H5AY called me out of the blue for my only zone 38 contact... *VK3SM*. Spent most of the weekend listening to the hiss of a dead 160 meter band... *VK6HD*. Bag containing my equipment and logs was stolen; only my logs were recovered... *3D2EE* (Opr. *WØJEE*). It's hard to believe the sunspot cycle is going down; conditions seemed better than last year... *KG6DX*. Luckily, the airline lost the linear on the way home... *WB6FCR/KH6*. Didn't expect such good conditions on the high bands... *WH6W*. Didn't even plan to enter; it just started out so good I kept going... *KH6CC*. Where are all these countries when there is no contest?... *YCØDPZ*.

Conditions on 40 meters were very poor this year... *ZL1AAS*. Many thanks to all the FB ops who worked me during the contest... *KA3DRR/DV2*. I fixed my antenna 3 times during the week before the contest due to high winds... *4X5NM*. Moving van arrived with rig and furniture from W6 Saturday afternoon; was on that evening... *JY9RL*. It was a disappointment to go to a DXpedition to a rare one and hear the Europeans and the Americans only working each other... *DF2RG/4S7*. Worked 5X5GK and 75 more DXCC on 28 MHz near the sunspot minimum... *VE1BNN*. Excellent sportsmanship; no Murphy; fantastic... *VE1LI*. It's when you operate 24 hours a day that you learn the neighbors have a new video player... *VE2FU*. CQ's yielded ON7IP/IST2,

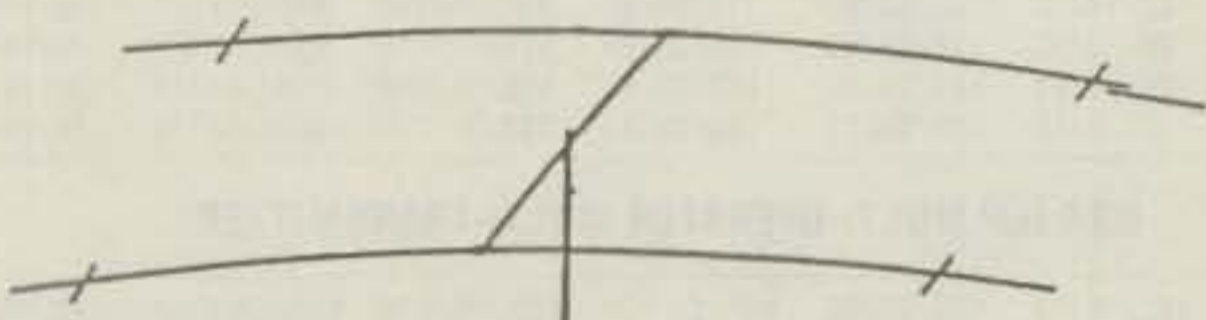
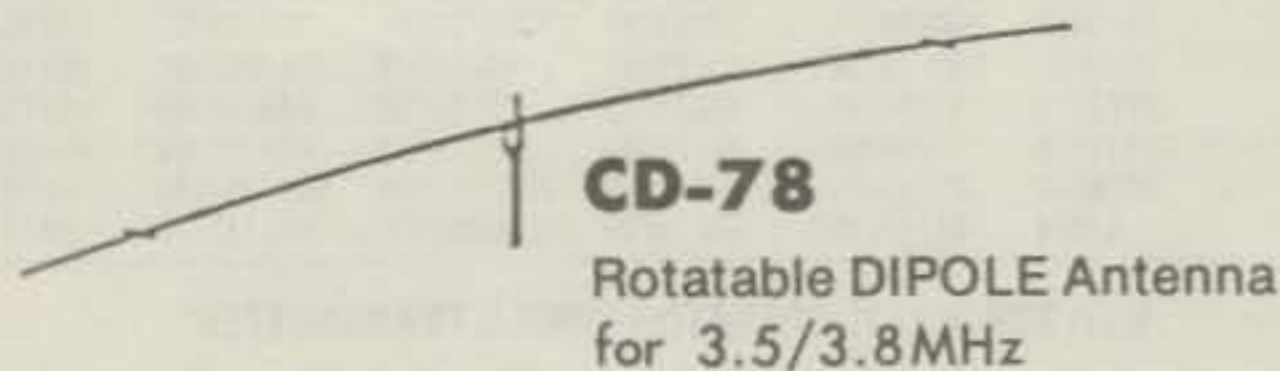
DF2RG/4S7, and 5H3HM... *VE3XN*. Real treat to work VK5BC on 160 meters... *VE3NNR*. You will see more of me... *VE5AFY*. The first contest without CEØAE. We miss you Father Dave... *EA9IE*. Fantastic propagation on all bands at all times; ideal for multi-multi... *TR8JLD*. First time working CQ WW from the DX side. Believe me, it is fantastic... *TU4BR*. 100 watts and a dipole will never outrun anybody... *EL8E/7*.

Oh, for a better 160 meter antenna... *GW4BLE*. The mountains up to 1000 m all around us make it difficult to work the North Atlantic and the States from Monaco... *3A5F* (Opr. *3A2LF*). Logs sent by first helicopter after the contest... *JWØA*. Couldn't keep up with the southern Europeans, but enjoyed it anyway... *G3RRS*. A fine and pleasant single-op contest... *F6BEE*. It was certainly a pleasure to be called by VR6JR... *F6BBJ*. Nice to see all bands coming alive—even 10 meters... *EI4DW*. Want to thank the WVE operators for good behavior in the pileups... *DK8NG*. I was amazed at how well some hear QRP and others don't... *ZL1BIL*. Best contest for QRPs... *EA4CFN*. One year of waiting for the contest and I end up ill for the weekend... *EA2SN*. Fun as always in the CQ WW... *SK6TW*. Our highest score in the CQ WW so far... *4U1VIC*. Conditions a lot better... *GM4GPN*. UFB conditions on 40 meters crossband... *HG9R*. Never had so many DX stations... *PA3CEF*. American stations were booming in on 14 MHz... *PI1GOE*. Thanks for the extra sunspots... *ON6NL*. Hard work, good fun, fair conditions—even our contest manager was happy... *GMØBRS*. It was good to be back in the big one again... *GW8GT*. Biggest thrill was getting a camper full of electronic gear across three borders... *HBØ/OE3YEA*.

The new 3-element full-size on 80 really works... *ISNPH* (*Tell us about it—ed.*). As usual, N2AA is the beacon on all bands... *G3VZT*. Enjoyed using DLØVHF in the only 3 kHz wide West German 160 meter phone band... *DLØVHF*. Back on the air after 3 years of absolute QRT... *IV3PRK*. Propagation like 1980. Thank you, sun; thank you, CQ... *I4RYC*. Band very crowded... *I4EWH*. I am sorry but I lost my voice after only 12 hours... *IK4CFV*. Nice to meet China in the contest... *IT9GCQ*. Nice to hear the big signal still coming from the W6AM rhombic farm thanks to N6AW... *OH8OS*. Being this far north brings some interesting propagation phenomena... *K8MN/OH2*. First contact with my 8 watt transceiver... *YO6DJG*. A fine contest; all the best to CQ magazine... *YO5BQ*. I had more QSOs on Saturday than all of last year... *YU3EA*. Call given after each QSO still resulted in 6% dupes... *YZ9A*. TVI problems; had to stop both days when the band was best to the USA... *YU7XX*. Hope to be QRV from D2 next year... *YU3NA*. Heavy storm damaged my quad during the contest... *OH2BAH*. Pleasure hearing old friends still playing around... *UB5WE*. Multipliers might be better if stations listened below 3.650 MHz... *UP2BIM*. Thanks for heating the ionosphere up; contacted W and VE on 10 meters... *UA6LQ*. Many stations were 59 + 30... *RR2RR*. This CQ WW

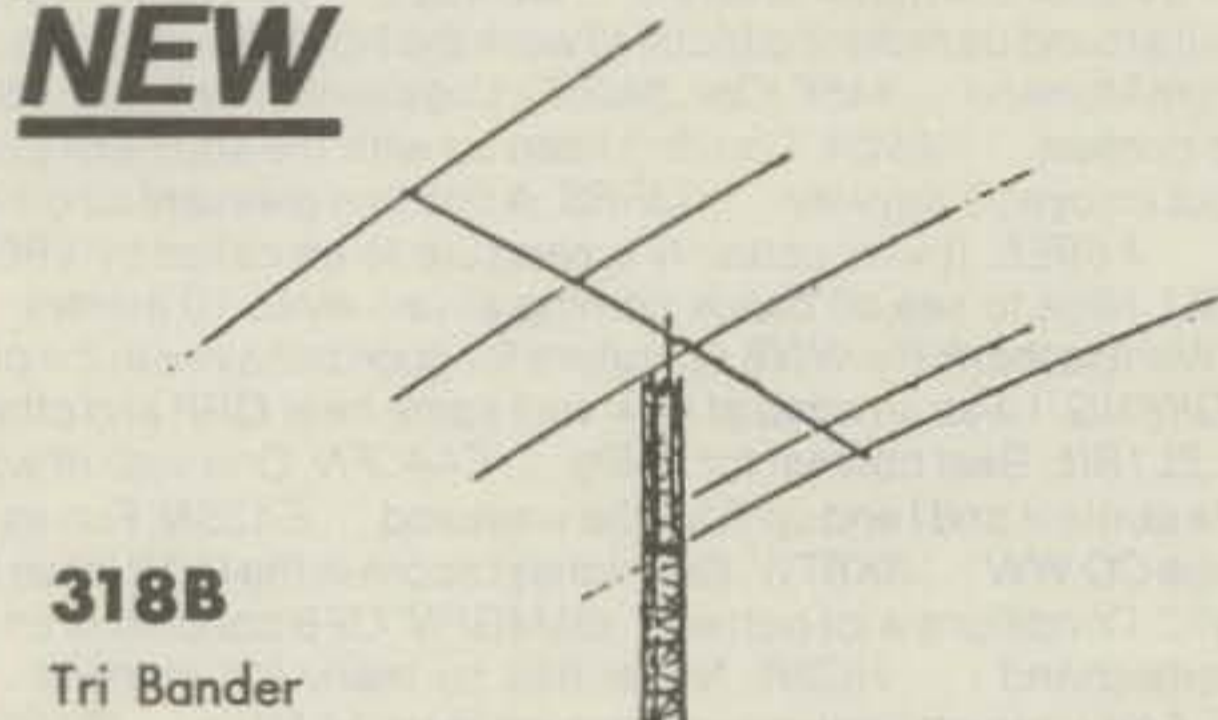


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Frequency MHz	3.8	Impedance	50ohms
Front Gain dB Avg.	4-6	Element Length Max.	79ft
F/B Ratio dB Avg.	18	Boom Length	30ft
F/S Ratio dB	30	Weight	148 pound
VSWR	MAX 1.8	Wind Survival Rate	80mil/h
Power Capability			
CW/PEP KW 2/4			
CW: 50% Duty			

NEW



Frequency MHz	14	21	28	Element Length Max	28ft
Front Gain dB Avg.	7.5	9	9.5	Boom Length	21ft
F/B Ratio dB Avg.	20	18	20	Mast Diameter	2" - 2 3/8"
Power Capability				Weight	49pound
CW/PEP KW	1/2	1/2	1/2	Wind Survival Rate	90mil/h
CW: 50% Duty				Rotational Radius	17.4ft
Impedance					50ohms

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was wonderful indeed... UZ9AKT. The 7 MHz band was best because of our new 4-el Yagi on a 26 meter boom... RL8PYL.

USA QRM

Worked 30 CE and 47 LU stations... KG1E/QRPP. Would love to see an all QRP CQ WW contest, big ears and small mouths... K7SS. Thunderstorms Saturday night forced us off the air for 2 hours of prime time on the low bands with 2 hours more of QRN as they moved on... W8NGO. Such great conditions into Europe on 15... N6TU. Great being called by YI1BGD... KS1L. Finally worked BY... W1GD. I really didn't mean to dupe BT1BK; honest, it was an accident... W3BGN (Shame, shame, Steve—ed.). Ten meters—what a nice surprise... KA1DWX. I couldn't work Radio Tirana either night... K1MM. Working KH6XX on 160 meters—what a signal... KK2B. Frustrating waiting for high-scoring ops to ID... KT2M. The hardest part was climbing the roof every hour to turn the beam... N2DUB. BT1BK working JA's on 7073 and never listening Stateside; I almost went nuts... K2UU. Worked UC1AWC on a shortened vertical on 75 meters when it was still daylight outside... WB2ITR. Power outages can certainly stop a good European run... K1UO.

Finding BT1BK under the QRM and no one answering him... AD8J/3. Took off 7 hours to attend law school reunion—scored many points there... K1VR. One tube in amp went out... K1K1 (Opr. K5ZD). Nothing broke... K4JPD. Still a thrill after 30 years... N4JF. Trying to find a 5 amp fuse at 5 AM on Sunday morning and being successful... W4UNP. Too many stations with the callsign of QRZ... N4MM. After 20 years as a W6, I finally got to see what 80 meters can really be like as a W4. NO comparison... N6AR/4. Old sol must read CQ... KF4CI. 20 meters barefoot with a vertical equals frustration... WA5IYX. My first weekend DXCC... K5BDX. CQ WW still the king of the Contests... W6PU. DX IS but CONTESTS ARE... W6US. We all know "You can't work them if you can't hear them," but the QRPer's lament is "You can't work them if they can't hear you"... W6CN. TVI during the World Series and football games QRTed me... W8AKS/6. Raspberries to Hurricane Gloria... K1NG.

Final adjustments made to 20 meter beam by moonlight at 50 feet, 0000 UTC... NB1H. Amazed to work Europe on 10 meters... K3TUP. Unbelievable conditions for this time of the cycle... K6LY. Relay problems caused loss of 7 rhombics first night... N6AW. The antenna is not everything—the power company is... KM9L. Let the big guns from the East Coast come to the Midwest and see how they score... KZ0C. Licensed since 1924. Just getting on the air is a thrill... W7RIR. Wow! Four BYs in the first two hours!... N7TT (DX hog—ed.). Thanks, CQ, for another great one... W7FP. Hey guys, Montana is in zone 4 not zone 3... K7ABV. After 25 years off the air, what a way to get involved again... W8JRK. The greatest 15 meter opening to Europe I've ever heard... N8II (and others). Even low power and a dipole can be fun... N9DMG. Cooperative round-table monopoly of DX stations on 75 should be stopped... N9CIW. Sunspots may be low but enthusiasm is still high... K9BN. Power failures are rough on computer logging... AC0N. Just starting; every country was a new one for me... KA0TMW.

Station Operators

Multi-Operator Single Transmitter

BT1BK: JA1BK, JK10PL, Yuan Bo, Li Gouzhen, Wang Gouxian, Sheng Yongjian. BY4AA: Xie Di-Hua, Xuru. CE3PA: CE3A00, CE3A0W, CE3CTF, CE3CBA, CE3HBA, CE3HFA, CE3IB0, CE3JIB, CE3JIC, CE3RR, CE3WE, CE4ETZ: Club. CESCJA: CE5BY, CE5EMZ, CE5GTH, CE5SG, XQ5BIB, XQ5CFR. CE8DX & CE8EAC, CE8FGC, CE8PD. CH4ALD: VE4ALO, VE4VY. CN8MC: CN8EJ, CN8LF, CN8LN, CN8MK. DA1WA: DA1DS, DA1VD, DA2AB, DA2DG, DA2HS, DA2ZD, DJ8AW, DJ8KS, DJ8LC, DJ8SI. DF8BV: DL6MA0, DL1MAJ, DJ10J & DL5MAE, DL7MAT. DL8BI: DK1GH, DF9YG, DL3YBP. DL8JK: DK1DU, DK2XX, DL1FAK, DL2ZBK, DL2ZBM, DL2ZBP, DL2ZBR, DL2ZBS, DL3ZBA, DL3ZBC, Thomas. DL1KDT & DL1KDS, DJ6UP. DL8JS: DK4EC, DL7AMH, DL7ZQ, DL7AND, DL7AAZ. DL8RBW: DF6QV, DJ8CR, DL9NC. DL8SB: DL1AAR, DL6AAA, DL8AAT. DL8UE: DF20A, DJ5FT, DL3LU, DL7BI. DL8UM: DG1ZB, Club. DL8WU: DJ8SW, DJ8UV, DJ9YI, DL8EBN, DJ5PN. EA1RCQ: EA1BCF, EA1CXL. EA3MM: EA3EDV, EA3DIF, EA3DMO, EC3CJG. EA6NP & EA6VD, EA6SX, EA6TC, EA6UO.

EA8OZ & EA8AHB, EA8AOM, EA8AON. ED3CBE: EA3BOW, EA3BOX, EA3CVA, EA3DDV, EA3DGO, EA3EIO. ED6MDX: EA6KZ, EA6MR, EA6JW, EA6MO, EA6JZ, EA6WA. ED7BB: EA9EO, EA7TL, EA7BU, EA7EL, EA7TH, EA7FFA, EA7CEC, EA7CFW, Jose, Angel. F61FR & F6CWN, F6BPx, F01JVZ, F6GWV. F08KS & F08IW, G3LNS & G3KDB. G3YMM & G6LOS, G6LOT. GB2AA: G4PWA, G4TNB, G4MWA & G4BGH. GJ6UW: G4JVG, G4FRE, GJ3YHU, GD4ICD. GM8BR: G1FFF, G3HDT, G3KMR, G3YOG, G8AVU, GM1JFF, GM3KAJ, GM4HKH, GM4VJV, GM4WDO, GM4ZXJ, GM8BDX, GM8HO, GM8BP0. GU8/PA2FAS & PA3AWW, PA3CJF, PA8TUK, PE1FNB. GW8GT: GW3NWS, GW3KYA, GW4TTU, GW4ZUL, GW8BIC, GW5NF, GW4XLQ, GW8BRG, GW8CID, G3DAY, G4BXE. H5AY: VE3FXT, ZS4JB, ZS4KK, ZS4NS. HA1KRR: Jozsef, Zsolt, Janos, Jozsef, Jozsef, Sandor, Janos. HA2KMR: Jozsef, Attila, Gabor, Gaba, Julos, Laszlo. HA2KRP: HA2RP, HA2VG, HA2EO, HA2EOI, HA2PP. HA3KGC: Attila, Tamas, Pal, Jozsef, Istvan. HA3KNA: HA3FTA, HA3NS, HA3NU. HA5KDB: HA5AIY, HA5XA, HA5NP, HA5CP, HA5MY, HA3RC. HA5KDX: HA5LN, HA5VJ, HA5FM.

HA5KCC: HA5LV, HA5MA, HA5MD, HA5OG, HA5WU, HA5MO. HA7KLG: HA7MY, HA7LD, Aniko. HA7KMP: Tamas, Janos, Alexandrosz. HA8KAX: HA8LKB, HA8LKC, HA8IG. HA8KUC: HA8VX, HA8GB, HA8GZ, HA8ZQ, Hubicskai. HA8KZC: HA8ZC, HA8XF. HA8KDA: F. rbert, Zsolt, Istvan, Gyorgy. HB9ACA: HB9ADD, HB9BNJ, HB9CHR, HB9BOU, HB9CJG, HB9BQP, HB9CYF. HB9AUS & HB9SFD, HE9ASD, HE9EEX, Allesandro, Emanuele. HB9GT/p: HB9BTI, HB9CKL, HB9CWP, HB9CWU, HB9CMX. HB9H: HB9AGC, HB9BLQ, HB9ALM, HB9CIP, HB9CXZ, HB9AIB, HB9CAT. HB9/OE3YEA & OE5VBL. HB9BHA: DJ2EH, DL5NP, DL8NBH, DL9NAP, DH9HAP, DL4NN, DL4NAC, DK7NM, DL8NBH, DK6NN, HB9BHA.

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When it is time to return your unit, please **DO NOT SEND BACK ANY CONNECTORS, CABLES OR POWER SUPPLIES.** Send back only the unit itself. Any cables, connectors, or power supplies received will not be returned. You will receive a new manual and a 9-pin connector with your new KPC-2400.

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Serial Number _____

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VISA or Master Card Number _____

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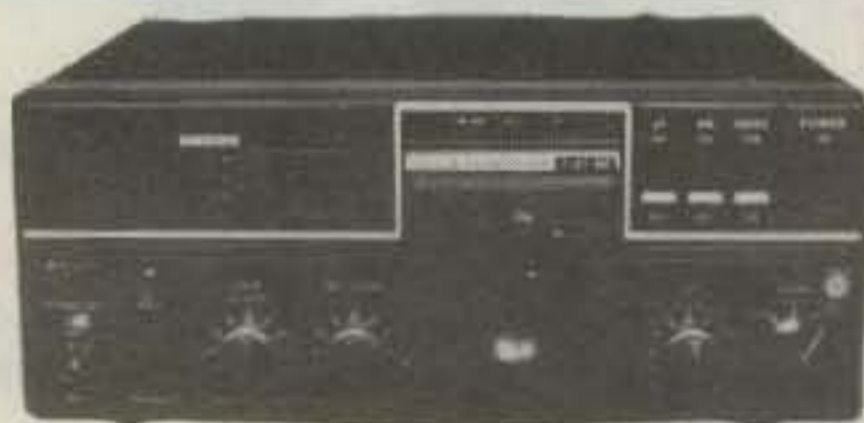
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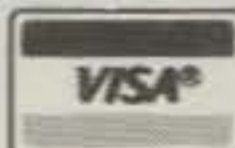
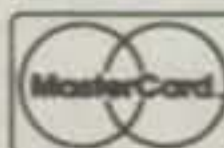
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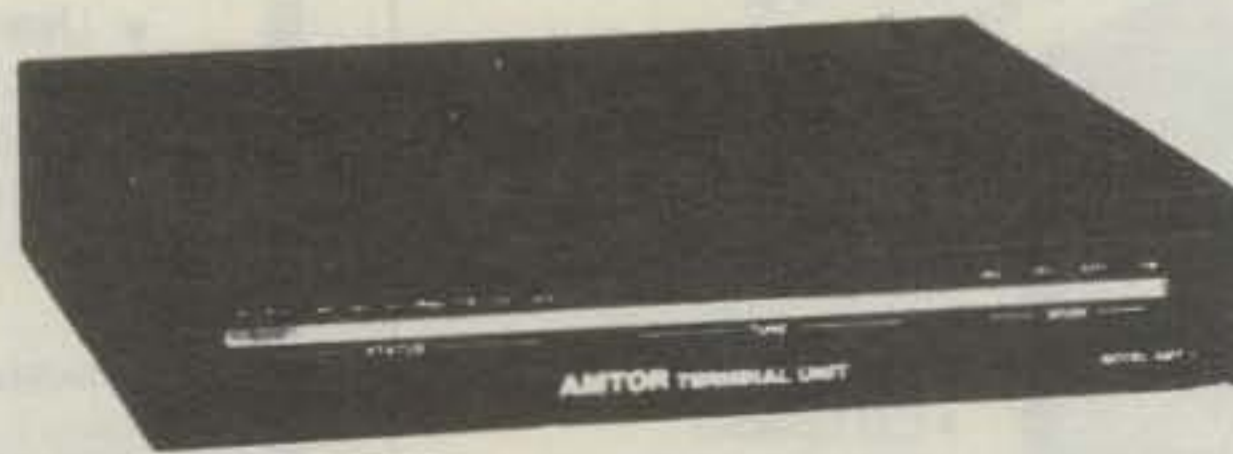
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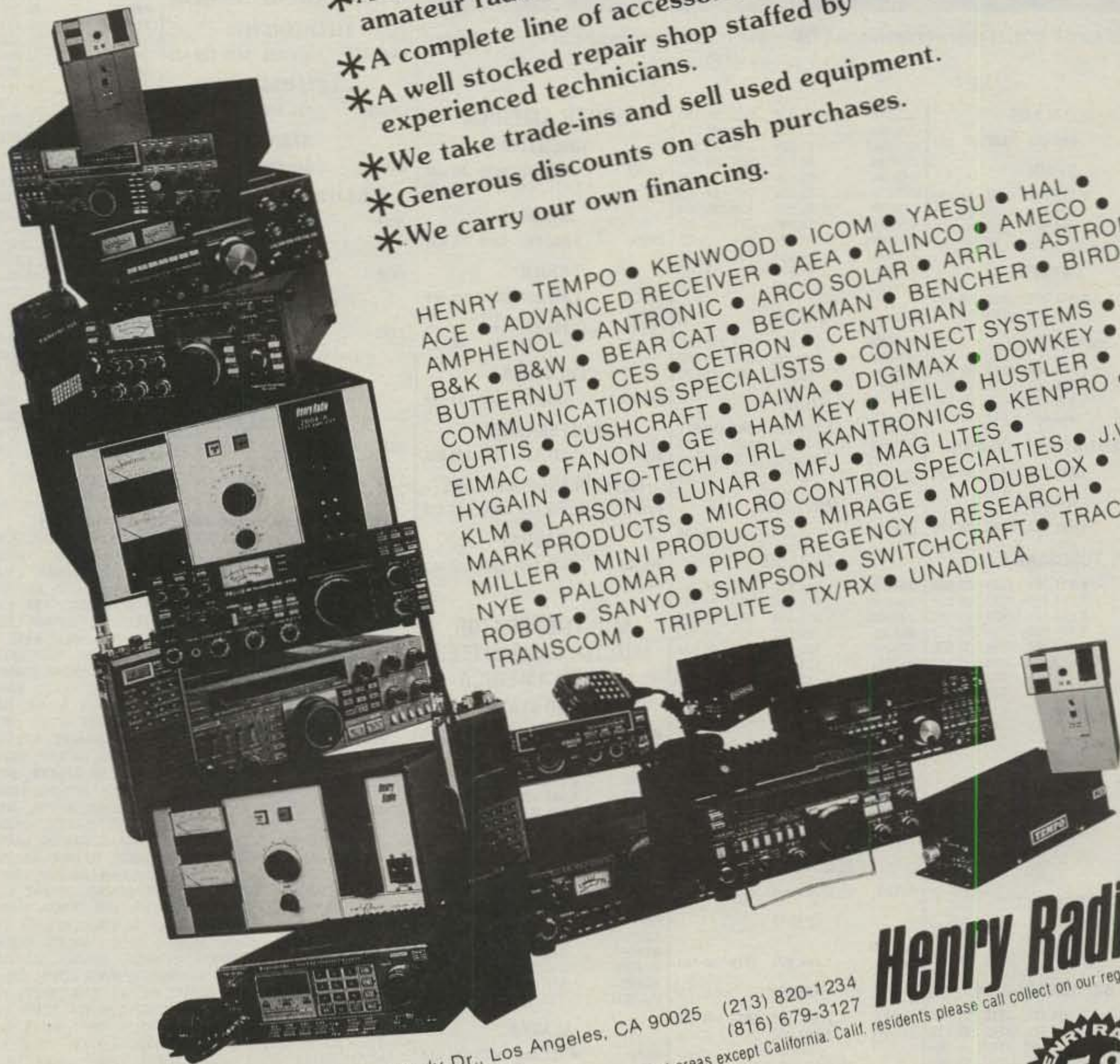
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The Ten-Tec Corsair II Transceiver – Part I

BY JOHN J. SCHULTZ*, W4FA/SV0DX

Unpacking a new transceiver from its shipping container has always been an exciting experience for me because no matter how much advertising copy one sees on a given transceiver, there is nothing like viewing the actual piece of equipment. So when I did unpack the Corsair II from its very well protected shipping container, I was immediately impressed by its bright, new styling as compared to the current trend of most transceivers to be styled in rather dull, darkish, "military" tones. The Corsair II has bright styling in that its front panel is done in a very light gray tone, and the various control knobs and cabinet trim panels continue the gray color theme in slightly darker shades. The color scheme reminded me very much of the latter series of the former Collins S-Line equipment.

Anyone who is really interested in the Corsair II, however, is certainly going to immediately ask if there is anything more to the Corsair II than a new "paint job." Well, that was exactly my question, since I was very well acquainted with the original Corsair transceiver. Therefore, I began to look around the outside and inside of the Corsair II, and I did indeed notice some significant changes. An extra front-panel Bandpass Filter control has been added, many of the smaller front-panel controls have been completely changed to provide for keyer speed control (a new feature), independent noise blanker level and width controls have been added, etc. On the back panel, various phono jacks have been added for 12 VDC accessory devices, and a keyer paddle jack and three controls for VOX operation (Gain, Delay, and Anti-VOX) have been added. Internally, several new shielding and PC-board arrangements are apparent. Indeed, as it became apparent later when the actual PC-board circuitry was studied, major circuitry changes were made on various boards, and some completely new boards were introduced. It seemed fairly clear that the Corsair II de-



The Corsair II together with its matching Moael 260 Power Supply.

served a detailed review on its own. Also, since the original Corsair transceiver was introduced well over two years ago, many newer amateurs are probably not acquainted with the original unit. In order to cover as many readers' interests as possible, I'll describe the Corsair II from the "ground up" and try to highlight now and then some of the interesting features that make the Corsair II different from the original Corsair.

General

The Corsair II is a 100 watt output class transceiver designed for use on any mode and on all existing and proposed amateur bands. Detailed specifications for the transceiver are shown in Table I. Users interested in operation out-of-band (e.g., MARS) might notice the PTO overrun on the band edges. Compared to the original Corsair, the Corsair II specifications present some interesting changes. A few of them:

1. Five IC's and a few more diodes have been added.
2. The receive selectivity has been increased by using a 16-pole crystal ladder unit with a better shape factor.

3. A new variable audio bandpass filter centered on 750 Hz has been added.

4. Adjustable blanking width, to complement the adjustable threshold, has been added to the noise blanker.

5. The dynamic range on receive has been increased from 90 to 95 dB.

6. Receiver recovery delay is specified for the first time (a first for any transceiver manufacturer).

7. On transmit, the SSB filtering has been increased from four to eight poles.

8. An internal keyer has been added, as a standard feature, which covers 8 to 50 wpm and which has a 40-character read/write memory.

9. On transmit, unwanted sideband suppression has been increased by 15 dB.

10. Numerous front-panel and rear-panel controls and connectors have been rearranged.

To say the least, the crew from the "Tennessee Technology Corridor" (that's from a label on the bottom panel of the transceiver) has done far more than just repaint the original Corsair. In fact, from what I have learned from Ten-Tec, they intend to continue to produce the Corsair series for a long time to come.

*c/o CQ Magazine

The RF preamplifier stage in the Corsair II can still be switched in or out, various optional filters are available, and the passband tuning feature is retained along with selectable AGC, notch filter, RIT/XIT, etc.

On transmit, a full 95–100 watts output is easily achieved without the use of any cooling fan *whatsoever*, either on the transceiver itself or on its optional mating Model 260 power supply. The only caution Ten-Tec recommends is that when the Corsair is used key-down for more than 20 minutes (!), a small external fan should be directed on the transceiver's heat sink. The reason for this is not that the final transistors will burn up, but rather that the heat sink will become so hot (200 degrees F) that touching the heat sink accidentally might result in a serious finger burn. The now rather famous Ten-Tec full break-in operation is available on CW complete with CW sidetone. The metering includes forward peak reading power, SWR (without any "set" meter preset), speech processing monitoring, and final collector current reading. Table I doesn't mention speech processing, but there is definitely a very good AF-type speech processor in the Corsair II.

All in all, the Corsair II does deserve a bit of a detailed examination, and so we shall proceed.

Circuitry

The basic block diagram of the Corsair II is shown in fig. 1. Basically, the Corsair II is also a single conversion design using a 9 MHz IF but with an additional down/up frequency conversion to provide the passband tuning feature. The PTO feeds a variable 5.0 to 5.5 MHz signal into the "Osc./Mixer" board where that signal is mixed with the output of a crystal oscillator so the signal going into the "RF Mixer" board is correct to work with a 9 MHz IF. For instance, for operation on 40 meters, 7.0–7.5 MHz, the PTO output frequency is translated to 16.0–16.5 MHz in the "Osc./Mixer" block. In this manner, full 500 kHz coverage is obtained on the

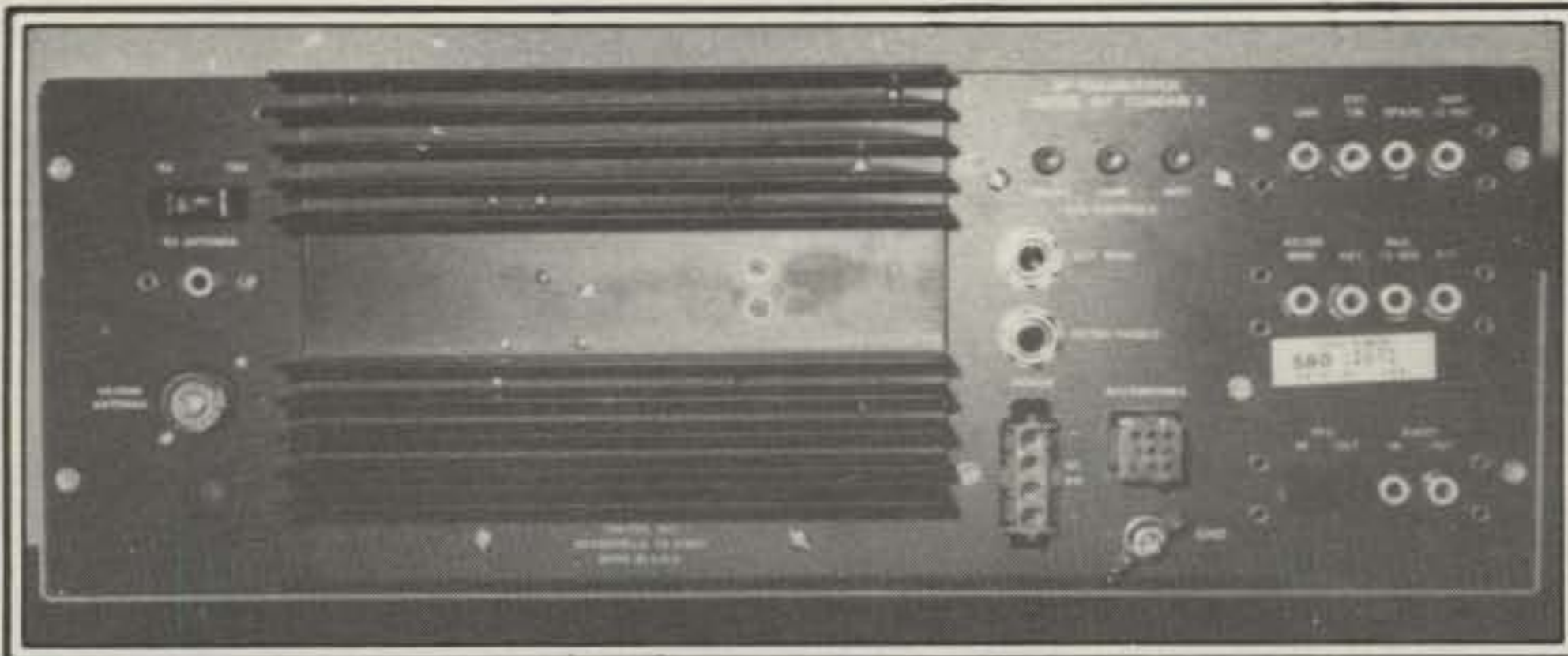
Corsair II Specifications	
General	<p><i>Frequency Coverage:</i> 1.8–2.3, 3.5–4.0, 7.0–7.5, 10.0–10.5, 14.0–14.5, 18.0–18.5, 21.0–21.5, 24.5–25.0, 28.0–30.0 MHz transceive. (VFO provides approximately 40 kHz overrun on each band edge.)</p> <p><i>VFO Stability:</i> Less than 15 Hz change per degree averaged over a 40 degree change from 70 to 110 degrees F after 30 minutes warmup. Less than 10 Hz change 105 to 125 VAC line voltage when using a Ten-Tec power supply.</p> <p><i>Tuning Rate:</i> Vernier, 18 kHz per revolution, typical.</p> <p><i>Readout:</i> 6 digit, 0.3" LED numerals.</p> <p><i>Accuracy:</i> ± 100 Hz.</p> <p><i>Semi-Conductors:</i> 1 LSI, 25 IC's, 94 transistors, 109 diodes, 6 LED readouts.</p> <p><i>PC Boards:</i> 22 PC assemblies with plug-in cables.</p> <p><i>Construction:</i> Rigid steel chassis. Extruded aluminum front panel with two-tone gray inserts. Textured gray top and bottom, snap-up stainless steel bail.</p>
Transmitter	<p><i>DC Power Input:</i> Maximum 200 watts at 14 VDC CW and SSB. 100% duty cycle for up to 20 minutes.</p> <p><i>RF Power Output:</i> 85–100 watts, typical.</p> <p><i>Output Impedance:</i> 50 ohms, unbalanced.</p> <p><i>Microphone Input:</i> High impedance. Accepts high- or low-impedance microphones with 5 mv output. Polarizing voltage available for electrets.</p> <p><i>T/R Switching:</i> VOX or PTT on SSB. Instant break-in or semi-break-in on CW.</p> <p><i>CW Sidetone:</i> Internally generated. Adjustable tone and volume independent of AF gain control. Operates only in CW mode.</p> <p><i>Programmable Iambic Keyer:</i> 8–50 wpm with 40-character memory.</p> <p><i>SSB Generation:</i> 9 MHz, 8-pole crystal ladder filter. Balanced modulator.</p> <p><i>Carrier Suppression:</i> 60 dB typical.</p> <p><i>Unwanted Sideband Suppression:</i> 60 dB typical at 1.5 kHz tone.</p> <p><i>Spurious Output:</i> Better than –45 dB relative to full output.</p> <p><i>Meter:</i> Forward power, collector current, SWR, audio processing level. Selectable 4-position switch.</p> <p><i>CW Offset:</i> 750 Hz, automatic.</p> <p><i>ALC Control:</i> Front panel adjustable. 30 to 100 watts output, LED indicator.</p>

Table I—Corsair II specifications.

1.8, 3.5, 7.0, 10.0, 14.0, 18.0, 21.0, 24.5, and 28.0 to 30.00 MHz bands (the latter in four 500 kHz ranges). Crystals are included for the 10.0, 18.0, and 24.5 MHz bands, and the Corsair is ready to go on those bands. A few bonus features are that the PTO range actually has about a 30–40 kHz overrun on band edges so many MARS frequencies are covered, the 1.8 MHz band extends to 2.3 MHz to cover part of the Marine band, and the 10 MHz band includes, of course, WWV.

In the receive mode, incoming signals are no longer routed through the lowpass filter assembly, but rather directly via a diode switch on the LL (low level) Driver

board to the BPF (bandpass filter) board. The latter contains separate, multiple-pole filters for each band. The signal is then routed to the RF Mixer board which is shown, in detail, in fig. 2. A 2N3866 (Q3 in fig. 2) is still used as the RF amplifier stage, but a great many circuit details have been changed on the board. The RF amplifier stage is a broadbanded, no-tune design and can be diode switched in or out. After passing through the amplifier stage, the signal is routed to a double balanced mixer which uses an integrated diode assembly, D13. The local oscillator signal comes in from the left (terminals marked L0), and the incoming signal is translated down to the 9 MHz IF in the mixer stage. It then proceeds to a low-noise amplifier stage, Q6, and some broad IF filtering (Y1). The signal then "splits," partly exiting via Q7 to the noise blanker and partly proceeding via more broad IF filtering (Y2) to the balanced diode switch assembly (D9–12) which is controlled by the noise blanker. Detection of fast-rise spike-type noise pulses by the noise blanker causes it to generate a blanking signal which gates Q5 and causes the balanced diode switch assembly to instantly interrupt the IF signal flow. It would be impossible to go into all the circuitry changes on the RF Mixer board, but obviously a lot of effort was devoted to improving the signal-handling capability, improving the purity of the



The rear panel. Note that there is no blower fan! Enough connectors for external accessories are provided to satisfy just about any application.

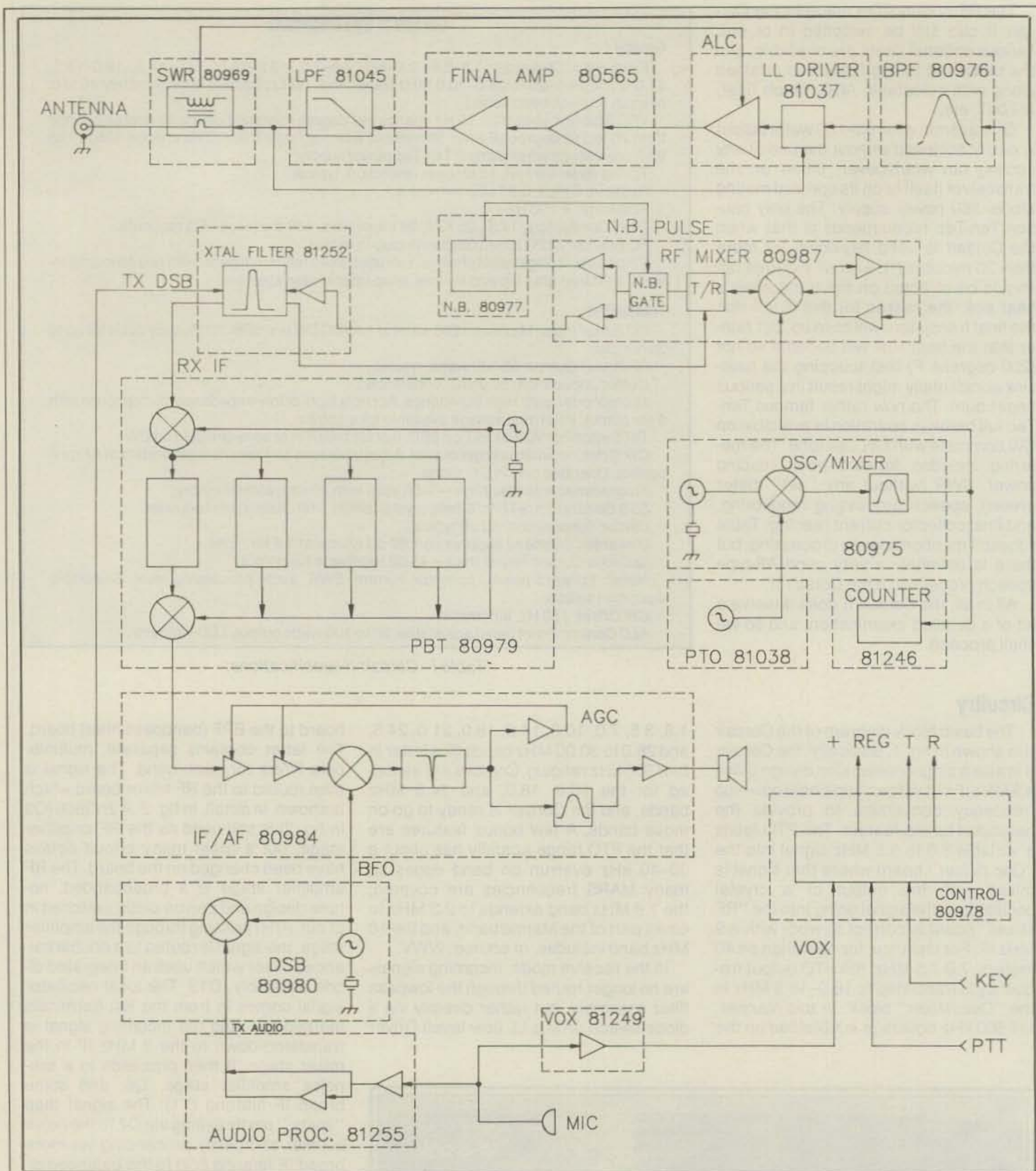


Fig. 1—Block diagram for the Corsair II.

mixing process, and adding extra filtering to the IF signal. The signal is next routed to a new crystal filter board which contains a standard 8-pole, discrete crystal filter. It sets the basic IF bandwidth on receive and acts as the SSB filter on transmit.

On receive, the signal then continues to a passband tuning board. The board contains a standard 8-pole, 2.4 kHz SSB filter with provisions for optional 8-pole 1.8 kHz SSB, 6-pole 500 Hz CW, and 6-pole 250 Hz CW filters. Ten-Tec must have been quite satisfied with the design

of this board, since nothing more than a few minor resistor values have been changed over the original design. For that reason, the schematic diagram is not presented. The idea of its operation remains the same, of course. By varying the injection frequency to mixer stages

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both before and after the filters on the board, the passband of the chosen filter on the board is moved across that of the preceding 8-pole SSB filter on the new filter board which was previously mentioned. One can imagine two doorways physically moving across each other to provide a full doorway opening or an extremely narrow opening. In any case, using just the standard filters supplied with the Corsair II, one has 16 poles of IF filtering and using the passband tuning feature one can vary the IF bandwidth on receive from 2.4 kHz to roughly 600 Hz.

After the passband tuning board, the signal is routed to the IF/AF board. This board has also been significantly redesigned and is presented in fig. 3. The board handles most of the receive functions including RF gain control, audio notch and audio bandpass filters, AGC action, S-meter control, audio amplification, and CW sidetone. One can pretty much see the signal flow around the board from the RX IF input point through IF amplifiers Q1 and Q2, demodulator Q4, through the notch filter stages of U1, the bandpass filter stages of U3 and U4 and, finally, to U5 as an audio output amplifier. The notch filter is tunable from about 200 to 3500 Hz with a 50 dB notch. The bandpass filter, a new feature, has a fixed center frequency of 750 Hz, but can be controlled to produce a flat audio response or one that increasingly peaks at 750 Hz until it reaches a 200 Hz bandwidth with skirts rolling off at -24 dB/octave. The use of the two audio filters plus the use of the variable IF passband tuning pretty much negates the need for an optional CW IF filter for the casual CW operator. The AGC is of the time delay or "hang" type, and it does follow the setting of the audio notch control. The sidetone oscillator on the board has both adjustable pitch and volume controls. A bit complicated spotting oscillator circuitry which runs back and forth among several PC boards produces a 750 Hz signal, the same as the IF offset on CW. A front-panel push-button control zero beats incoming signals for exact frequency spotting.

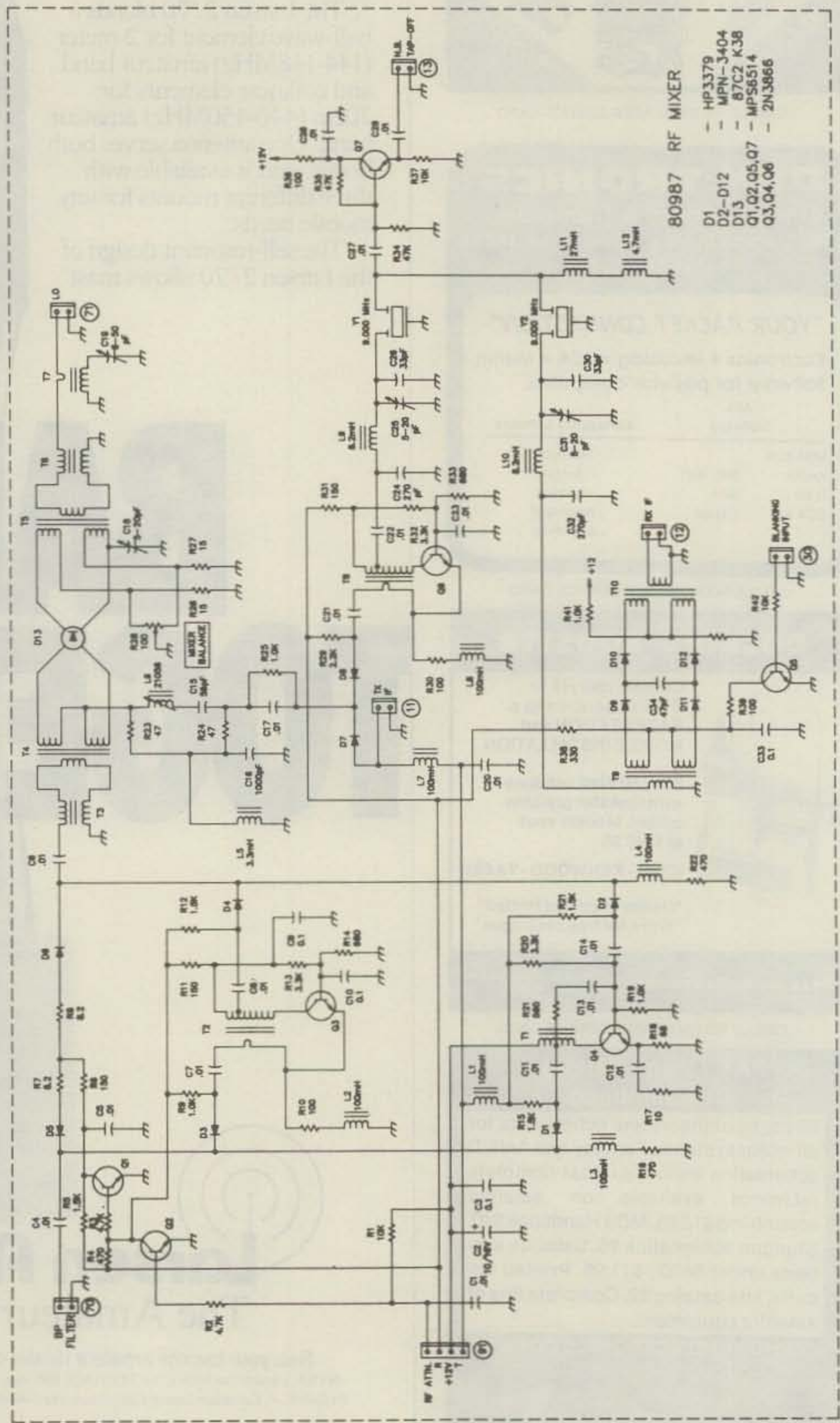
In the transmit mode one can, more or less, visualize the circuitry as working backwards if one follows the signal flow arrows in fig. 1. The microphone signal is split and goes to both the VOX and Audio Processor boards. The latter board in the Corsair II has been extensively redesigned and is shown in fig. 4. Basically, the circuitry conditions the audio through a process of compression followed by soft clipping. U2B is the compression stage, the output of which partially couples to U3B, which in turn drives Q1 as a shunt element at the input of U2B. D3 and D4 are the clipping elements. The processing level is adjustable by a front-panel control. The VOX circuitry has been moved to a separate new board, and the three controls associated with the VOX

function (gain, delay, and anti-VOX) have been installed as rear-panel controls on the Corsair II, since they usually require only infrequent adjustment.

After passing through the speech processor board, the AF signal goes to a DSB board where a double sideband signal is generated. The DSB signal passes

through the standard 8-pole 2.4 kHz SSB filter and then on to the RF Mixer board where it is translated to the final output frequency. The signal is then amplified in various stages until it reaches a pair of MRF-458 transistors which operate in a push-pull Class AB configuration with 200 watts DC input on all bands. The PA stage

Fig. 2—The "front end" of the Corsair II underwent various design changes.



80984 IF/AF BOARD

- D1,D2,D3 - 1N5767
- D4-D11 - 1N4148
- Q1,Q2,Q3 - MPS3693
- Q4 - 3N201
- Q5-Q8,Q11 - MPS6514
- Q9 - 2N5087
- Q10 - MPS01
- Q12 - 2N4870

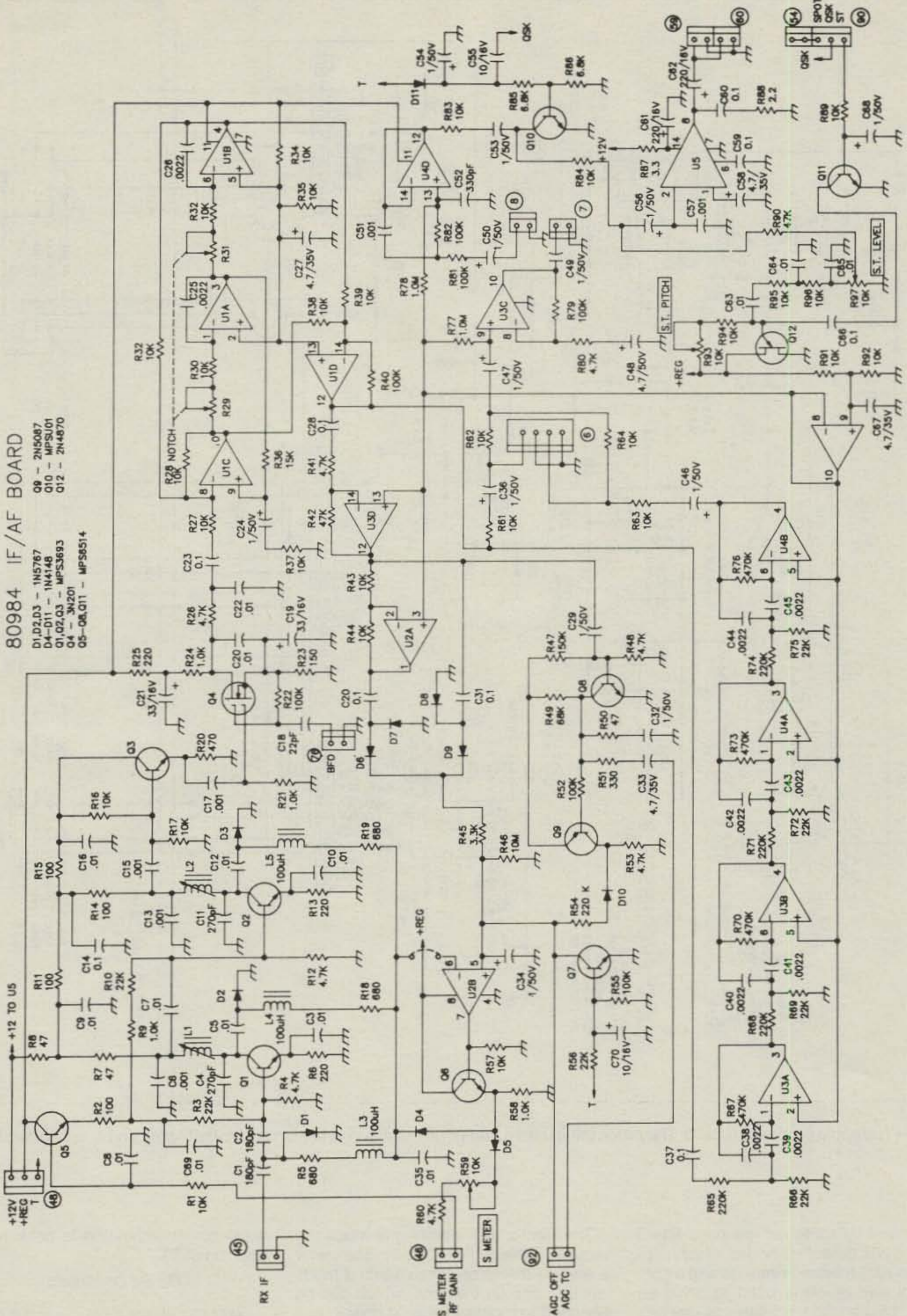


Fig. 3- The IF/AF board. Functions are discussed in the text.

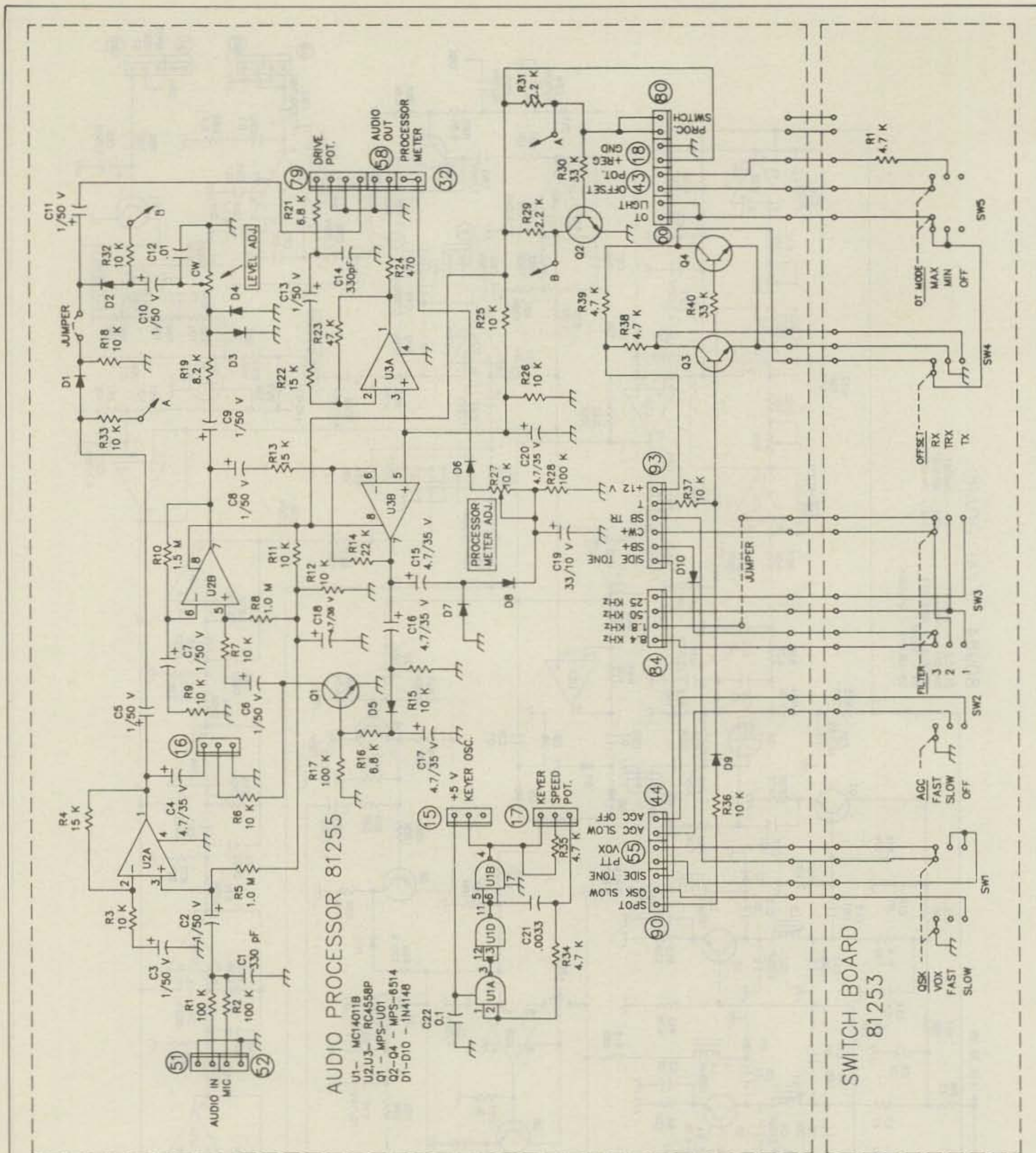


Fig. 4—The audio processor board. The processing uses a combination of compression and soft clipping and is very effective.

is followed by switched low-pass filters and a SWR detection board which supplies an ALC feedback voltage and a control voltage which is used to drive an "ALC" LED on the front panel so one has an instant indication if a safe ALC level is exceeded.

The front-panel metering is much the same as in the original Corsair. The meter is an "S" meter on receive and a multi-function one on transmit, which can be switched to monitor forward power, collector current, SWR, or the audio processing level. In the SSB mode the forward

power indication is peak reading (PEP on SSB).

(To Be Continued)

Next month we'll continue our review with a description of the frequency read-out system.

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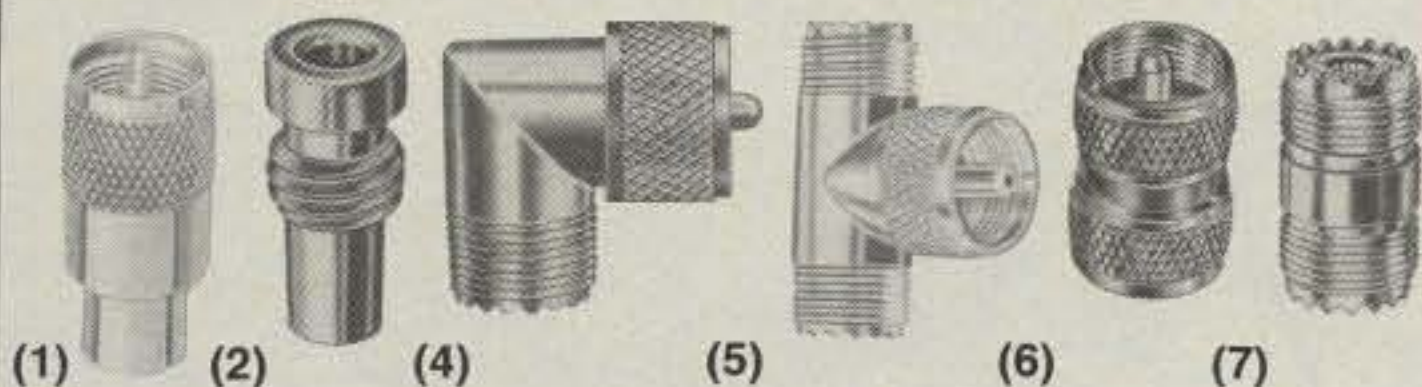


Fig.	Description	Cat. No.	Pkg. of	Only
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5	M-358 "T" Adapter	278-198	1	2.49
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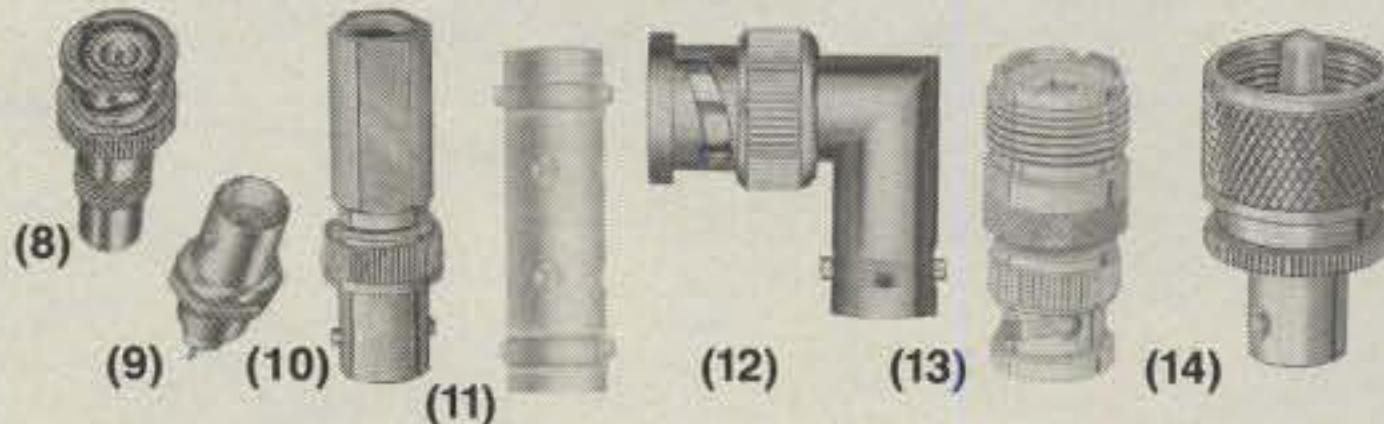


Fig.	Description	Cat. No.	Only
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12	Right-Angle Adapter	278-116	3.99
13	Male to SO-239 Adapter	278-120	2.39
14	Female to PL-259 Adapter	278-121	2.39

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8/M	52	75%	50 MHz, 2.2 dB	100 MHz, 3.0 dB 200 MHz, 4.6 dB 400 MHz, 7.5 dB	278-1328	.21
58/U	52	66%	50 MHz, 4.0 dB	100 MHz, 5.3 dB 200 MHz, 8.0 dB 400 MHz, 12.0 dB	276-1326	.16
59/U	75	75%	50 MHz, 1.8 dB	100 MHz, 2.8 dB 200 MHz, 3.9 dB 500 MHz, 7.5 dB	278-1327	.16
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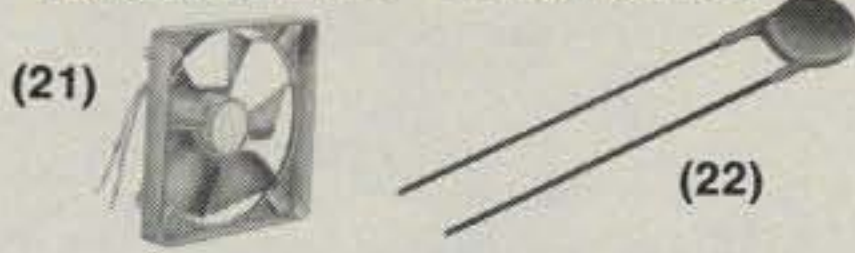
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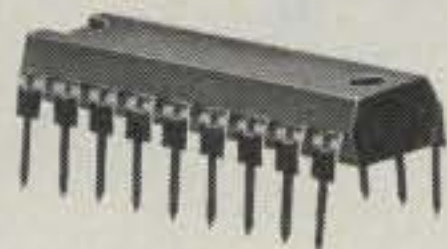
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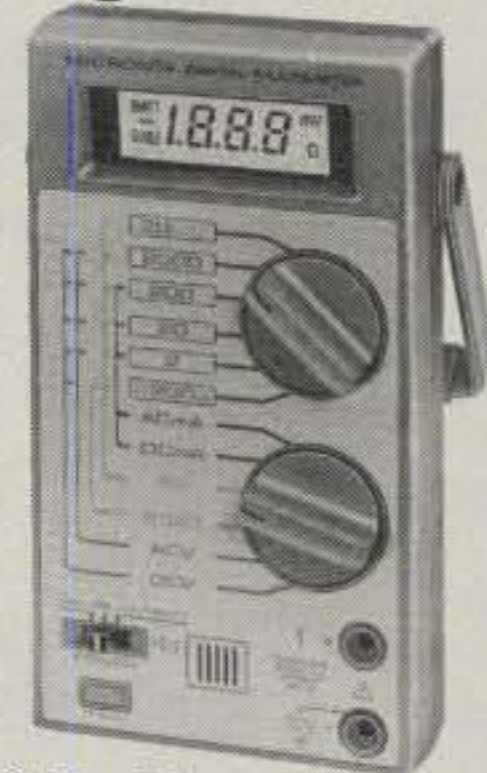
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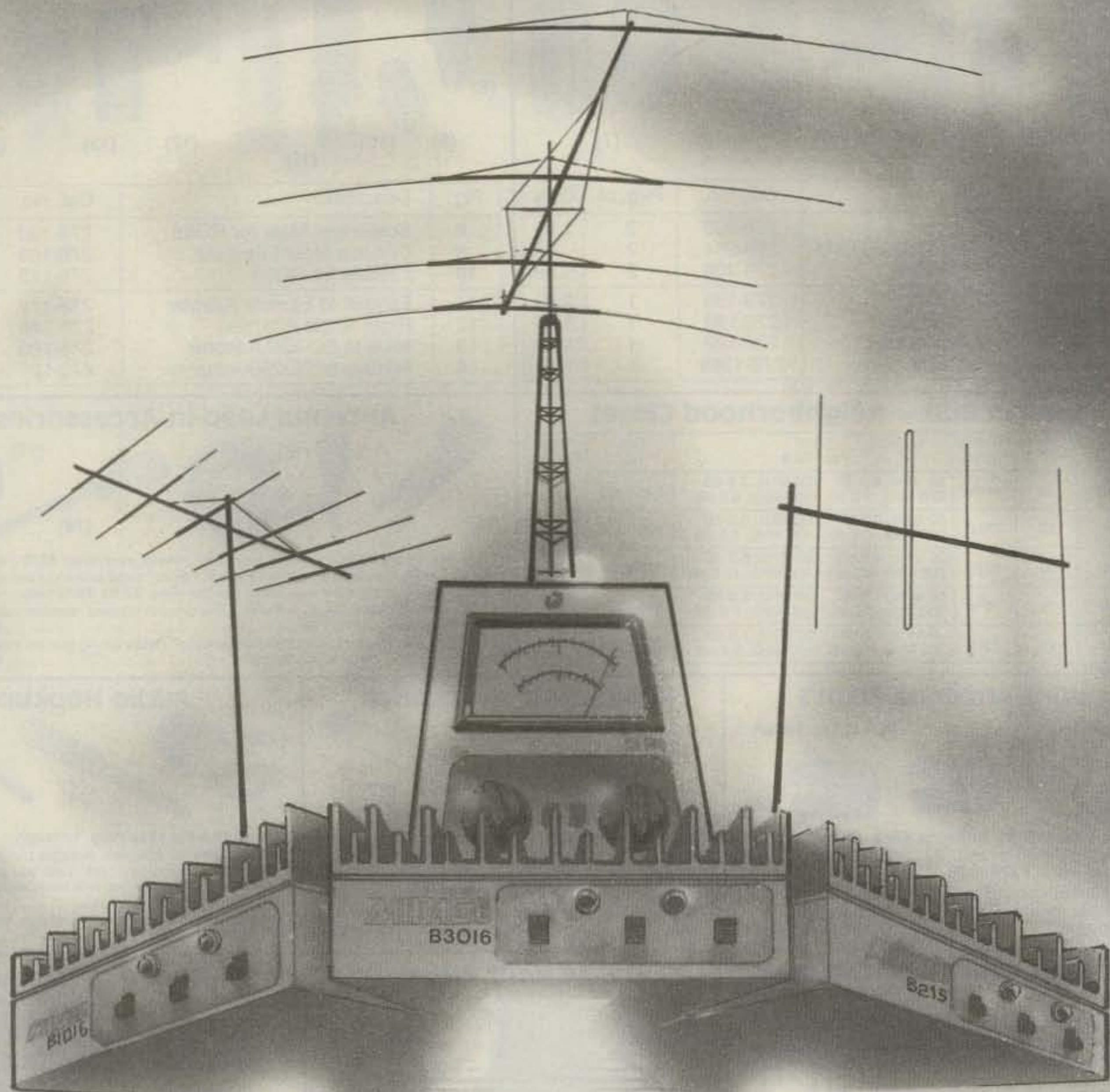
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Starts 0000 GMT Saturday Ends 2400 GMT Sunday

I. OBJECTIVE: For amateurs around the world to contact other amateurs in as many zones and countries as possible.

II. BANDS: All bands, 1.8 through 28 MHz, except for WARC bands.

III. TYPE OF COMPETITION:

1. Single Operator (single band and all band). Single operator stations are those at which one person performs all of the operating, logging, and spotting functions. The use of DX spotting nets or any other form of DX alerting assistance places the station in the Multi-Operator category.

2. Multi-Operator (all band operation only).

a. Single Transmitter, only one transmitter and one band permitted during the same time period (defined as 10 minutes). *Exception: One—and only one—other band may be used during the same time period if—and only if—the station worked is a new multiplier. Logs found in violation of the ten-minute rule will be automatically reclassified as multi-multi to reflect their actual status.*

b. Multi-Transmitter (no limit to transmitters but only one signal per band permitted).

c. All transmitters must be located within a 500 meter diameter or within the property limits of the station licensee's address, whichever is greater. The antennas must be physically connected by wires to the transmitter.

3. QRPp (single operator only). Power must not exceed 5 watts output. Stations in this category will be competing only with other QRPp stations for awards.

4. Team Contesting. A team consists of any five radio amateurs operating in the single operator category. A person can be on only one team per mode. A team **must operate** from two continents. Competing on a team will not prevent any team member from submitting his personal score for a radio club. A team score will be the sum of all the team member scores. S.S.B. and C.W. teams are totally separate. That is, a member of an S.S.B. team can be on a totally different C.W. team. A list of a team's members must be received by October 15 for S.S.B. and November 15 for C.W. Send the list to CQ, Att: Team Contest, 76 North Broadway, Hicksville, NY 11801 U.S.A. Awards will be given to the top teams on each mode. A list of a team's members' scores plus the total team score must be submitted to CQ by the normal contest log deadlines.

IV. NUMBER EXCHANGE: Phone: RS report plus zone (i.e., 5705). C.W.: RST report plus zone (i.e., 57905).

A station in a zone or country different than that indicated by its call sign is required to sign portable.

V. MULTIPLIER: Two types of multiplier will be used.

1. A multiplier of one (1) for each different zone contacted on each band.

2. A multiplier of one (1) for each different country contacted on each band.

Stations are permitted to contact their own country and zone for multiplier credit. The CQ Zone Map, DXCC country list, WAE country list, and WAC boundaries are standards.

VI. POINTS: 1. Contacts between stations on different continents are worth three (3) points.

2. Contacts between stations on the same continent but different countries, one (1) point. *Exception: For North American stations only, contacts between stations within the North American boundaries count two (2) points.*

3. Contacts between stations in the same country are permitted for zone or country multiplier credit but have zero (0) point value.

VII. SCORING: All stations: the final score is the result of the total QSO points multiplied by the sum of your zone and country multiplier.

Example: 1000 QSO points × 100 multiplier (30 Zones + 70 Countries) = 100,000 (final score).

VIII. AWARDS: First place certificates will be awarded in each category listed under Sec. III in every participating country and in each call area of the United States, Canada, Asiatic USSR, and Japan.

All scores will be published. To be eligible for an award, a Single Operator station must show a minimum of 12 hours of operation. Multi-operator stations must operate a minimum of 24 hours. A single-band log is eligible for a single-band award *only*. If a log contains more than one band it will be judged as an all-band entry, unless specified otherwise.

In countries or sections where the returns justify, 2nd and 3rd place awards will be made.

All certificates and plaques will be issued to the licensee of the station used.

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- World—QRPp—Adrian Weiss, K8EEG/0
- U.S.A.—Potomac Valley Radio Club
- Carib./C.A.—Alex M. Kasevich, VP2MM
- Europe—Potomac Valley R.C. - W4BVV Memorial
- Africa—Gordon Marshall, W6RR
- *Asia—Japan CQ Magazine
- *Japan—Japan Crazy Contesters Club
- Oceania—No. California DX Club
- S. America—David Novoa, KP4AM

Single Operator, Single Band

- World—North Jersey DX Assn., K2HLB Memorial
- *World—21 MHz—Lee Wical, KH6BZF
- World—3.8 MHz—Fred Capossela, K6SSS
- U.S.A.—28 MHz—Donald Thomas, N6DT
- U.S.A.—3.8 MHz—Arnold Tamchin, W2HCW

U.S.A.—So. California DX Club
*Canada—Gene Krehbiel, VE7KB
Carib./C.A.—Pedro Piza, Jr., NP4A—KP4ES Memorial
Europe—28 MHz Zone 14 —A. G. Anderson, GM3BCL
Japan—21 MHz—DX Family Foundation

Multi-Operator, Single Transmitter

World—So. Calif. DX Club—W6AM Memorial
U.S.A.—Carolina DX Association
Europe—Box Cox, K3EST/6

*Canada—Calgary Amateur Radio Assn.

Multi-Operator, Multi-Transmitter

World—Radio Club Venezolano
U.S.A.—DX Incorporated Club
Europe—OH-DX-RING—OH2AM

Contest Expeditions

World—Single Opr.—Stuart Meyer, W2GHK
World—Multi-Opr.—The German CDXG & SDXG
(DJ3NG & DJ4EI Memorial)

C.W.

Single Operator, All Band

World—Albert Kahn, K4FW—W2AB Memorial
World—QRPP—Gene Walsh, N2AA
U.S.A.—Frankford Radio Club

*Canada—Canadian DX Association

Carib./C.A.—Peter Munroe, WB1DQC
Europe—Edward Bissell, W3AU
Africa—Gordon Marshall, W6RR

*Asia—Japan CQ Magazine

*Japan—Japan Crazy Contesters Club

Oceania—Maui Amateur Radio Club

*So. Amer.—Venezuela DX Club—YV5AAZ Memorial

Single Operator, Single Band

World—North Jersey DX Assn.—W2JT Memorial
World—3.5 MHz—Fred Capossela, K6SSS
World—1.8 MHz—Chip Margelli, K7JA—KP4ES Memorial
U.S.A.—No. Illinois DX Association

*Canada—Canadian Amateur Radio Federation

Carib./C.A.—DX Club of Puerto Rico
Europe—Southern New England DX Club
Australia—14 MHz—Jay Carr, W6FAY

*Japan—21 MHz—DX Family Foundation

Multi-Operator, Single Transmitter

World—Anthony Susen, W3AOH
U.S.A.—Douglas Zwiebel, KR2Q
Europe—Friends of K3AO—K3AO Memorial

Multi-Operator, Multi-Transmitter

World—Hazard Reeves, K2GL
U.S.A.—James Rafferty, N6RJ
Europe—OH-DX-RING—OH2AM

Contest Expeditions

World—Single-Opr.—Yankee Clipper Contest Club
World—Multi-Opr.—Bill Schneider, K2TT

Special—Single Operator Awards

World—All Band—SSB/CW—John Knight, W6YY
World—Single Band SSB/CW—Yuri Blanarovich, VE3BMV
World—All Band—CW—Most QSOs—KV4AA Memorial
(From the 14270 kHz Group)

Club

World—SSB/CW—CQ Magazine

*Trophy supplied by Donor.

Trophy winners may win the same trophy only once in a two-year period. In the event that the same wins the World Award in the same category in two consecutive years, a spe-

cial CQ Magazine Championship plaque will be awarded the second year. The sponsored trophy in that category will then be awarded to the second-place finisher in that category if the returns justify the award.

A station winning a World Trophy will not be considered for a sub-area award. That Trophy will be awarded to the runner-up of that area.

The Canadian and Carib./C.A. awards are for residents *only*. A resident is defined as one living in that country with an established Post Office address.

X. CLUB COMPETITION:

1. The club must be a local group and not a national organization.

2. Participation is limited to members operating within a local geographic area defined as within a 275 km radius from center of club area (except for DXpeditions especially organized for operation in the contest).

3. To be listed, a minimum of 3 logs must be received from a club and an officer of the club must submit a list of participating members and their scores, both on phone and c.w.

XI. LOG INSTRUCTIONS:

1. All times must be in GMT.

2. All sent and received exchanges are to be logged.

3. Indicate zone and country multiplier only the FIRST TIME it is logged on each band.

4. Logs must be checked for duplicate contacts, correct QSO points and multipliers. Submitted logs must have duplicate contacts clearly shown. The *original* log may be requested by the Contest Committee if further cross-checking of the log is necessary.

5. Use a separate sheet for each band.

6. Each entry must be accompanied by a summary sheet showing all scoring information, category of competition, contestant's name and address in BLOCK LETTERS, and a signed declaration that all contest rules and regulations for amateur radio in the country of operation have been observed.

7. Sample log and summary sheets and zone maps are available from CQ. A large self-addressed envelope with sufficient postage or IRC's must accompany your request.

If official forms are not available, make up your own 80 contacts to the page on 8½" x 11" paper.

8. All entrants are required to submit cross-check sheets for each band on which 200 or more QSO's were made. All other entrants are encouraged to submit cross-check sheets.

9. Duplicate contact penalty: up to 1%—three (3) additional contacts removed; 1% to 3%—ten (10) additional contacts removed; over 3% is grounds for possible disqualification.

10. QRPP stations must indicate same on their summary sheets and state the actual maximum power output used, with a signed declaration.

XII. DISQUALIFICATION: Violation of amateur radio regulations in the country of the contestant, or the rules of the contest; unsportsmanlike conduct; taking credit for excessive duplicate contacts; unverifiable QSO's; or unverifiable multipliers will be deemed sufficient cause for disqualification. (Incorrectly logged calls will be counted as unverifiable contacts.)

An entrant whose log is deemed by the Committee to contain a large number of discrepancies may be disqualified from eligibility for an award, both as a participant operator or station, for one year. If an operator is disqualified a second time within 5 years, he will be ineligible for any CQ contest awards for 3 years.

Actions and decisions of the CQ Contest Committee are official and final.

XIII. DEADLINE: All entries must be postmarked NO LATER than December 1, 1986 for the Phone section and January 15, 1987 for the C.W. section. An extension may be given if requested. Indicate phone or c.w. on envelope.

Both phone and C.W. logs should be sent to CQ Magazine, 76 North Broadway, Hicksville, NY 11801.

Breadboard n 1: a board on which dough is kneaded or rolled or cut; 2: a board on which electric or electronic circuit diagrams may be laid out and experimental circuits constructed.

The Unexpurgated Transmatch — Part II Breadboarding Your Own

BY LEW MCCOY*, W1ICP

Since the advent of sliced bread, genuine and official breadboards might be in short supply. However, any board will do to take you into one of amateur radio's oldest and best traditions, breadboarding. Here you can cut and try, build and rebuild to your heart's content while learning some basic fundamentals. It doesn't have to look good, just work. Come on and give it a try. No one is grading you. You might even want to try some other experiments this way. —K2EEK

In Part I, I discussed and answered some of the questions that I had received from my February 1986 *CQ* article. That article dealt with the subject of whether or not to use a Transmatch. This is a continuation of the subject.

Breadboarding—A Lost Art?

I guess I am getting to be just a little too long in the tooth and too old for my own darn good. Many amateurs wrote and asked me to recommend values for variable capacitors, plate spacing, and so forth. A very common question was, "I have a good junk box, but I don't know what to use, etc." Or, "I would like to build one, but I am not sure it would work or if my parts are right."

Years ago in amateur radio we had an art, and it certainly seems to have become a lost art. That art was breadboarding. Forgive me if I sound like I am talking down to my readers. That is not my inten-

tion. However, a little hand-holding may be in order to get many of the newer amateurs back to good old amateur radio. I doubt very much that you would read anything like I am going to tell you in some of the more esoteric amateur magazines which now seem to think amateurs want to read nothing but articles on digital and analog techniques.

Okay, so breadboarding it is. A really simple way to find out if the parts you have will work is to build a unit and try it. Using a wooden board makes a good test "platform." (Hey, I've got to make it sound "technical" don't I?) To make a Transmatch you need two capacitors—variable—and a coil, plus some wire and a couple of coax fittings. If you are fortunate enough to have a roller inductor coil, that's great, but we can still build a very suitable Transmatch with mostly junk-box coil stock, or you can even wind your own coil.

How much variation can there be between recommended component values and actual practice? This is where breadboarding really does its stuff. I have made a Transmatch on breadboard to illustrate my points. The circuit is shown in fig. 1. There are a few things I must emphasize when it comes to breadboarding. A wooden board doesn't have a metal base for ground, so we need a common ground. A length of No. 12 bare copper wire (house wiring, stripped ROMAX, etc.) can be tacked at both ends and run across the board to use as a common ground. Also, if you frequent fleamarkets, you can pick up some copper-clad circuit board, which makes a good base for breadboarding. In addition, this material can be used to make boxes and chassis as desired.

If you look at the circuit in fig. 1, you will note that the rotors of the capacitors are "hot" for RF, so you need insulated shaft couplers to avoid RF burns. (I didn't use them in this breadboard unit because I had some large insulated knobs.) In fact, the primary and ever-present rule when working with breadboard is to stay alert. The components are exposed! The dog-gone stuff can bite you. RF can make nasty burns that are slow to heal; ask any old timer who drew an RF arc off his final amplifier and then lit his cigarette from the arc. (I told you I was old. That is why they called me "hot lips" McCoy back in those days! Also, it was a good way to kick the cigarette habit.)

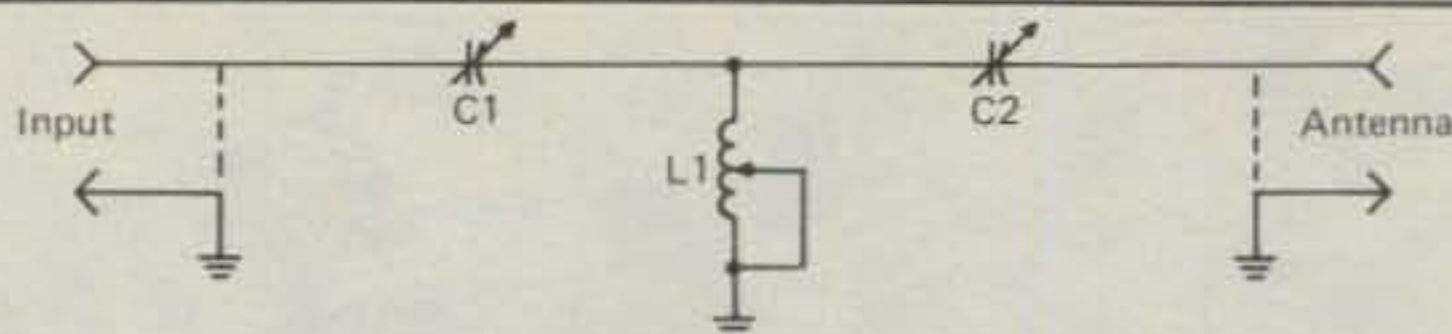
On breadboard, you can use screws or tacks to mount the components because it should only be a temporary setup. As I have already mentioned, you will need a common ground and wire will suffice.

The breadboard Transmatch I have shown uses a fixed coil with a tapped shorting lead. The coil I used was one of many I had in my junk box. How many turns on the coil, what diameter, what size wire? How big should the variables be? This is why we are breadboarding—to find out. Any amateur who passed his Novice—no, make that Technician—should know that you can't hit 80 meters with just a few turns of coil. (Oh, I know there are a lot of smart-butted engineers out there saying, "Yes you can. Yes you can!!" Sure you can if you have a coil 8 or 10 feet in diameter, etc., etc. But I am not writing this for you guys.) Bear with me devoted readers. We'll ignore those hot shots.

In our breadboard we don't need switches. You may want to add them in your final version, but they are not really

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

Fig. 1—The basic Maxwell circuit (a modification of the Ultimate Transmatch) is used in our breadboard work. The values of C1, C2, and L1 are discussed in the text.



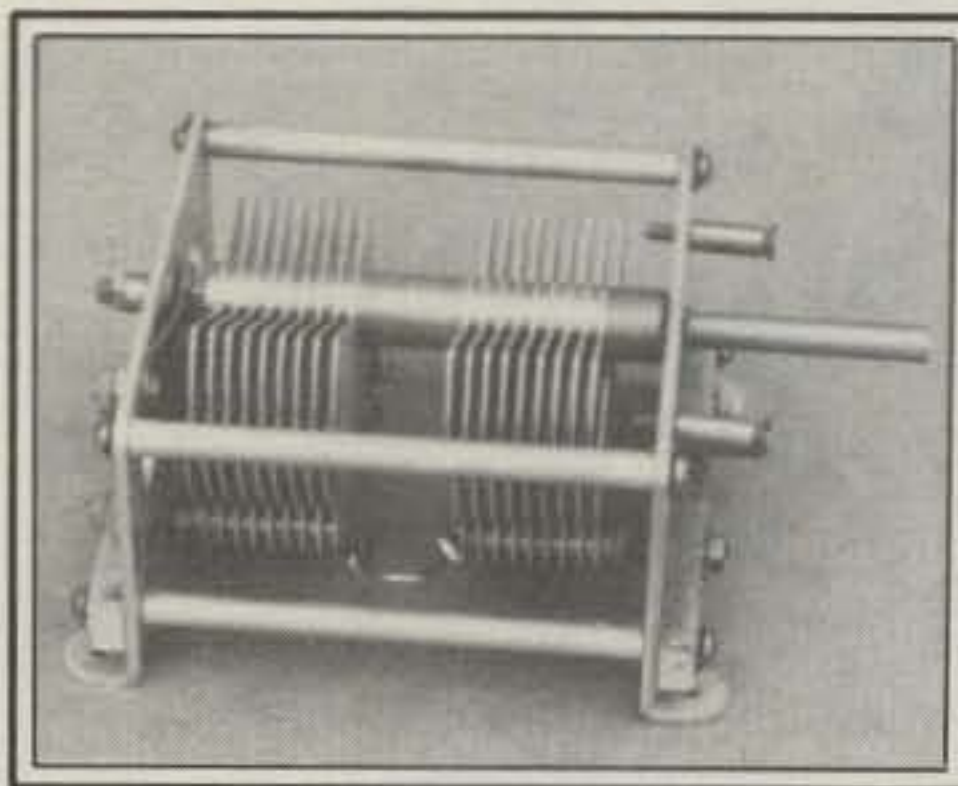
necessary. A clip lead will work just as well, assuming you make it easy to get at. The Transmatch shown here is the Walt Maxwell version described in my original article. This circuit does everything my Ultimate Transmatch did when it comes to matching and it doesn't require a dual capacitor on the input (or output side).

In our breadboard our first concern of course is our final goal. What exactly do we want? If you are planning to run full power, 1500 watts PEP, then some husky capacitors and a fairly rugged coil are needed. If, however, you are only going to be using normal transceiver output, say 200 watts maximum, then the component sizes can be considerably less. Many beginners have asked me if they can use larger size components than necessary even though they are running low power. Of course you can. Actually, larger size wires and bigger capacitors have slightly less losses than smaller ones. There is no electrical difference as to performance for matching.

Variable Capacitors

If the variable capacitors you have are marked as to value, all well and good. In the Transmatch circuit the normal values for the input and output capacitor are on the order of 150 to 200 pF each—that is maximum capacitance, plates fully meshed. (We are not really concerned with minimum capacitance because most of the capacitors we would find and use would permit us to hit 10 meters with their minimums.)

I said 150 pF was the normal value specified, but that doesn't mean 100 pF or even 75 pF won't work. The fortunate thing about our Transmatch circuit is that it will provide matching with several different values of capacitance and inductance. Before I go on, let me talk a little about capacitor power/voltage ratings. There are really two distinct power levels we are concerned with—barefoot transceiver, up to 200 watts, or with an amplifier running up to 1500 watts. For the lower power level we can get by with capacitor plate spacings of 0.016 inch, which have an RF voltage rating of 600 volts, but we need to be very careful. Those spacings will work if we tune up under low power, less than 50 watts, and achieve a match, and then load up to full power. If the Transmatch is "out of tune," it possibly won't handle the mismatch without the capacitors arcing. However, that spacing will work for 200 watts under matched conditions. But this is why we

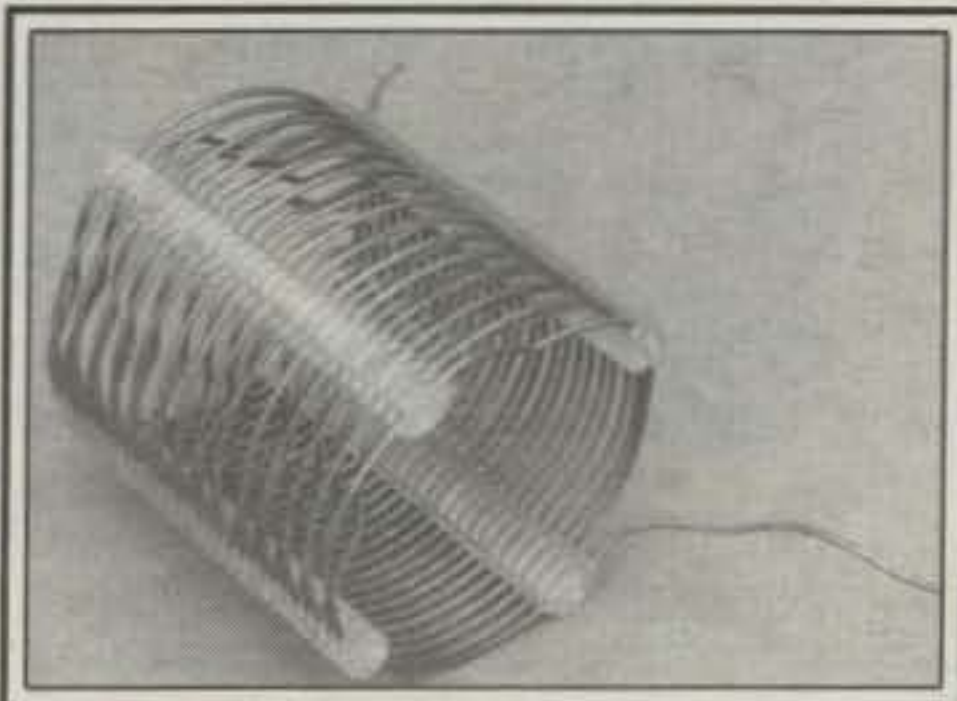


As described in the text, the capacitance of any dual variable can be increased by connecting the two stators together in parallel. A simple shorting wire between the two stators is shown here.

are breadboarding. It might not. (Frankly, I would prefer at least 0.025 inch spacing minimum.)

The next commonly available spacing is 0.032 inch, which will handle 1000 volts and would be much better spacing for our 200 watts. Another common spacing is 0.075 inch, and this will handle 2100 volts. We could use this for a kilowatt easily under matched conditions. The next step in spacing is 0.120 inch or 0.125 inch (3200 volts), and this will handle legal limits with ease. Any spacing wider than this is gravy for high power.

If a capacitor is unmarked as to value, it may be that someone in your local group or club has a capacitance meter and can measure the values for you. It can also be measured by using a grid-dip meter and a fixed value inductance across the capacitor. In my travels to fleamarkets I see many dual variables



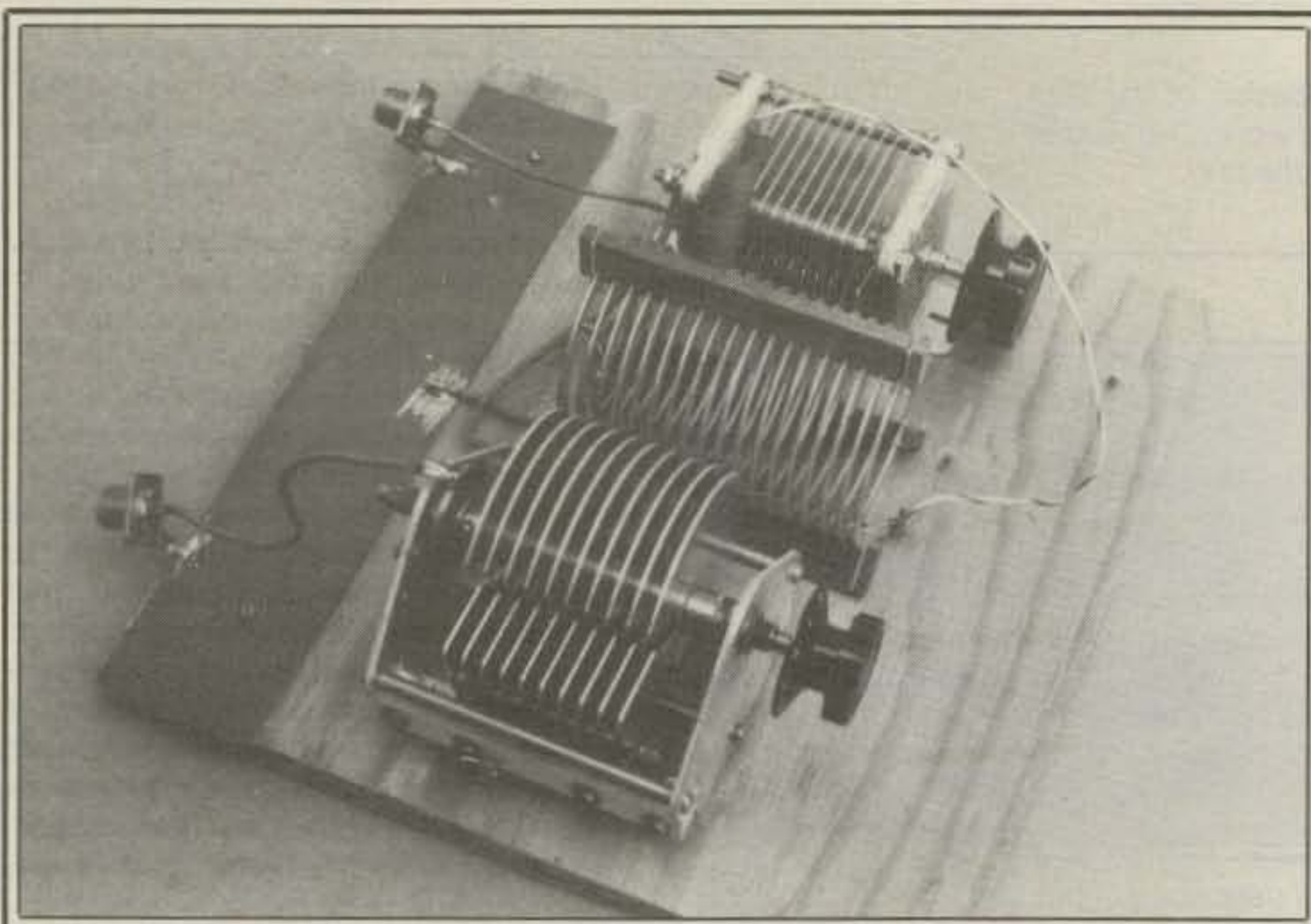
In order to get at each turn of the coil with the shorting clip lead, the wire on each turn is indented (bent in). This is done on each side of one of the support bars as shown.

that are 50 or 75 pF per section. Two 75 pF sections in parallel will equal 150 pF. Many amateurs might pass these up because they think the values are too low. However, one needs only to connect the stators of the capacitors in parallel to double or increase the value and thus make them very suitable for our purposes. Also, while it is a little cumbersome, one can increase the value of a variable by clipping a fixed value unit across the variable. This is an old trick used to hit 160 with your Transmatch. Look around fleamarkets for the so-called doorknob TV high-voltage capacitors and get a supply of different values, 100 pF up to 500 pF. In any event, there are plenty of options available if one just looks for them.

The original circuit diagram called for 150 pF variables, but 100 pF will work. Again, this is why we are breadboarding. Each antenna system is different, and for yours 100 pF may be adequate. Also, it is possible in some cases to rig up two junk-box variables so that they are "ganged" and increase the capacitance in that manner.

Coils

In our Transmatch the best coil to use is a variable (or roller) inductor. Any total value of 15 μ H will work for 80 meters and the higher bands. About 25 μ H maximum is good if you are thinking of 160 meters (the variables for this band should be 200 maximum). The reason the roller coil is better is simply that it provides the most accurate and wide range matching possible. A fixed coil that is tapped every turn is almost as good and should work without any real problems, as I will show. I note that at fleamarkets there seems to be plenty of coil stock of the "Miniductor" or "Illumitronic" type still around. For full power I would recommend a wire size of No. 14 or No. 12 and a coil diameter of at least 2 inches. If you were going to wind your own, you could use a piece of PVC pipe for a form, 2 or 2½ inches in diameter. Wind the coil about 6 turns per inch with 6 inches of coil (36 to 40 turns). Use bare copper wire, not insulated (you'll see why in a moment). This many turns of wire will provide about 20 μ H of inductance on a 2 inch form and about 30 μ H on a 2½ inch form. A good trick in winding the coil evenly is to use two lengths of wires and wind the turns on close space. Secure the ends of the winding in place on the form via holes drilled in the forms at each end of the coil and then remove



Here is a breadboard Transmatch. The coil used is one of many from my junkbox. In this case I used a strip of copper circuit board for a common ground, mounting the strip along the back of the board.

one of the lengths of wire. This will provide even spacing between the turns. You can use Duco-type cement to fix the coil firmly to the form. Apply the cement to whatever the underside of the coil will be when mounted in place. The cement will insulate the wire, so we want that part of the coil out of the way, away from our tap points.

The top of the coil will go to the junction of the capacitors, and the bottom of the coil will be grounded. At the ground end of the coil we will attach a shorting clip lead, shorting out unused portions of the bottom of the coil, the clip going to the matching point on the coil. This is why we can use uninsulated wire. From the clip point down the coil to ground is all at ground potential and shorted out. Another trick is to wind a turn of coil and make a twist in it to provide a small pigtail for our clip lead or switching lead. However, to make a really universal Transmatch, one would have to do this on every turn, and that gets a little tedious. As long as your clip lead end is formed to make a good connection on the shorting point, that is all we really need. One could also cut a slot the length of the coil form, say 1/2 inch wide, so that the clip lead would make good contact. On ready-made coil stock, bend in each turn slightly, alternating on each side of the support bar. This will provide space for your clip or switch lead. If you don't have a variable coil with the inductance specified above, you will want to have a coil with at least as many turns available for tapping in order to have a wide matching range. And this brings up another "controversial" point.

Let's get one point clear about this cir-

cuit and the Ultimate Transmatch. You may read elsewhere that these circuits don't have the matching range of some other circuits—in other words, that you might encounter loads that cannot be matched. Don't be misled, because this is just not true. The circuit we are describing here will match any load one can encounter (except infinity!) as long as the inductance is variable. Some loads are

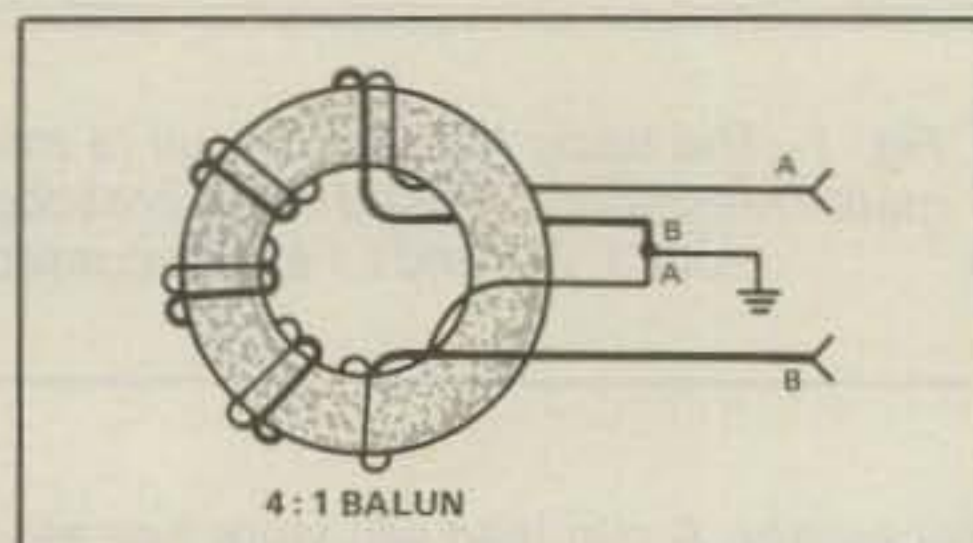
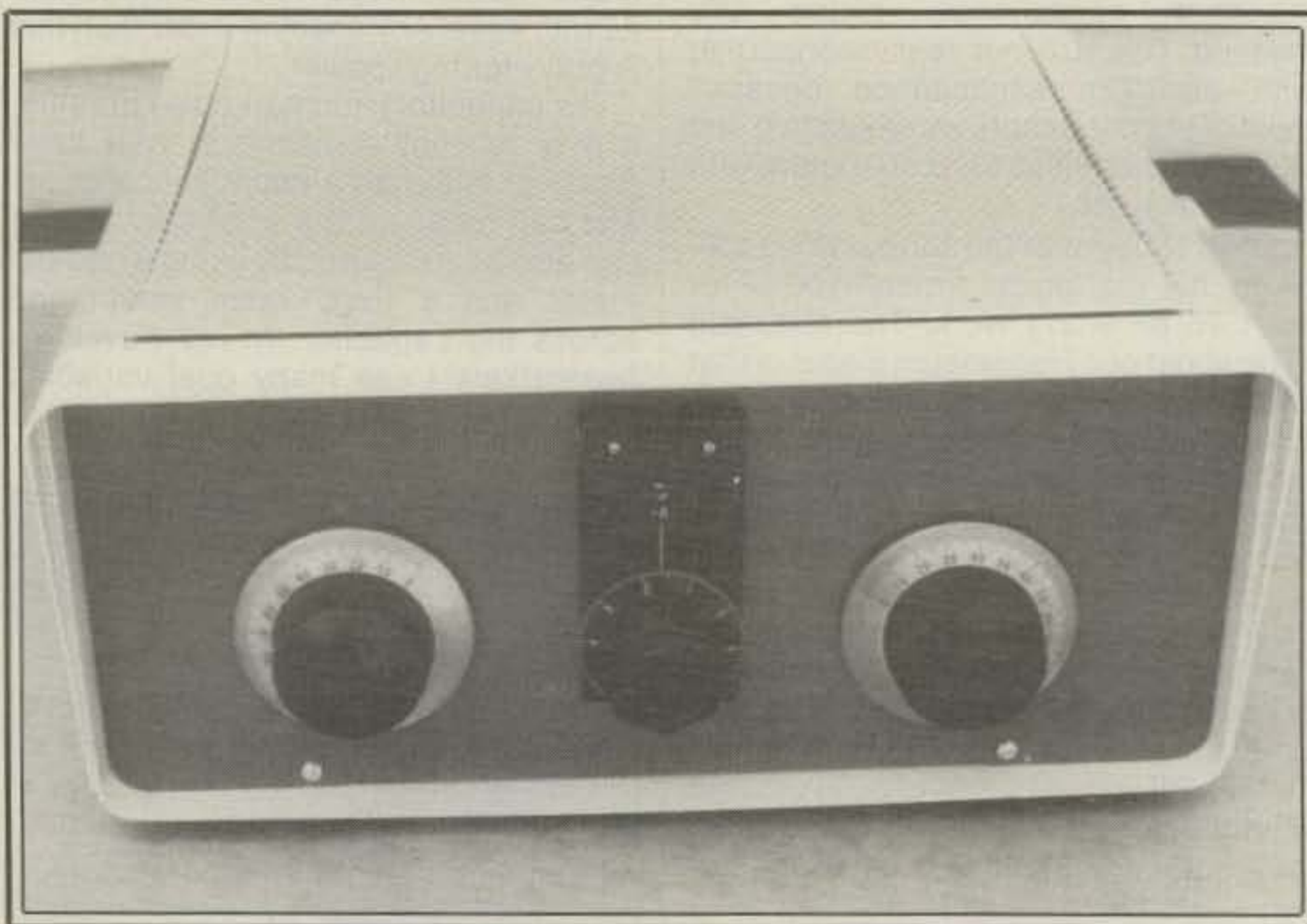


Fig. 2—T1 is the 4 to 1 balun for feeding balanced lines. The transformer consists of three T-200-2 toroid cores covered with a layer of 3-M No. 27 glass cloth insulating tape. The cores are then stacked, covered with another layer of the tape, and then wound with 12 bifilar turns of No. 14 Teflon-covered wire.

very critical to match. You might find that with a fixed coil you may have to move your shorting clip just a portion of a turn, but you can achieve a match. It takes some patience on some loads, but in all my years of experience with this circuit I have never found a load I could not match.

The Balancing Transformer

The Transmatch circuit we have used here is a circuit designed to go from coax to coax or single-wire feed. In order to use open-wire feeders or twin-lead we will need a balancing transformer. Over the years there has been much discussion of whether or not this transformer should have a 4 to 1 ratio (as this one does), or a 1 to 1 ratio. I prefer the 4 to 1 ratio simply



This is a front view of the full-power Transmatch. The two vernier drives for the capacitors were from my junk. The drives do not have to be vernier, but they do make for a smoother control. The counter dial is another item I had on hand, a Groth dial. My enclosure is an LMB cabinet with contoured front. As mentioned in the text, this item and the other parts are available from Radiokit, Inc.

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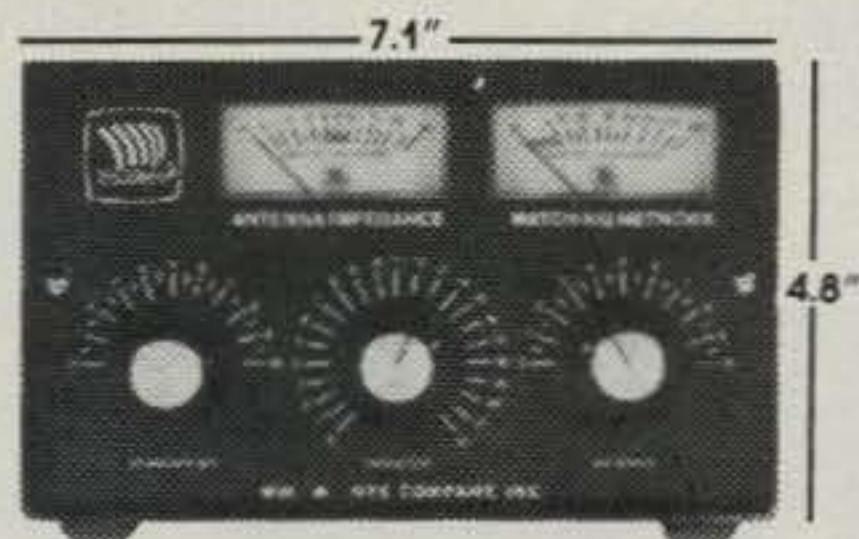
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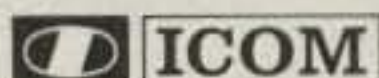
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because in all probability the load on the output side of the transformer (open-wire side) will be higher than 50 ohms. However, for myself, I never considered the ratio important because there are just too many variable factors to contend with. Fig. 2 shows the details for making the transformer. Be sure to use T-200 type cores. A single core will handle over 600 watts, and three cores are needed for very high power. The No. 14 Teflon-covered wire is available from Radiokit (Box 411, Greenville, NH 03048; 603-878-1033). You'll need 20 feet, as 12 to 13 bifilar turns are required.

You may read in some other publication that you should avoid the use of this type of transformer to achieve balance feed, the reason being that if such core-type transformers become saturated with too much RF they can generate harmonics. Don't be misled by these statements. It is true that such can happen, but if you observe the use of three cores for full amateur power or one core for the 200 watt level there is no way harmonics will occur.

Once you have your breadboard unit built up you are ready for some testing. You'll need an SWR or matching indicator installed between the Transmatch and transmitter. Don't forget, the object of this exercise is to take your unknown antenna load and transform it via the Transmatch to a 50 ohm load for your rig. Set your capacitors at full capacitance, fully meshed, for all bands from 160 through 40 meters. They should be set at half meshed for 20 and higher. Switch your SWR meter to read reflected readings and adjust your transmitter to get a reading. You'll need to use the most sensitive setting of your SWR or power meter. These adjustments must be made with the *lowest* power possible but one that provides useful meter readings. If you have a roller inductor, start with the most of the coil in the circuit and adjust towards lesser inductance (less turns), always watching the SWR indicator. At some point you should get a meter indication change. Stop there and adjust both capacitors, looking for a match. You no doubt have to reduce the inductance a slight amount to achieve a match. Also, you are going to find that there may be several different settings that provide a match. Always use the match point that requires the *most* capacitance on both variables, as this is the best setting.

A "No Holds Barred" Transmatch

Maybe instead of breadboarding you would rather buy new components and build a "once and for all" Transmatch. The Oren Elliot Company makes absolutely beautiful capacitors and roller inductors that can be used to make a full-power Transmatch that will cover from 160 through 10 meters. I used the circuit,

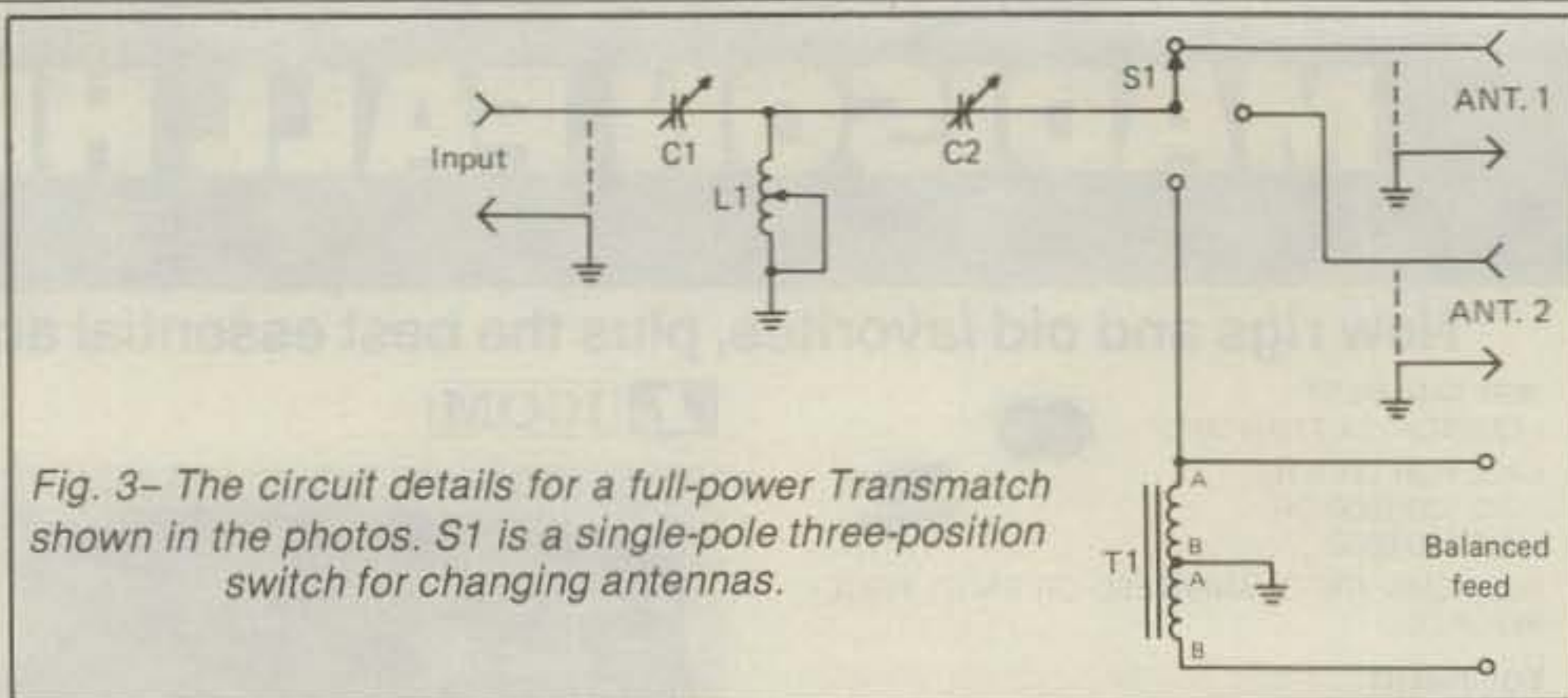
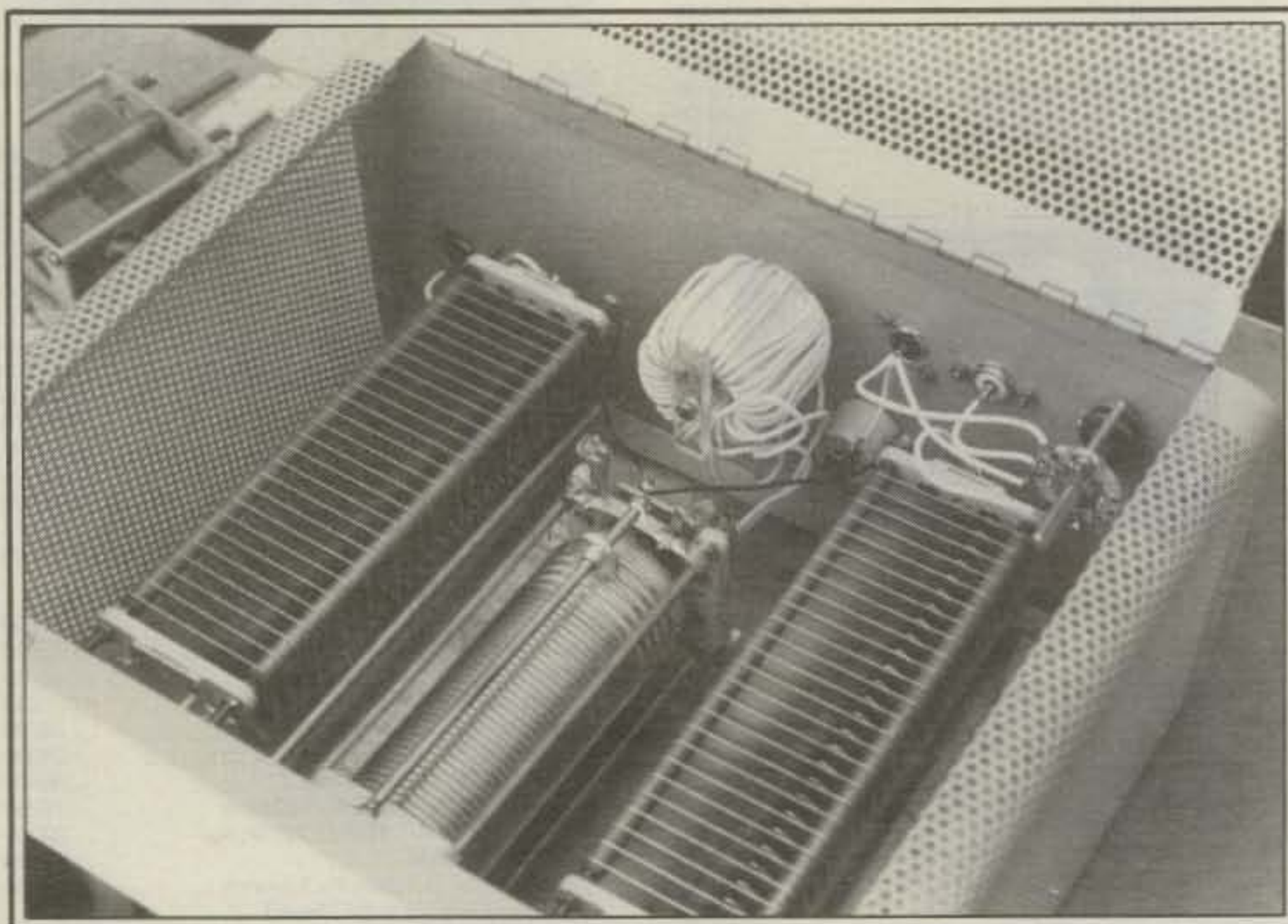


Fig. 3—The circuit details for a full-power Transmatch shown in the photos. S1 is a single-pole three-position switch for changing antennas.



Here is an inside view of the Transmatch. The balun coil is mounted on the rear wall and its leads go to isolantite feed-throughs to accommodate the open-wire feeders. S1 is visible at the upper right rear.

fig. 3, which has two single-section variables and a 28 μ H roller inductor. Using these components the circuit will cover 160 through 10 meters. For balanced feed I use a toroidal transformer as shown previously.

I had a single-pole three-position isolantite wafer switch on hand, so I used it in the Transmatch. This allows the antennas to be permanently connected to the Transmatch and switched as needed.

The Elliot company does not sell direct. I talked to Bob Wilson, owner of Radiokit (see his ad elsewhere in the magazine), who agreed to stock the Elliot capacitors and roller inductors, plus other material for the NHB (No Holds Barred) Transmatch shown in the photos. Radiokit also stocks a 4 to 1 balun kit as required for balance feed in the Transmatch. Their kit includes three T-200 cores, the Teflon covered wire, and insulating tape. In fact, Radiokit even lists in their catalogue the B & W and Illumitronic coil stock I mentioned earlier.

A nice feature of the Elliot capacitors

used in this model is that they have insulated shafts mounted permanently on the ends of the regular metal shafts. This eliminates the need for insulated shaft couplers, which would be required (the shafts are "hot" for RF) with normal capacitors.

Other Suppliers

In addition to Radiokit, there are other suppliers of antenna and Transmatch materials which should be mentioned. Certified Communications, Route 2, Pittman Road, Landrum, SC 29356, handles all types of antenna wires and feeders. A catalog is available for a business-size SASE. Another is Nema Electronics, 12240 N.E. 14th Ave., Dept. Q, Miami, FL 33161, who handles feedlines and other material. Texas Towers, 1108 Summit Ave., Suite 4, Plano, TX 75074, is another who carries an extensive line of supplies.

In Part III of this series, we'll discuss some more questions and information on some other antennas.

(To Be Continued)





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Dale Scott, KA7QYX /Store Manager

73, Jim Myers, WA6ICB
President

CIRCLE 66 ON READER SERVICE CARD

NEWS OF CERTIFICATE AND AWARD COLLECTING

The Story of the Month for September:

Frank F. Coursey, G4JZ All Counties #118, 11-7-74

"Radio-wise, life began for me in 1921 when, at age 13, I built my first crystal set. By 1923 I had progressed to a two-tube set with which I received my first American station—WBZ at the 'World's Playground,' Atlantic City. At this time another lad at school was licensed and I started to learn a bit about the transmitting side of radio.

"The best DX was some 20 miles on 200 meters. This is not surprising, as modulation was via a carbon mike in the antenna lead and not much power, as high voltage was 120 from dry batteries.

"Those were years of listening and hearing DX on frequencies previously regarded as useless. During that time I had much to occupy my mind. I was serving an apprenticeship in electrical engineering and playing a variety of games, singing in three choirs, acting in stage plays, dancing, and trying to discover what made girls tick—a matter not yet solved! I've lost hope of that now!

"In 1930 I built my first super-het and for the next few years copied many medium-wave broadcast stations in the United States. I no longer have the records, but I remember WOAI in San Antonio, Texas; KSL in Salt Lake City, Utah; and KFI, San Francisco, California as being among the best catches.

"In 1931 I was running a service department for G2IN, so I came back into touch with radio transmission. I remember putting up the latest super antenna 199 feet end-fed with a copper water tank float at the far end. We did work quite a lot of W's on 20 meters. Having moved to another area in the mid 30's, I met G2IQ, possibly the first medical doctor in England to apply radium to skin cancer. He borrowed it from Curie in Paris. It worked! I saw a lot of Doc and put up a W8JK for him, which went quite well. The power limit here was 10 watts. The final was a PX4 tube similar to a 210. He got me into contact with friends. I also put up a W8JK for G2IW, on the air pre-WW I. I used to visit G6BW after moving QTH again. That brings back memories of putting up a Johnson Q fed dipole by the light of car headlamps! Then we put up a 3-element 10 meter Yagi, and we began to realize



Frank Coursey, G4JZ, All Counties #119, 11-7-74, in his garden at the Old Forge, Birdlip, Gloucester.

that DX was easy, especially with the sunspots plentiful. He had a 50 watt permit.

"Having made a little spare cash by writing mainly on DX reception for several radio magazines, I applied for a transmitting license in 1938 and was issued 2FHA. No G prefix was issued, as use of anything but a dummy load was forbidden. Maybe some leaked a little? After six months I got the radiating license, and in 1939 G4JZ was on the air.

"Then came WW II and confiscation of any transmitter for the duration. I was lucky, as I got my radio back in 1946. I spent the war in a plant where we made variable pitch propellers and other accessories for aircraft. It wasn't a lot of fun with 12 hour shifts 13 days out of 14—the day 'off' being for a change from day to night shifts. (I did volunteer for the Royal Navy, but was firmly told that the firm would not release me, so I was left with a clear conscience). After work I listened for an hour trying to intercept enemy radio traffic. They never told us what we were copying, and as it was mainly five-letter or figure code groups, it meant nothing to me. A number of UK amateurs who were not called up acted as VI's, Voluntary Interceptors, for an intelligence organization. Some were full time, available due to being retired or disabled, and had regular collections by dispatch riders. We were ranked as being in the Royal Observer Corps to give us standing if captured in an invasion, which could well have happened before Pearl Harbor.

"January 16, 1947 saw my license back. It happened that we were to have a fine sunspot maximum, which was just as well, as we only had 10 meters for some time. Still being single, I spent much time on the air working the world. I got the 44th post-war 'phone DXCC issued. Post-war we were permitted up to 150 watts final input, as we still are. At first I had a two-section W8JK on 20, and as soon as I could get hold of the tubing, far from easy at that time, I built a 3-element WS rotary Yagi for 10 meters. In the summer I extended the elements with ex-tank whips, so got going on 20 in fine shape. I placed second in the ARRL phone contest in 1948. Ten years later I did it again with some 2000 contacts as against 900 in 1948. I got a second ARRL phone top and a couple of CQ 20 meter single op awards. I then retired from contests and got seriously busy hunting the USA Counties, and five years later I had worked them all and received All Counties #118. I would never have achieved this without the assistance of Marv, WB2SJK, who hunted down the necessary QSL's and helped in other ways. Marv remains my QSL manager to this day, although there is little to handle now. He also saw Bob, GW3NWV (SK), through his first and second time around the US counties. I did restart to work all counties the second time, but stopped at 2600, all mobiles. I doubt whether I shall ever continue.

"I don't know how many countries I've worked. It must be near 300. I don't have many cards partially due to the risk of loss of cards when sent abroad. I have a few, such as WAS in 1948. That took me nearly 2½ years. In 1968 I worked all on 10 meters, just missed New Mexico on 15 meters, had 38 on 20 meters all during one contest. Things have changed!

"I was pleased to receive the A1-OP award and TFO#4, YLSSB. Others I was pleased to get were the 15th Empire DX, now of course defunct, so changed to Commonwealth, the VK/ZL Cook Centennial, and the VE Centennial.

"I suppose I could get many more awards, 50 state awards for a starter, but expense rules them out, and I no longer send QSL's abroad—haven't updated DXCC for about 20 years. I have 21 log books which probably have about 3000 entries in each. How many W's? Maybe one day I'll get busy and count them all?! Three ARRL contests would give nearly 5000 for a start and counties at least another 5000.

"I had a very quiet period between late 1948 and 1957. I married and moved

333 South Lincoln Ave., Mundelein, IL 60060

three times. I only had poor wires and low power. In 1960 I got a TA-33 Jr. 30 feet up on a pole and went over to 100 watts on SSB and was fairly active during the 1960's.

"After I was left on my own in 1967, I was on the radio often. In 1969 I got a 40 foot tower and moved the gear indoors. I tried a Hy-Gain Quad (Hyquad), then a Gem Quad which suffered a weld failure and ended up atop a nearby tree. I then put up a Hy-Gain 204 BR, which was the best antenna I have had up. That stayed until 1978, when I wanted to get back into 10 and 15 with more than a Mosley trap vertical, so I got the present Western Electronics DX-34, 4-element trap Yagi, which is quite effective. Had I gotten someone to do the work, I would have had the 204-BA up again during this sunspot minimum.

"Incidentally, I retired in February 1972 and have had a good run as a pensioner. I was 32 years with the firm, ending up as a Quality Engineer. 73's de Frank, G4JZ"

USA-CA Honor Roll

3000					
		WB6TJW		752	
		OK1DKS		753	
W2DWO	543	KB5FU		754	
N9BDM	544	VE1AIT		755	
KB5FU	545	WA1UDH		756	
		JH8GWW		757	
		KJ4EJ		758	
2500					
W2DWO	609				
N9BDM	610				
N6PE	611	N9BDM		926	
K0OJG	612	WB6TJW		927	
KB5FU	613	OK1DKS		928	
		KB5FU		929	
		WA3SDU		930	
2000					
W2DWO	668				
N9BDM	669				
N6PE	670	N9BDM		2105	
KB5FU	671	WB0ZSS		2106	
KJ4EJ	672	WB6TJW		2107	
		KB5FU		2108	
		G4AHJ		2109	
		Y37XJ		2110	
		WA3SDU		2111	
1500					
N9BDM	750				
N6PE	751				

Awards Issued

W2DWO (ex: W8CYB/2), Warren C. Dunn completed all the paperwork and claimed USA-CA 2000 #668, USA-CA 2500 #609, USA-CA 3000 #543, and All Counties #510, all dated 4-28-86, Mixed.

Glenn O. Lavin, N9BDM, with his fine signal from Wisconsin, followed the mobile stations and then sent for USA-CA 500 #2105, USA-CA 1000 #926, USA-CA 1500 #750, USA-CA 2000 #669, USA-CA 2500 #610, USA-CA 3000 #544, and All Counties #511, 5-5-86, All 20 M, SSB, Mobile.

Galen Graff, KB5FU, took enough time from his duties with the Armadillo Run (Texas DX Society) to win USA-CA 500 #2108, USA-CA 1000 #929, USA-CA 1500 #754, USA-CA 2000 #671, USA-CA 2500

USA-CA Special Honor Roll

Warren C. Dunn, W2DWO
All Counties #510, 4-28-86

Glenn O. Lavin, N9BDM
All Counties #511, 5-5-86
All 20 M, SSB, Mobile

Galen Graff, KB5FU
All Counties #512, 5-15-86

#613, USA-CA 3000 #545, and All Counties #512, 5-15-86, Mixed.

Richard Darwicki, N6PE, sent for USA-CA 1500 #751, USA-CA 2000 #670, and USA-CA 2500 #611, 5-5-86, Mixed.

Wilbur R. C. (Bill) Lewis, K0OJG, upgraded his certificate again by sending for USA-CA 2500 #612, 5-8-86, Mixed.

Clarence A. Willis, Jr., KJ4EJ, sent for two more gold seals for his award and now has USA-CA 1500 #758 all 20 M, SSB and USA-CA 2000 #672, All SSB, 5-30-86.

Karl Sokol, OK1DKS, continues to add to his credentials and has claimed USA-CA 1000 #928 and USA-CA 1500 #753, All SSB, 5-13-86.

Oscar J. Reiner, WB6TJW, sent for USA-CA 500 #2107, USA-CA 1000 #927, and USA-CA 1500 #752, All SSB, 5-12-86.

G. L. "Lin" Titus, VE1AIT, has been awarded USA-CA 1500 #755, 5-15-86, Mixed.

Stephen E. Press, WA1UDH, claimed USA-CA 1500 #756, 5-16-86, Mixed.

Yasu-Tada Ninomiya, JH8GWW, qualified for USA-CA 1500 #757, All SSB, 5-23-86.

William E. Willis, WA3SDU, claimed USA-CA 500 #2111 and USA-CA 1000 #930, All SSB, 5-30-86.

USA-CA 500 certificates went to:

Glen O. Lavin, N9BDM, #2105, 5-5-86, All 20 M, SSB, Mobile.

William E. McMichael, WB0ZSS, #2106, All CW, 5-8-86.



Lou Wenisch, W9ZD, All Counties #126, 4-19-75, addressing the County Hunters Forum at the Dayton Hamvention on mobile installation for amateur radio.

Oscar J. Reiner, WB6TJW, #2107, All SSB, 5-12-86.

Galen Graff, KB5FU, #2108, 5-15-86, Mixed.

Mike Downey, G4AHJ, #2109, 5-16-86, All SSB.

Wilfried Suchalla, Y37XJ (ex: DM3RDG, YXG, WMJ), #2110, 5-22-86, Mixed.

William E. Willis, WA3SDU, #2111, 5-30-86, All SSB.

Awards Available

Noorderkempen (N.O.K.) Award. (This is a new award from Belgium.) This award is issued for licensed amateurs and SWL's on VHF/UHF or HF bands. All contacts made (heard) after January 1, 1986 are valid.

VHF/UHF: No mode limitations. Contacts with repeaters are not valid. Belgium stations need 10 different contacts. Eu stations need 5 different contacts.

DX stations need one contact with stations out of the Locators: JO21IJ, IK, IL, JH, JI, JJ, JK, JL, KH, KI, LH, LI, LJ, MI, MJ, MK, ML, NH. SWL cards are also valid.

HF: No mode limitations. Belgium stations need 50 points. Eu stations need 40 points. DX stations need 30 points. Each contact (SWL card) with a station from the Sektion N.O.K. equals 10 points. Other Belgium stations (SWL's) equal 1 point. Members of N.O.K. as of 14 April, 1986: ON1ABB, AEK, LL, HM, BZD, BGT, BZY, BON; ON4AZD, ALA, ATL; ON5CA; ON6ZO; ON7WN, BC, IU, XB; ONL 2500, 3539, 3975, 2832.

Send GCR list and the fee of 150 Bfr or 5 IRC's or \$4 U.S. to: Verbist Cyriel, Helhoekweg 6, 2310 Rijkevorsel, Belgium.

NARS at 24 Award. From the Nigerian Amateur Radio Society, the aim of this award is to encourage more contact with Nigerian amateur radio stations, to increase the amateur radio activities in the Federal Republic of Nigeria, and to celebrate 25 years of NARS service in amateur radio.

DX stations need to work only 5 Nigerian ham stations during 1986 (0000 UTC 01 January to 2359 UTC 31 December 1986). Club stations count as two (2) contacts.

To obtain certificate send proof of contact plus \$5.00 US to: NARS at 25 Award, P.O. Box 2873, Lagos, Nigeria, West Africa.

Japan Century Cities. From the Japan Amateur Radio League, this award may be claimed for having contacted (heard) and received QSL cards from an amateur radio station located in each of at least 100 different cities of Japan. JCC-200, 300, 400, 500, and 600 will be issued as separate awards. A list of the QSL cards should be arranged in order of JCC reference number. Endorsements are avail-



The Japan Cities Award offered by the Japan Amateur Radio League.

able for CW, AM, SSB, FM, SSTV, RTTY, ATV, and FAX.

Each claim must be accompanied by a QSL card list furnished with the call signs of stations worked (heard), dates, bands, and modes of the contacts (receptions) meeting the requirements of the award.

Each list must be accompanied by a statement from the applicant's national society or from any two amateurs other than the applicant that the QSL cards of the contacts listed are in the possession of the applicant and that the items of the cards are correctly listed. If such a statement is not available, the applicant must submit all QSL cards concerned.

A fee of 8 IRC's will be charged per award. An additional 2 IRC's will be charged for air delivery regardless of the number of awards claimed. If QSL cards are submitted, sufficient funds for return postage will also be required.

Send application and fee to: Japan Amateur Radio League, Award Section, 1-14-2 Sugamo, Toshima, Tokyo 170, Japan.

The Budapest Award. Issued by the Radioamateur Society of Budapest, conditions are as follows. DX stations must obtain 25 different QSL's from HA, HG5 stations. European stations must obtain 75 different QSL's from HA, HG5 stations. VHF stations must obtain 50 different QSL's or 5000 kms summarized distance from HA, HG5 stations.

VHF/UHF contacts via satellites or EME QSO's count with 500 kms/QSO value.

Send log information accompanied by a statement from your national society or from any two amateurs other than the applicant that the QSL cards of the contacts/receptions listed are in the possession of the applicant and that the items of the cards are correctly listed.



The Budapest Award sponsored by the Radio Amateur League of Budapest.

Send application with a fee of 10 IRC's to: Award Manager, Verebes Janosne, HG5YR, P.O. Box 64, Budapest, Hungary H-1475.

Cuba DX Group Award. This award is sponsored by the Federacion de Radioaficionados de Cuba. Work four mem-

bers of Cuba DX Group, including foreign members. Valid contacts must be after September 1, 1980. Do not send QSL cards. Send certified list of the four contacts and the list will be checked there. Any mode or band may be used. If any country changes prefix, both old and new are valid.



The Federacion de Radioaficionados de Cuba is the sponsor of the Cuba Grupo DX Award.

The award is free of charge to members of the Cuba DX Group, radio clubs, or other amateur radio organizations. Others send list along with fee of 10 IRC's or \$2.00 to: Federacion de Radioaficionados de Cuba, F.R.C., P.O. Box 1, Habana 1, Cuba.

Of Special Interest To County Hunters

If you would like information about the County Hunters Nets and the Mobile Amateur Radio Awards Club (MARAC), send a large SASE to: MARAC Secretary, Bill Olsen, WB0UPU, 2221 Ogden Court, St. Paul, MN 55119.

The B & B Shop (1348 Pinewood Drive, Woodbury, MN 55125) has issued a new, updated *County Hunters Directory* containing addresses and old calls and USA-CA All Counties numbers of the active county hunters. Cost of the directory is \$7.00 for first-class mailing in the United States, and \$9.25 mailed airmail to DX stations.

The sixteenth edition of the *County Hunter Handbook* is also available from the B & B Shop. This book contains 100 pages of information about county hunting and is a valuable aid to county hunters.

Notes

David S. Short, W5PWG, All Counties #393, 8-7-82, sent in two QSL cards to claim contact with counties #3081 and #3082. Dave has worked ALL of the counties, including the deleted ones as well as the newest ones through Armadillo County!

Have a pleasant autumn.

73, Dorothy, WB9RCY

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



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Low cost VHF SWR/Wattmeter!

Read SWR (14 to 170 MHz) and forward/reflected power at 2 meters. Has 30 and 300 watts scales. Also read relative field strength. 4x2x3 in. **MFJ-812 \$29.95**



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



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\$19.95 NEW

Switch to 24 hour UTC or 12 hour format! Battery backup maintains time during power outage. ID timer alerts every 9 minutes after reset. Red LED .6 inch digits. Synchronizable with WWV. Alarm with snooze function. Minute set, hour set switches. Time set switch prevents mis-setting. Power out, alarm on indicators. Gray and black cabinet. 5x2x3 inches. 110 VAC, 60 Hz.



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

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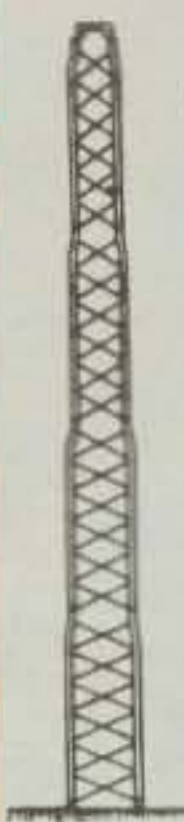


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Model	Height	Load	Sale Price
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HG52SS	52 ft	9 sq ft	\$CALL
HG54HD	54 ft	16 sq ft	\$CALL
HG70HD	70 ft	16 sq ft	\$CALL

Masts—Thrust Bearings—Other Accessories Available—Call! Prices Shown Are Your Total Delivered Price in Continental U.S.A.!



ROHN Self Supporting Towers On SALE! FREIGHT PREPAID

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

Model	Height	Ant Load*	Weight	Delivered Price*
HBX40	40 ft	10 sq ft	164	\$329
HBX48	48 ft	10 sq ft	303	\$429
HBX56	56 ft	10 sq ft	385	\$499
HDBX40	40 ft	18 sq ft	281	\$399
HDBX48	48 ft	18 sq ft	363	\$489

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

ROHN Guyed Tower Packages

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

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

Model	25G	Model 45G	Model 55G
50'	\$ 579	1079	1439
60'	639	1209	1609
70'	689	1329	1759
80'	849	1479	1929
90'	919	1749	2089
100'	989	1899	2259
110'	1189	2019	2639
120'	1259	2179	2819



These rugged crankup towers and masts now available from Texas Towers! Check these features:
✓ All steel construction
✓ Hot dipped galvanized
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Coax arms, Thrust bearings Masts, Motor drives, Remote controls, Hinged bases, Rotor bases, & Raising fixtures also in stock.

CALL FOR SALE PRICES!

Model	Min. Ht.	Max. Ht.	Ant. load*	Sale price
MA40 mast	21'	40'	10 sq ft	\$ 540
MA50 mast	22'	50'	10 sq ft	890
TX436	22'	38'	18 sq ft	829
TX455	22'	55'	18 sq ft	1249
TX472	23'	72'	18 sq ft	2059
HDX855	22'	55'	30 sq ft	1879
HDX572	23'	72'	30 sq ft	3229

Note - US Towers Shipped Freight Collect From Visalia, CA Factory
*Note-towers rated at 50 mph to EIA specifications

RG-213U

\$.29/ft \$279/1000 ft
Up to 600 ft via UPS
• RG-213/U—95% Bare Copper Shield
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• Our RG-213/U uses virgin materials.
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9086

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• Same specs as Belden 9913
• Lower loss than RG8U
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1/2" Alum. w/poly Jacket \$.79/ft
1/2" LDF4-50 Andrew Helix™ \$1.79/ft
3/4" LDF5-50 Andrew Helix™ \$3.99/ft
select connectors below.

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

HARDLINE & HELIX™ CONNECTORS

Cable Type	UHF FML	UHF MALE	FML N	MALE
1/2" Alum	\$19	\$19	\$19	\$25
1/2" Helix™	\$25	\$25	\$25	\$25
3/4" Helix™	\$49	\$49	\$49	\$49

COAX CONNECTORS

Amphenol Silver PL259	\$1.25
UG21B N Male	\$2.95
9086/9913 N Male Connector	\$4.95

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1/4 mile 18ga copper-clad steel wire	\$30
6 inch heavy-duty end insulator	\$3.00/ea.

Van Gorden

1:1 Balun	\$11	Center Insulator	\$6
Dipole Kits	D80 \$31.95/D40 \$28.95		
Short Dipole Kits	SD80 \$35.95/SD40 \$33.95		
All-band Dipole w/ladder line	\$29.95		
G5RV all band antenna	\$49.95		

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

CUSHCRAFT

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A4 4-el Tribander Beam	\$299
A743 & A744, 30/40 mtr KIT for the A3 & A4 ea	\$79
R3 20, 15, 10mtr Vertical	\$275
AV5 80-10mtr Vertical	\$109
D40 40mtr Dipole	\$159
40-2CD 2-el 40 mtr Beam	\$299
A50-5 5-el 6 mtr Beam	\$85
215 WB NEW 15-el 2 mtr Beam	\$85
230 WB NEW 30-el 2 mtr Beam	\$229
4218 XL 18-el 2 mtr Beam	\$105
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220B 17-el 220MHz Beam	\$99
424B 24-el 432MHz Beam	\$85
ARX2B 2 mtr Vertical	\$39

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TH3JRS 3-el Triband Beam	
205BAS 5-el 20-mtr Beam	
155BAS 5-el 15-mtr Beam	
105BAS 5-el 10-mtr Beam	
204BAS 4-el 20-mtr Beam	
64BS 4-el 6-mtr Beam	
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14 AVQ 40-10 mtr vertical	
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23BS 3-el 2 mtr Beam	
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28BS 8-el 2 mtr Beam	
214BS 14-el 2-mtr Beam	
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58DQ 80-10 mtr Trap Dipole	
BN86 80-10 mtr KW Balun W/Coax Seal	

HUSTLER

68TV 80-10 mtr Vert	\$129	58TV 80-10 mtr Vert	\$109
48TV 40-10 mtr Vert	\$89	G7-144 2-mtr Base	\$119
G6-144B 2-mtr Base	\$89		

Mobile Resonators	10m	15m	20m	40m	75m
400W Standard	\$16	\$17	\$19	\$22	\$26
2KW Super	\$20	\$22	\$25	\$29	\$39

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- Use with TV Rotor

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25G \$49.50	55G \$149.50

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	FK2558	58 ft	13.3 sq ft	\$949
	FK2568	68 ft	11.7 sq ft	\$999
	FK4544	44 ft	34.8 sq ft	\$1199
	FK4554	54 ft	29.1 sq ft	\$1299
	FK4564	64 ft	28.4 sq ft	\$1399

25G Foldover Double Guy Kit \$249
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*Above antenna loads for 70 MPH winds and Guys at Hinge & Apex.
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3/16 CCM Cable Clamp (3/16" or 5/32")	\$.45
1/4 CCM Cable Clamp (1/4" Cable)	\$.55
1/4 TH Thimble (fits all sizes)	\$.45
3/8EE (3/8" Eye & Eye Turnbuckle)	\$6.95
3/8 EJ (3/8" Eye & Jaw Turnbuckle)	\$7.95
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Length	5 FT	10 FT	15 FT	20 FT
12 in Wall	\$29	\$49	\$69	\$89
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- M-Series with Meter-A-Series Without Meter

Model	'Cont. Amps	ICS Amps	Price
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RS7A	5	7	49
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"HOW TO" FOR THE NEWCOMER TO AMATEUR RADIO

How To Get Started in Amateur Radio—Part I of III

This month's column updates and supersedes the July 1978 Novice column with the same title. Amateur radio continues to change, and it is time to cover this matter anew.

There is no age limit associated with holding any class of amateur radio operator's license. My youngest successful student was seven years old, whereas my oldest beginning amateur was 92. Amateur radio is an excellent hobby for women, men, girls, and boys. It is also a great equalizer, enabling all types of people to converse with each other directly. Amateur radio's ranks include athletes, entertainers, TV/movie people, politicians, royalty, writers, and other people from all walks of life living in all parts of the world. It is no longer necessary to be an American citizen to be a licensed amateur in this country.

The material one learns while preparing to pass license examinations helps one in other matters in addition to amateur radio. An obvious example of this is the knowledge of electrical and electronic fundamentals one acquires. Such knowledge can be put to use at home, school, and in work. The studies associated with qualifying for amateur radio licenses can initiate desires to learn more about subjects such as mathematics, physics, and science. Radio brings such subjects to life. When operating, it is natural to use an Atlas (or other maps) to determine the location of someone you just contacted, which improves one's knowledge of geography. When one's contacts spread to other countries, it is normal to read about them in an encyclopedia. Every time my wife (W6JEP, Marie) or I contact an amateur at an island or country that is not well known to us, we use the encyclopedia to learn about it. This practice has greatly increased our family's knowledge of people and places. International contacts may also increase one's interest in stamp collecting and foreign currencies. Amateur radio is worldwide, and it has something of interest for everyone.

It is hoped that readers who are licensed amateurs will bring this article to the attention of people who may be interested in becoming amateurs. Getting started in amateur radio is not as easy as it should be. We seldom communicate



This is Roman Garbacik, KA1MWL, who lives in Connecticut. He practiced code with his 10-year-old son (Roman) and passed the Novice exam in April of 1984. He credits Jim Guavino, W1ACI, and Joe Alfano, W1GUZ, with helping him get started in amateur radio. His station includes an ICOM 751 transceiver and a trap dipole antenna.

well with the general public. Your help is needed.

Licenses

There are five classes of amateur radio operator licenses; they are Novice, Technician, General, Advanced, and Extra class. The Novice licensee has the least amount of operating privileges. Privileges increase as one upgrades, and the Extra class licensee has all the operating privileges that are assigned to the amateur radio service. Even the lowest class license (Novice) provides the use of frequencies and power that can be used to contact amateurs around the world.

The Novice license requires the applicant to have knowledge of basic FCC regulations, a reasonably good understanding of electronic and communication fundamentals, and the ability to receive and transmit the International Morse Code at a slow rate (5 words per minute). The Novice license is available to anyone who does not presently hold any class of amateur radio operator license. The Novice license is available to people who previously held Novice through Extra class licenses.

All amateur licenses are now issued for the recently adopted ten-year term. One may only hold a single valid amateur

license; consequently, the lower grade license is superseded (cancelled) when one upgrades to a higher class license. All classes of license may be renewed for subsequent ten-year terms without proof of operating activity or re-examination. There is no "time-in-grade" requirement; one may upgrade as quickly (or slowly) as one wishes. I am a member of a club that regularly conducts Technician through Extra class license examinations. During the past year we twice had candidates go from unlicensed to Extra class licensees in one day. It can be done, but this is not the recommended system. It is easier (and probably better) to upgrade step-by-step from the Novice license to the Extra class license, if the top ticket is your goal. The General license is the basic goal of most aspiring and new amateurs. The General license provides about 85% of the Extra class (total) privileges. It is my observation that newcomers progress to the General license faster (and more enjoyably) by first operating as Novices.

Licensing, Written Examination Preparation

Several organizations publish licensing manuals that are useful to people preparing to pass FCC "written" examinations. Be careful to get a licensing manual that contains the latest questions and answers. The Novice material is updated in November of each year (per the present schedule), and all Novice tests given from the following January, to January of the next year, must use the new (current) material. It takes a couple of months to prepare, print, and distribute revised licensing manuals, so it is unlikely that updated manuals will be available before the new questions start being used in updated tests. This problem is not as bad as it may appear to be, since the updated test material is usually not extensive. One should be able to pass an updated test based on studying the previous year's material. Study manuals are usually available at one's local amateur radio store. Manuals are often advertised in the five major amateur radio publications; these are *CQ*, *Ham Radio*, *QST*, *Worldradio*, and *73*. A couple of these publications can be found for sale in magazine racks of local stores.

The July 1985 through January 1986 issues of *CQ* cover Novice licensing data related to last year's tests. If one is studying on one's own to become a Novice,

that multi-part article can provide a big assist.

Local libraries are sure to contain many books that one can use to prepare to pass "written" exams.

You will need a license manual for sure, and I strongly urge you to get a dictionary of electronic terms. The license manual will lead you through the basic material you must know to pass the FCC exam. If you make it a practice to look up unknown terms and abbreviations in a dictionary of electronic terms, you will quickly learn that even the most technical things are really quite easy to understand. It is helpful to obtain some backup radio-electronics textbook to help clear away any problems you might have in understanding any subject related to your licensing studies. I believe *The Radio Amateur's Handbook* by the ARRL is the best possible choice to be the third major source of information.

There are several correspondence courses available to help you get a satisfactory knowledge of electronic and radio fundamentals. There is even one correspondence course available on amateur radio.

Decide how you are going to prepare yourself to pass the Novice exam. You could attend a licensing course, complete a correspondence course, or study by yourself or with a friend. No matter how you are going to prepare yourself to take the test, set a firm date to take the exam and take it on that day.

Code

One must know the International Morse Code to get any class of amateur radio license. The Novice and Technician code test rate is just 5 words per minute, which amounts to reasonably fast code symbol recognition. The code proficiency required of General and Advanced class license applicants is 13 wpm, and the Extra class license applicants must pass a 20 wpm code test.

The international language on the air (not just in amateur radio) is English. Consequently, the Morse code which matches the English-language alphabet is called the International Morse Code. There is no special magic which enables foreign amateurs to understand what they copy in the International Morse Code. If they did not understand English, it would do them little good to copy English-language International Morse Code transmissions. There are several other Morse code systems that match other alphabets such as Turkish, Russian, Hebrew and Japanese. It is legal to use such known Morse codes on the amateur radio bands as long as all operators involved in the contact agree to their use and all identifications are made in the International Morse Code.

Code remains extremely popular with thousands of active amateurs, and this

popularity is not easily understood by outsiders. Code still provides the most effective long-distance communication capability. Simply stated, the code emission is packed into a very narrow frequency spectrum. This concentration of signal output energy provides maximum intelligibility, even under the worst conditions. Another factor in favor of code operation is that the receivers and transmitters can be simpler and less expensive than what is required for voice, television, radio-teletype, or other more sophisticated methods of communication. In addition to the long-range (DX) low-power superiority of code, proficient operators also enjoy its reduced probability of errors in names, callsigns, and locations. I do not personally know any proficient code operator who prefers voice operation most of the time he/she is on the air. Code provides great communication capability.

Prospective amateurs usually fear the code, but this is unnecessary. It is easy to master the code if a realistic practice schedule is established and followed. There are magnetic tapes (cassette and reel), inked paper tapes, records, and books available to help you learn the code and to increase your receiving speed. Cassette tape recordings are presently the most popular code training aid. One should master the code to a receiving proficiency of about five words per minute (5 wpm) before starting to

practice sending. Except in the case of a physical handicap, the beginner's sending proficiency (speed) exceeds her/his receiving speed. Avoid any system involving sight, since code is a language of sound.

Do not buy a junk handkey since it can cause you to develop bad sending habits. Get a top-quality handkey with adjustable keying gap, adjustable return spring tension, smooth action at the pivot points (possibly using ball bearings), and large keying contacts which are perfectly aligned and are plated to minimize wear due to electrical arcing.

The second initial item you should purchase is a good set of communication headphones. Amateur communications are normally conducted within the relatively narrow frequency range of about 300 to 3000 Hertz. Do not get high-fidelity headphones with extremely wide frequency-range reproduction capability, since they are not as suitable as communication headphones. It is advisable to get a comfortable pair of headphones instead of a single earphone headset. You are strongly advised to use headphones at all times while practicing code and operating.

The code practice oscillator (CPO) does not have to be an expensive device. However, it should have adjustable volume, adjustable pitch, and a headset output jack which mutes any internal

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speaker. Code practice oscillators are now difficult to find in the stores, but they are easy to build. Also, Radio Shack and similar outlets usually have CPO kits for sale.

A good way to increase one's code proficiency, while also checking one's sending capability, is to record an article from a magazine or a newspaper. Before recording it, delete everything that cannot be included in the license exam, such as dollar signs, percentage signs, and asterisks. Replace such items with the work signs you must know, which are \overline{AR} (end of message), \overline{BT} (paragraph/break),

and \overline{SK} (end of work). Record the cassette and put it away for 7 to 10 days. When you are going to play it and copy what you recorded, do not read the printed article before you copy what is on the tape. Copy exactly what is recorded and check it a second time through to verify that you copied it right. Then check what you copied against the original printed item. Any sending errors will be very apparent to you. It is advisable to make at least three recordings per week during the first six to eight weeks of code practice. Whether practicing sending or receiving, or both, it is best to limit each

code practice session to no more than 30 minutes. It is more effective to practice code when one is alert, such as before a meal and/or alcoholic drink.

The best way to increase code proficiency is to get active on the air. Once you have attained a code speed of 5 to 7 wpm, get your Novice license and operate. Simply stated, it is easier and a lot more fun to develop code proficiency while operating on the air than it is to practice code by any off-the-air method. Code proficiency increases rapidly if one operates regularly. In addition to increasing one's code proficiency, Novice band operation has side benefits that may not be apparent to a newcomer. Novice bands are primarily used by a good mixture of new and experienced operators, with the experienced operators usually trying to provide new operators with code practice at whatever speed is desired. Advice is freely exchanged on the Novice bands and feelings of friendship are more prevalent there than they are outside the Novice bands. The Novice experience is usually a highlight for every amateur who goes that route to the General and higher licenses. Novice operation also provides working familiarity with equipment, accessories, antennas, operating procedures, band conditions, Q-signals, and the Phillips code (phonetic abbreviations).

Radiotelegraphy remains the most efficient mode of radio communication. Develop good code proficiency and it will be an asset to you throughout your operating life.

This concludes the first part of this three-part article. The second part of the series covers clubs and courses, examinations, callsigns, privileges, and equipment and accessories.

Photographs Wanted

Photographs of Novices in their shacks provide introductions to a few of the newer amateurs. Photograph size is unimportant, but good definition, contrast, and subject matter are important. Color pictures can be used, but black-and-white photographs are preferred. Operating activities and achievements, plus a self-introduction, are needed with each picture. Send an SASE if a picture must be returned. A free one-year CQ subscription (or renewal) is awarded to the one amateur whose picture I select as the winner for the month. If you are a subscriber, please enclose the mailing label (or copy) from your latest CQ issue. One award is made each month, no matter how many photographs are printed. DX amateurs, who frequently work the American Novice bands, are also urged to submit photographs. I have not received a picture from a Novice in Hawaii or Vermont.

73, Bill, W6DDB

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Universal Shortwave DES M-800 Facsimile (FAX) Converter

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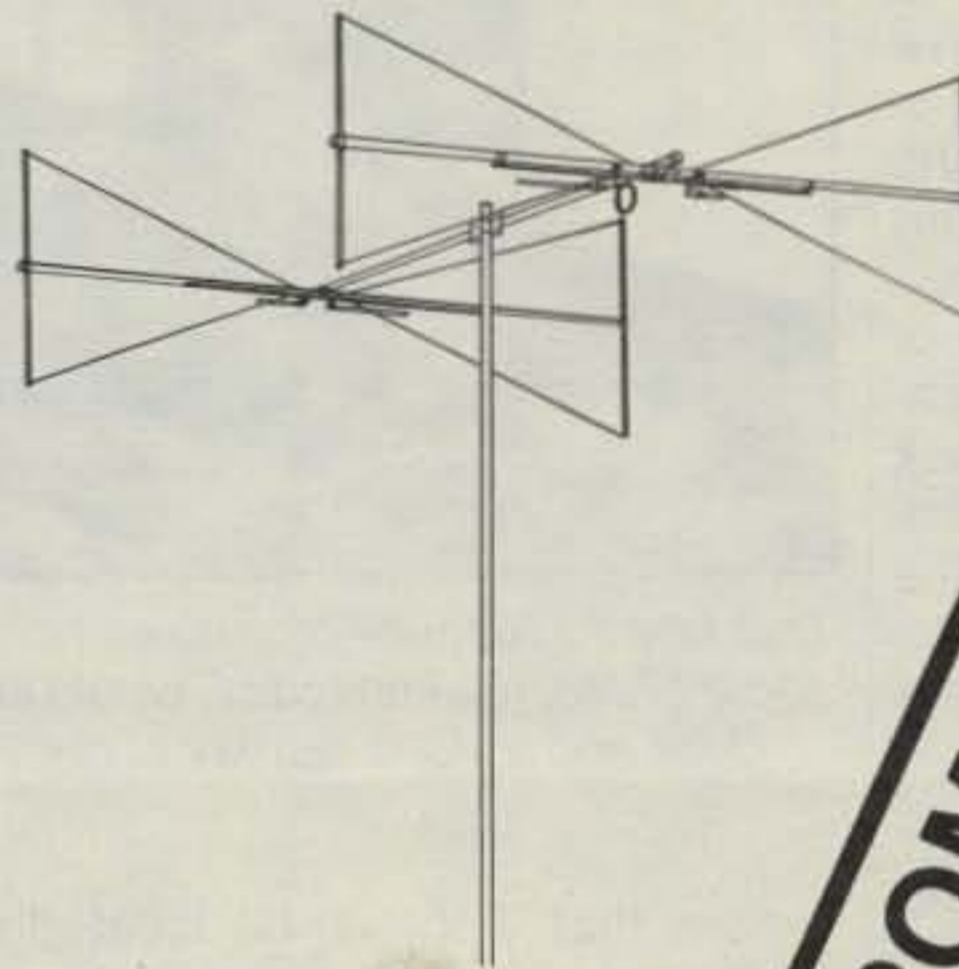
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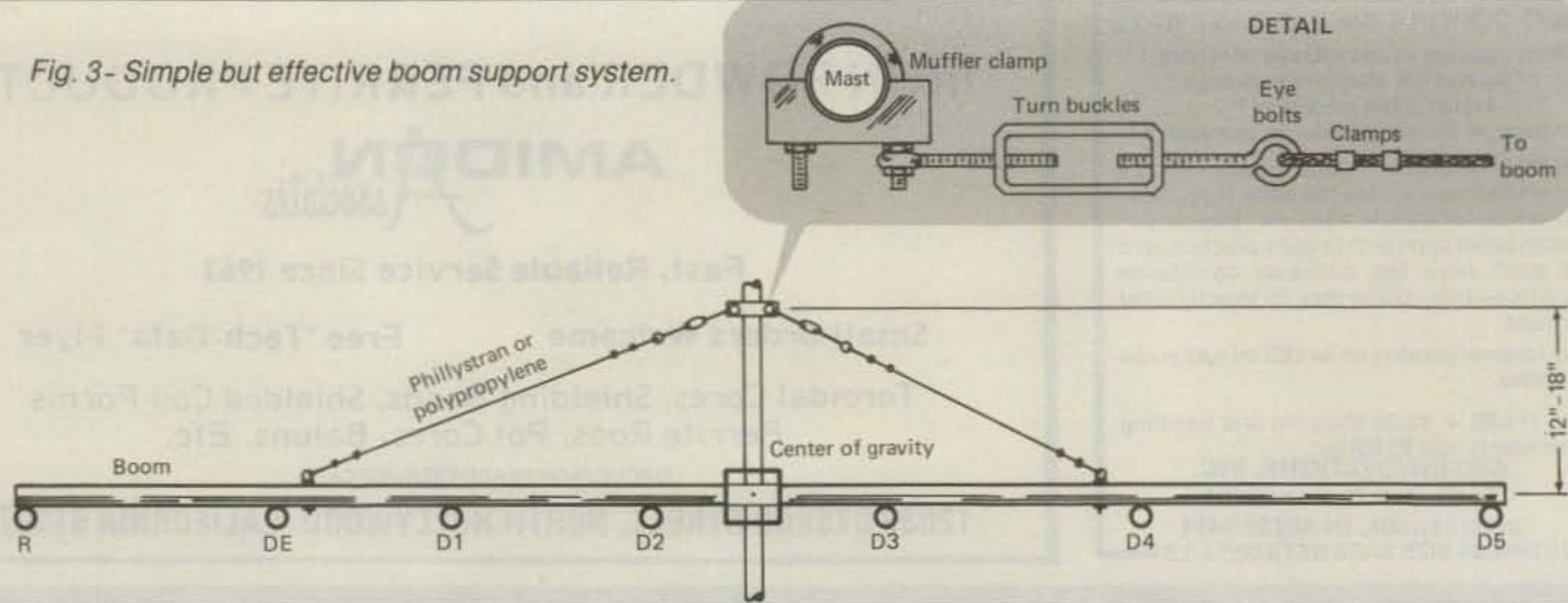
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Fig. 3- Simple but effective boom support system.



from Fitchburg, Massachusetts and had moved around a bit prior to settling in Cynthiana, Kentucky, had some loyalty to antennas made in his hometown by Hi-Par Manufacturing, who may or may not still be in business. When he installed his first tower at his new KY home (this would make a good song title), Ron used a Cushcraft A50-6—a very popular 6-element Yagi on a 20 foot boom.

N4KCM goes on to say he was happy with his 6 meter station until "when Rodney, WD8CTX, got on the air 85 miles away, it was bad news for me. The directivity and F/B (of the A50-6) made working around Rodney difficult." I understand entirely, since having a 6 meter beam 90 feet above a hilltop QTH can make a station 85 miles distant awfully strong, as Ron found for himself. Having stumbled across a series of articles by Stanley Jaffin, WB3BGU (*Ham Radio*, August, September, and October 1984) wherein the author discusses Yagi antenna design optimization by computer iteration, Ron decided to modify his A50-6 for improved performance.

Ron goes on to say, "One nice weekend, the A50-6 came down and the changes made were a result of WB3BGU's article. The original Cushcraft dimensions are included to give one a feel for the changes I made. I changed the boom length, element length, and inter-element spacing. The seventh element was added by the addition of 6 feet of boom from one of W1NEV's (Hi-Par, Fitchburg, MA) old antennas, along with one of his directors. I would have bought the parts from Cushcraft, but I have a bunch of old antennas lying around."

"The addition of this extra boom and element required some kind of boom support. When the 7th element is added, it really sags unless braced. I used the method shown, and in addition to being ultra cheap, it made the boom much stronger than the original design.

"A decision had to be made whether to configure the new antenna for maximum

gain or F/B. The F/B optimized antenna is (theoretically) 1/2 dB down in forward gain but approximately 40 dB better in F/B. This was the way I configured mine, but both dimensions are given. The nice thing about this change is that the antenna does not have to be retuned."

Results? To hear Ron tell it, terrific! "After the 'A50-7' was reinstalled, I could not believe the improvement! I have never made a modification that worked so well. I could now make scatter contacts much easier than I could with the A50-6. What is so surprising is the F/B and the sharpness of the main lobe. WD8CTX no longer bothers me when I swing (the antenna) 180 degrees away from him. I do not have the equipment to make field strength measurements for my 'A50-7' but by rotating the antenna I made the following observations:

Beam Heading (degrees from reference signal source)	S-Meter reading (S-9 reference signal)
0	S9
15	S8
30	S7
45	S2-3
180	S0

"Remember, these are relative S-unit readings from my uncalibrated meter. The figures do show that once the antenna is rotated approximately 35 degrees away from an S-9 signal, the signal strength drops very dramatically. The existence of smaller grating lobes seems small and inconsequential. The front-to-back performance seems to parallel the findings of Stan, WB3BGU."

As Ron says, the rework described here should enable owners of the A50-6 (or even the A50-5, a lightweight 12 foot long Yagi) to increase their station range for the smallest possible dollar expenditure. Shown in this column are the original A50-6 dimensions, plus gain and F/B-optimized dimensions provided by

N4KCM with thanks to WB3BGU's excellent published work. Also included is a photograph showing Ron's modified A50-6 with seven elements on a nearly 24 foot boom. Thanks, Ron, for an interesting story and a good modification.

Nobody Noticed

What's going on with you readers? Didn't anybody notice that the schematic diagram of the "Monimatch" SWR bridge published in this column (July issue) is completely wrong and won't work? I might as well correct the error. My original drawing of this bridge was correct, but as luck would have it, somewhere along the line someone decided to revise the circuit a bit so it couldn't possibly work. If you look closely, you'll see why. The coupling line intended for reflected power measurement isn't spaced correctly from the line section to which it is supposedly coupled, and the bypass capacitor is on the wrong side of the detector diode, thus shorting out all the RF before it reaches the diode. If you can get that circuit to work, you may as well begin marketing pet rocks. Unfortunately, *CQ*'s publication schedule is too tight to allow authors to review page proofs prior to release, so errors will creep in.

Letters

Dale Long, N3BNA, wrote about his VHF activities from the Lancaster, PA area and a new award sponsored by the Lancaster Radio Transmitting Society, W3AD. Dale uses an IC-471A driving a Mirage D1010 on 70 cm and related some information regarding the input circuit and ALC attack time of the Mirage product, but I'm unclear on this and can't print Dale's comments until I fully understand what he meant. The Mirage amps, to my knowledge, have no ALC of any kind. Are you out there, Dale?

N3BNA works with a small band of dedicated volunteers to keep the L.R.T.S. station, W3AD, active on the VHF/UHF

bands from rather rare grid FN10. They currently use NBS-style antennas (homebrewed, I assume, to NBS published design criteria) on the 50 through 432 MHz bands, and were planning to put FN10 on the air on 1296 MHz for the first time in years during the ARRL June contest.

The L.R.T.S. group is sponsoring a new award for working the "grids" of Pennsylvania, which number 14 total. The awards are based on single-band data only, with 8 grids being the required number on 50 MHz, 10 grids on 144, 6 grids on 220, 4 grids on 432, 2 on 902, and 1 on 1296 MHz. Each award is a certificate suitable for framing, and either QSL cards, photocopies of QSL cards, or a statement of qualification based on award requirements, signed by both the applicant and another licensed amateur witness, will qualify the applicant. Send this data, with a \$3.00 donation to cover the processing/handling costs, to: L.R.T.S., P.O. Box 34, Elm, PA 17521.

Marty Woll, N6VI (a call familiar to HF/DX contesters everywhere) wrote to compliment my "How to Work the VHF WPX Contest" article (June CQ) and to comment that telephone skeds (contest QSO's resulting from schedules set up over telephone lines during the contest period) are frowned on by the contesting community and are downright against the rules for ARRL contests. Marty's right, and I knew about the recent ARRL

CAC (Contest Advisory Committee) decision to outlaw "landline contesting," but I have a somewhat different attitude: I feel that real contesters don't cheat and real cheaters don't win contests. There may be a few examples of exceptions to this, but cheaters don't get away with it for very long and are so spurned by the contesting community when discovered that they tend to disappear for long periods between activities.

I don't have any objection to telephone skeds, for I don't see how they are any different from any other kind of sked (e.g., ones set up on another band during the contest, or ones established by mail prior to the contest's start). The sked offers both participants the real advantage of prior knowledge of the exchange data, thus making the contact much easier than would otherwise be the case. It's amazing how many meteor-scatter QSO's are "completed" within seconds during the VHF contests. Some of these are bona fide contest QSO's and the players were lucky enough to catch a "zinger" (long, strong meteor burst); others are really incomplete QSO's which are logged in quickly because the players already knew what information to log. The "Why waste time completing a meteor contact when I already know who the other guy is?" thinking disgusts me as it does any true contester, but as long as any kind of sked is allowed, this is going to

happen. Let's just hope that the contest winners really are the best operators using the best equipment at the best locations. They probably are.

The June issue of the "Midwest VHF Report," edited by Roger Cox, WB0DGF, was fascinating reading. VHF/UHFers in the midwest, and many who live elsewhere but would like to work midwest stations to improve their WAS, VUCC, or other award status, are missing a good bet if they don't subscribe to this excellent newsletter. The June issue included a lot of "who worked what" information, as well as a listing of 50 MHz beacons in North America. Knowing where these beacons are located, with respect to both geography and frequency, helps enormously in spotting band openings or enhanced propagation of any kind. Anyone wishing a copy of this beacon list is welcome to write to me. Include an SASE and I'll send you the list.

I received a very gracious letter from David Cruikshank, WB3EKN, of Neffsville, PA. David wrote, "I am writing to let you know that through your column you have won over another ham to VHF. I have always had a slight interest in the world above 50 MHz, but nothing ever moved me enough to do something about it. I was in a rut on 40 meters and 2 meter FM when I picked up a copy of CQ at the local newsstand..." David goes on to tell that the column inspired him to look all

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over for small, portable SSB gear for 6 and 2 meters, and his search finally ended with the purchase of second-hand ICOM IC-202 and IC-505 transceivers. WB3EKN comments, "Well, contrary to my 2 meter FM friends (opinions), there is activity on 2 and 6 meter (SSB). In fact, I can honestly say that I haven't had so much fun since my Novice days. I have worked K2TXB in southern NJ using just the built-in whip on 2, and have worked the Gulf coast of Florida on 6 while sitting on my back porch using battery power and a quicky dipole at the dizzying height of 4 feet."

I sure believe it, David! I previously related an experience I had using an IC-202 at 3 watts PEP, battery power and its quarter-wave whip from the Sky Line Inn atop Mt. Equinox, VT. I worked K4GL in SC on 144 MHz CW, establishing my personal record of 270 miles per watt using a zero-gain (indeed, likely a 3 dB loss) antenna.

Continues David, "If anyone in your reading audience is sitting on the fence like I was, my suggestion is that they go for it. VHF is fun. And as far as cost, I was able to get on two bands for less than the cost of a new HT (handie-talkie)." These are WB3EKN's comments, not mine. Good VHF QRP DXing, David!

Ever wonder what happens when two VHF/FM repeaters have an interference conflict? Here in the northern New Jersey/New York City area we are about to find out. The following comes from the Splitrock A.R.A. (Whippany, NJ) "Spectrum," the club's monthly newsletter.

"The Tri-State Amateur Repeater Council, Inc., at its regular meeting on Saturday, May 31, 1986, took action respecting the problem existing between the repeaters run by K2RF (146.985) and WA2EXP (147.000) as is detailed below. By way of formal complaint, K2RF brought an interference problem to the attention of TSARC. TSARC investigated the problem and determined that WA2EXP was at technical fault. Letters were sent to both of the repeater groups to the attention of their trustees, in which both groups were requested to send emissaries to sit with a committee from TSARC in order to amicably resolve the dispute. The K2RF group agreed to such an arrangement. Dave Minott, WA2EXP, sent a letter to TSARC in which he said, *inter alia*, "... if you think your report is credible, send it to the FCC..." It was apparent that WA2EXP had no intention to cooperate with TSARC. Subsequent to the complaint's having been filed by K2RF, another letter complaint was submitted by WA2TOW, whose repeater operates at 147.015. That group is also experiencing interference from WA2EXP.

"In addition to the interference problems, it was learned that WA2EXP moved its antenna and repeater location without having applied for re-coordination. That



The smiling faces of Dennis, WA4PFN, and Donna, N2FFY, in the 'PFN hamshack in Randolph, MA. The neat layout is just one of three stations set up in the WA4PFN household.

action in and of itself is ground for de-coordination, especially when such a move results in interference with coordinated repeaters, which was not experienced before.

"As a result of the unauthorized move by WA2EXP, the formal complaints lodged against it, and the letter from its trustee, the Tri-State Amateur Repeater Council, Inc., by a 2/3 majority vote, de-coordinated WA2EXP and will forward the entire package to the Federal Communications Commission in Washington, D.C."

I printed this release verbatim, although I would have like to edit it, to assure that the nature of its message came through unaltered. It is unfortunate that two groups of (hopefully) mature people with a common interest such as amateur radio cannot get together to resolve an interference dispute. I haven't any idea what, if any, action will be taken by the FCC in this matter. It will be interesting to see the outcome, which I shall be happy to report.

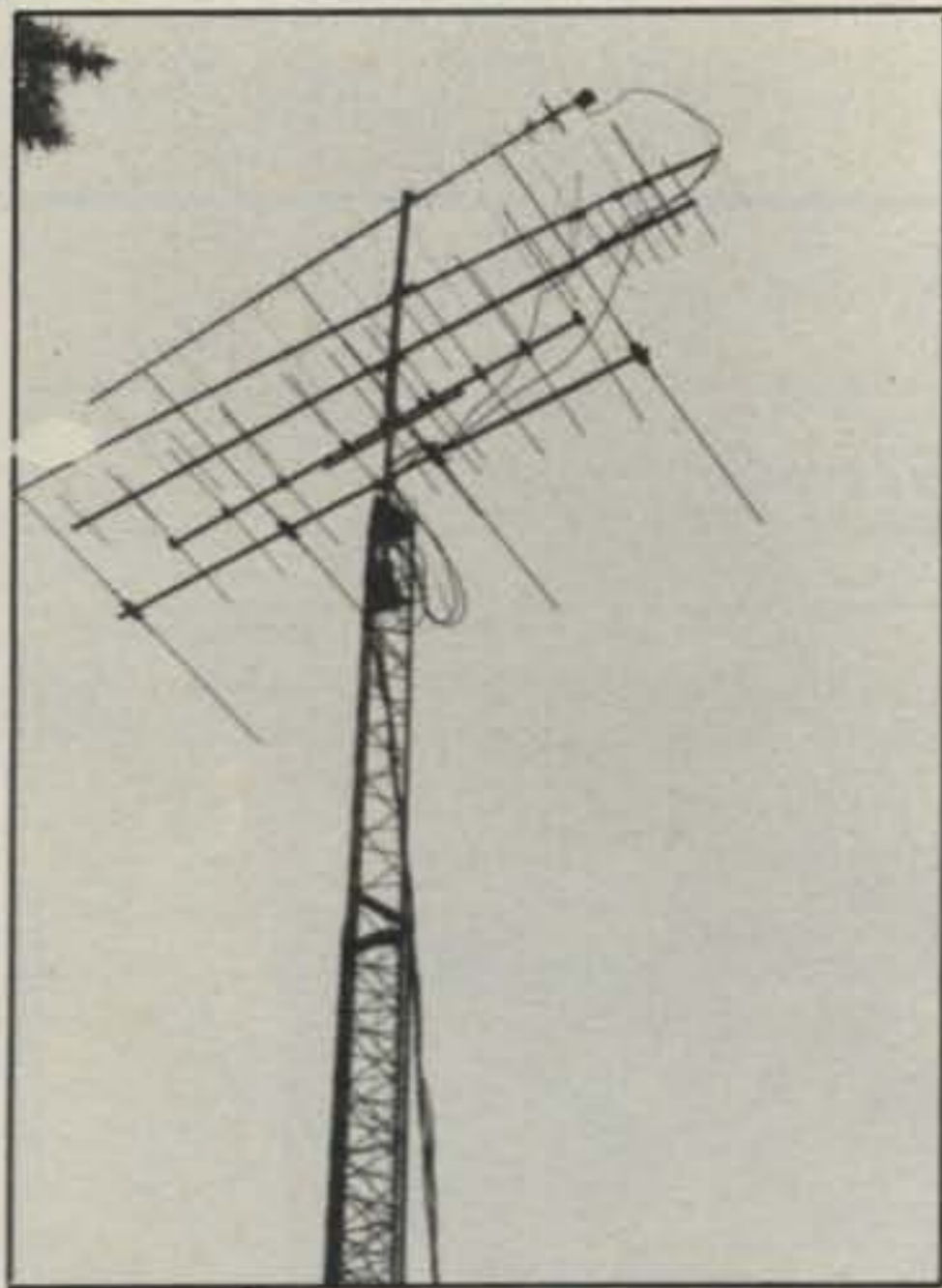
Being a resident of the area in which this particular dispute is ongoing, I am aware of the players involved. I made some off-the-air measurements of the WA2EXP repeater's spectral purity, deviation, center frequency accuracy, etc., but was not called upon for comment. In my own judgment, the interfering repeater has a minor technical problem which is easily solvable by skilled engineering personnel; it appears as though their transmitter doesn't roll off higher modulating frequencies, allowing considerable power to be generated in high-order sidebands and creating a high mod-

ulation index. If it were my own repeater, I'd add some low-pass filtering in the transmitter's modulator to shape the transmitted signal differently. One needn't be a rocket scientist to figure out such things, but when personalities enter the arena of conflict, not much productive work results.

Personal Look: Dennis Tallyn, WA4PFN

I first met Dennis on the air when he was living in New Jersey, about five years ago. While his callsign hails from Ft. Lauderdale, Florida, Dennis had lived all over the east coast and spent some time in the midwest prior to relocating to the Boston area almost two years ago to take his current position with radio station WHTT (home of the hits, power 93 FM) there.

Dennis is an avid ham who has set up some elaborate home stations in recent years. While you can find him on 160 meters—and even 75 meter AM—during the winter months, his primary interest is VHF, and he's very active on the 144, 220, and 432 MHz bands, taking occasional excursions to 50 MHz as well. So, when Dennis and his lady friend Donna—who is also licensed, N2FFY—moved to Randolph, MA in the winter of 1984, they had to survive several months without a tower (a VHFer's nightmare). Finally, spring of 1985 arrived and up went the Hy-Gain HG52 crank-up, which, by the way, is climbed mostly by Donna! Since that time Dennis has been spending several hours a week chasing weak-signal DX on the VHF/UHF bands.



The VHF/UHF antenna farm at WA4PFN, Randolph, MA. Note the coaxial lines dressed along the rear (reflector) ends of the upper antennas. This is to prevent field distortion of the circularly polarized Yagis for 144 and 432 MHz.

The WA4PFN home station is spread over three operating surfaces in two rooms, but is mostly contained in the multi-purpose "shack" containing a legal-limit HF station (two Collins "S"-lines, IC-720 and IC-751 driving Alpha 78 amplifiers) and four-band VHF station consisting of two IC-730's driving Microwave Modules transverters and Mirage solid-state amplifiers for 144, 220, and 432 MHz, plus a Yaesu FT-620B and solid-state amp for 50 MHz. Dennis was planning to replace the FT-620B with something a bit more modern, possibly an IC-551, by the time this reaches print.

The "nostalgia" station is across the room from the main operating console at WA4PFN and contains golden oldies like Johnson Rangers, a Johnson Valiant, National NC300 and NC303, Hallicrafters HT37, and other such goodies from days gone by. But high-tech creeps in almost anywhere, evidenced by the E.T.O./Alpha 78 amplifier wired in amongst the 30-year old gear.

The rest of the WA4PFN household is much like a radio museum, with odd bits and pieces of radio equipment from the days of early wireless acting as a prop here or a table there. Much of this old gear works, as I found out when I switched on a Marconi receiver sitting atop a TV set in the living room. Since Dennis has always made his living in radio, I guess his fascination with its history isn't surprising.

While most of us keep a clock radio on the night table near our bedsides, Dennis has an IC-740 and miscellaneous short-wave receivers set up there! I guess he

likes to be awakened to the sounds of 20 meter DX. You just can't escape the "ears of Boston," WA4PFN.

Skyhooks at WA4PFN included (at the time of my visit in May) a 4-element Hy-Gain Yagi for 50 MHz, a 14-element KLM for 220 MHz, 22-element circularly-polarized KLM Yagi for 144 MHz, and 40-element circularly-polarized KLM Yagi for 432 MHz, installed in that order going up the mast from the 52 foot crank-up tower. Nestled between the 6 meter and 135 cm Yagis is a 10-element horizontal Yagi for the FM broadcast band, where Dennis does some BCB DXing. Dennis intended to replace the 4-element 6 meter beam with something a bit bigger. I wonder if Donna climbed up there yet to do this work?

Dennis is an active ATV enthusiast and uses PC Electronics' 10 watt 439 MHz transceiver driving a 2C39 50 watt power amplifier on that band segment. The KLM circularly-polarized Yagi system suits both weak-signal and ATV use and is quite effective. He keeps a tripod-mounted color TV camera, VCR, and color monitor handy in the shack for impromptu TV QSO's.

Donna met Dennis in New Jersey, her home state, while she was a contestant in a beauty pageant and he was working for WNBC-AM in New York. How Dennis managed to convince the aspiring model to become a licensed amateur is anybody's guess, but Donna passed her

Technician class exam at a V.E. examination point in NJ and became N2FFY, as in "Never 2 Far From You." Donna doesn't spend much time on the air from the home station (maybe because she'd have to fight Dennis for the rig, and he'd win), but she is active from her car on the local repeaters. And she does climb towers. Attendees of the Dayton Hamvention as well as many of the smaller, local northeastern flea markets have probably noticed N2FFY strolling about (Donna doesn't look much like the typical ham radio operator) accompanying WA4PFN on his rare-equipment searches.

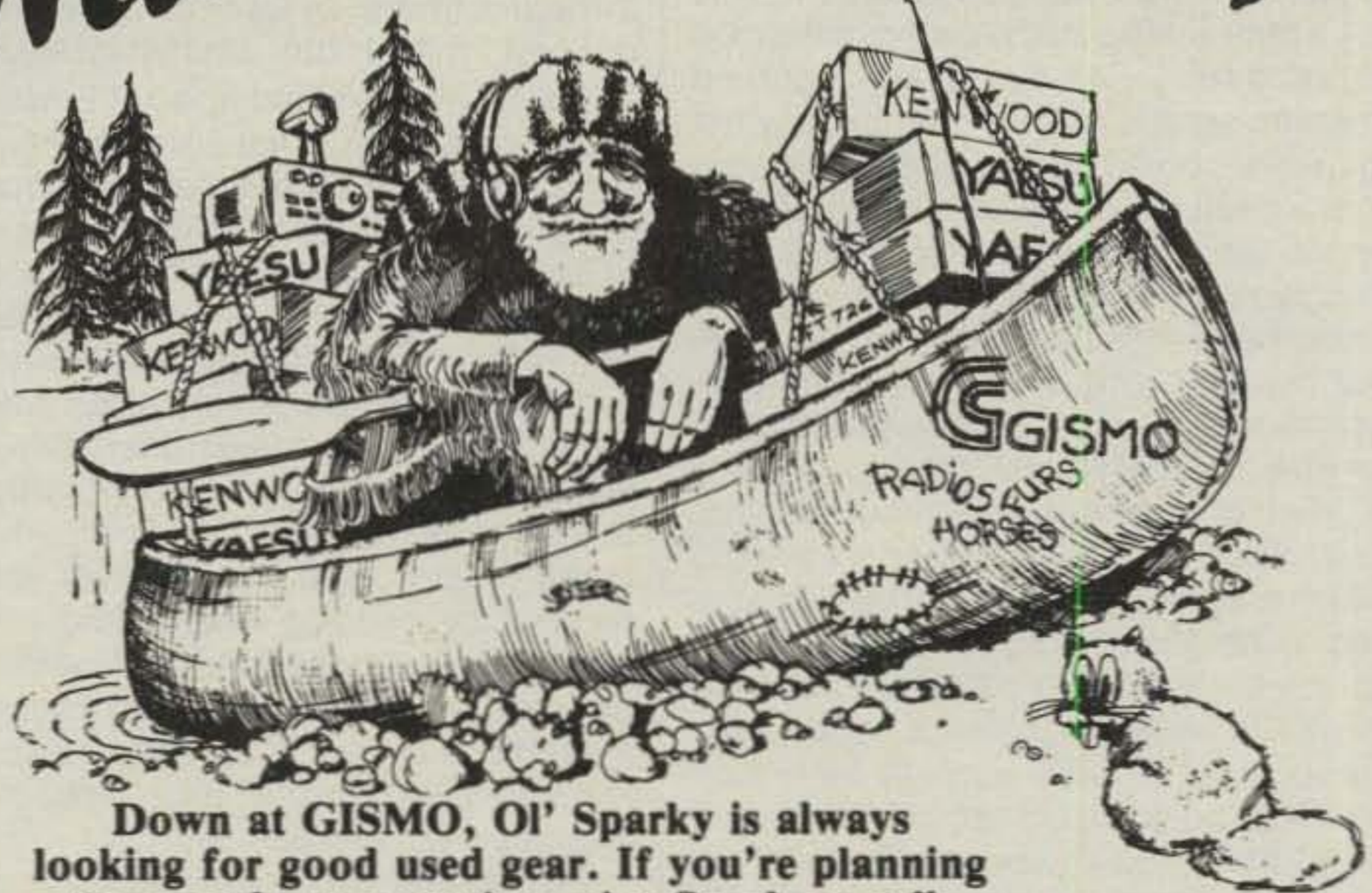
Now when you hear these folks on the air, you'll know what they look like. Dennis is active in almost all the VHF/UHF contests from his FN42 QTH and welcomes contest skeds.

Where's The Review?

Still in the works, that's where. I had intended to review the Alinco ALR-206T 146 MHz mobile transceiver this month, but my lab work was delayed due to a holiday shutdown, and we ran out of space, anyway. This is a hearty little rig, and we should have the review ready next month. Also in process is a review of the Henry 2004A kilowatt amplifier for 70 cm, and a picture story about a very unique VHF antenna system being assembled in New Jersey. Keep reading, and keep writing!

73, Steve WB2WIK

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A LOOK AT THE WORLD AROUND US

Classic Amateur Gear Revisited

As discussed in last month's World of Ideas column, there's a rapidly increasing interest in older style gear among today's amateurs. This situation may be due to newcomers' appreciation for the simpler lifestyles of yesteryear, the lower cost of that era's gear in today's world, or it may be related to older amateurs (our majority) being nostalgia-struck with desires of recreating their favorite old-time or first rig(s). Whatever the case, the sheer pleasures in recapping times of old—of finding and refurbishing classic gear of yesteryear, of finally acquiring and enjoying that long-sought "dream rig"—can provide fascination beyond comparison. Imagine, for example, the relatively inexpensive thrill of operating a warm and soft glowing vacuum-tube rig complete with classic antenna and chrome-plated bug on our low-power and CW-only 30 meter band. The exhilaration of DXing with sheer operating skills is renewed in top style! Modern solid state transceivers with their multitude of operating "frills" and high-power linear amplifiers make modern DXing great, true, but there's still no comparison to enjoying those "basic rigs" of yesteryear!

Visualizing the previously described pleasures and rewards, let's begin our jaunt down memory lane with some nostalgic views of the not-so-vague past. This was a time when softly glowing half-moon dials and red jeweled pilot lamps graced amateur setups across the land, when rigs were cooled by the breeze blowing from a nearby open window and wire antennas were silhouetted against a pale orange moon, when DX filled the night air, operating enthusiasm reigned supreme, and homebrewing was a daily pursuit. Typical views of the time also included the green dial of Heathkit's popular VF-1 VFO (which soon became integrated into their DX-100), Hallicrafter's SX-100 (which also included a dim green light behind its notch control), vertical designed Harvey Wells transmitters, 6L6 transmitters built on wood chassis, and those ever-popular BC-455 surplus receivers. K6ATX's books *SOS at Midnight*, *CQ Ghost Ship*, and *DX Brings Danger* had just been printed; Arthur Godfrey, K4LIB, headed an expedition to Equatorial Af-

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Fig. 1 - Hallicrafters' S-38 was a classic "bare bones" receiver that introduced many of today's amateurs to the exciting world of shortwaves. A warm and soft glowing gem, to say the least.

rica; and World Radio labs (later to become Galaxy) announced their 300 watt AM/CW "Globe King" transmitter. The merits of G4ZU-type beams and "Bird-cage" antennas versus Hornet tribanders was a popular argument of the time, and Novices enjoyed phone privileges on 2 meters (many of us thus experienced our first "mike fright" on that band).

Those were indeed special times, but they also had their share of pitfalls (which probably made us devoted amateurs in the process). Many of us were struggling to get a respectable signal on the air during that time, and 200 watt transmitters or any receiver with decent selectivity was far beyond any grade-school kid's allowance. A breadboard 6L6 transmitter, converted BC-455 receiver, and longwire antenna were the best this southern boy could muster, and the receiver was financed by building and selling crystal radios to other school kids. Since my parents had a nasty habit of "confiscating" my radio gear over low grades, I discreetly used the family's large floor-model radio as a DC and 6L6 source.

Six months after receiving my license, I could build a rig in record time (it became "duck soup" making those "Chinese" copies. A quick visit to the drug store, hardware store, and radio store netted a cigar box (chassis), wire (for coils), and nails (for a "basket-weave" form), a few odd parts, and a broken enve-

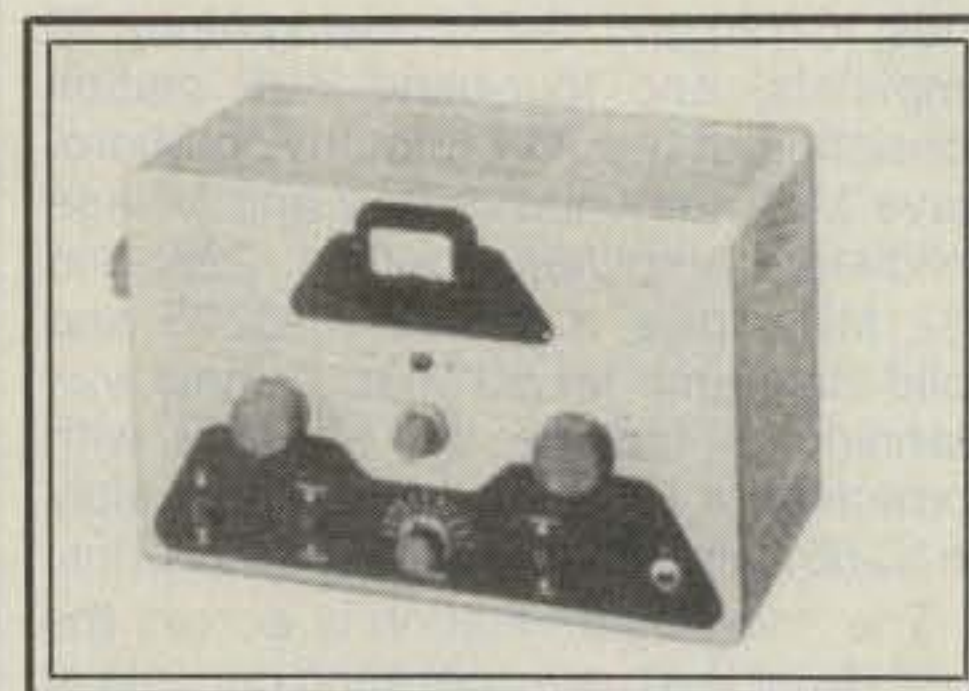


Fig. 2 - Heathkit's first of a 1950s series of HF transmitters was the popular DX-20. This "upgraded version" of the AT-1 ran 50 watts on CW only. Tube lineup? A 6DQ6 driven by a 6CL6. Beautiful!

lope tube. Wires were soldered to that tube's base and used as a power harness for the rig, while the floor-model radio's 6L6 was moved into the "cigar box transmitter" for some serious operating. Our Army surplus store soon began selling me BC-455s for \$3.00 out of sympathy. After each operating stint the floor-model radio was restored to "normal condition" (ere a vital power supply and 6L6 source would become history). Funny, Dad never understood why I always diagnosed the floor radio correctly as needing 6L6s and 5Y3s (... "and this time, get the BIG ones, okay?"). Some amateurs were



Fig. 3- Another economy champ from Hallicrafters during the 1950s was the S-53. Noteworthy points of this receiver were its ability to actually copy 15 and 10 meter signals, and dial-cord restringing problems that could drive one right up the wall.

more fortunate, and at least one piece of commercial gear or kit unit graced their shack. The most common names were Hallicrafters and Heathkit. Ah, yes, big time ham radio made life worth living!

Figure 1

Could there be a "three decade" amateur today who doesn't remember the amber dial, warm cabinet, and barn-door wide selectivity of Hallicrafter's classic S-38 receiver? This old-time favorite had two things going for it: economical cost and "storebought quality" . . . a significant factor compared to homebrewed or military-surplus receivers with "hand capacity tuning" or single-band coverage. The S-38 introduced many newcomers to the exciting world of shortwaves, and its B,C,D, and E versions also enjoyed popularity among budget-conscious amateurs for many years. Amateur setups "built around" the S-38 typically included a low-power homebrewed or kit transmitter such as Heathkit's "bare bones" AT-1.

Figure 2

One of the more popular kits of the 1950s was Heath's DX-20, a 50 watt input, crystal-controlled, 80 through 10 meter, CW-only transmitter. This unit exposed many amateurs to the untamed action of undamped meters, as its panel meter would bang wildly from side to side during CW keying. All aspects considered, however, the DX-20 (and/or its successors, the DX-35 or DX-40) were fun rigs capable of working their fair share of DX. These units still appear in fleamarkets of hamfests, and they're an ideal way to rediscover enjoyable CW operation on today's bands—especially 30 meters. The unit's wide-range tank circuits should cover 30 meters without difficulty,

and a 60 pFd variable capacitor placed in series with a 10.104 MHz crystal should provide "VXO coverage" of 10.101 to 10.107 MHz, the "main activity" portion of that band.

Figure 3

Successful HF operations during the mid-1950s called for a receiver with reasonable selectivity and variable sensitivity. Hallicrafters' economical answer to those needs was the S-53—a broadcast band through 6 meter receiver with fairly good bandspread and its own RF gain control. Imagine the "professional performance": you didn't need to "feather tune" signals and a quick twist of the RF gain pot let you monitor transmitted CW without screaming receiver overload. That was big-time operation! Unlike the AC/DC S-38, the S-53A included its own power transformer. Many amateurs thus added Heathkit's Q-multiplier to the S-53 for serious DXing. Twenty, 15, and 10 meters boasted some impressive DX openings during that time, and quite a number of today's amateurs worked their first VKs or JAs while using a DX-35 and S-53. Wouldn't one of these gems (refurbished, of course) be fun to use on today's low-power/CW-only 30 meter band?

Figure 4

Medium-power transmitters of the 1950s required some muscle to handle, and a prime example of that situation was Heathkit's legendary DX-100. This hefty unit boasted 125 watts *output* on both CW and AM, plus it featured a built-in VFO and AC supply. Tipping the scales at 120 pounds, the rig obviously was not UPS shippable, but no problem. There also wasn't a UPS operation during that era! Rigs of this nature were true "battle



Fig. 4- Heathkit's "Battle Cruiser" of the HF bands: The legendary DX-100. This unit was a DXer's dream come true, and its 125 watts output could literally "work the world"!

cruisers." They could be run "flat out" or "key down" as long as one desired without "meltdown." DX-100s are still a blast to operate on today's CW bands, and they're guaranteed to rekindle the true meaning of "big rigs."

Figure 5

The name Hammarlund requires miniscule introduction to old-time amateurs. Their "SP" series of receivers was a communications standard which paved the way and guaranteed the immediate success of their ham-band-only and rea-

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Fig. 5- Hammarlund's widely acclaimed HQ-110 receiver was a true gem, and it can still hold its own on today's CW bands. Unit in photo was spotted at a hamfest flea-market, low-priced and begging for a nice home.

sonably priced HQ-110 receiver. The unit appeared in amateur setups from coast to coast, and with good reason. It boasted an internal Q-multiplier, noise limiter, 6 meter coverage, and the largest send/receive switch in existence (large tuning-size knob under right dial). We recently spotted one of these gems in good condition at a hamfest sale for \$50, and couldn't resist snapping its picture for this month's column. Isn't that gem begging for a warm home and a chance for returning to the airwaves? Nostalgic happiness couldn't be less expensive, especially when teamed up with a good open-air CW transmitter and phased dipole antenna system!

Figure 6

As the famed DXpeditions of Gus, W4BPD, reached their peak and SSB use began overpowering AM, R.L. Drake Company began a long-term involvement in the amateur radio scene. Their first receiver, the model 1-A, was a radical departure from traditional cabinet styles, but its oscilloscope-type appearance was quickly overshadowed by its outstanding performance. Triple conversion was used in the 1-A's eleven-tube design, with its third IF fully tunable through both sidebands. This unique form of passband tuning won the hearts of SSB operators nationwide. Indeed, an AM detector or wideband filter wasn't even included in the ham-band-only 1-A. Today, a properly refurbished and retubed 1-A continues to prove its merit as an impressive receiver.

They may be a mite difficult to find in "used gear" circles, but they're worth the hunt.

Figure 7

Not to be forgotten in our gusto romp through yesteryear are Gonset's well-known communicators, the Gooney Boxes. Possibly dubbed in honor of those



Fig. 6- R.L. Drake's classic 1-A receiver reflected a radical change in cabinet designs, but its performance quickly became an accepted "standard of reference." S-meter is recessed behind main dial, speaker is mounted on cabinet's rear wall, and push/pull, on/off switch is on RF gain control.

awkward birds of the South Pacific that needed "runway" to begin flight and continuously "crash landed," these compact transceivers operated 6 meter AM in high style. There were four versions of Gooney Boxes: two vertical-styled units (with green tuning eyes), the G-50 shown here, and a smaller cabineted unit for cramped spaces. The classic G-50 had

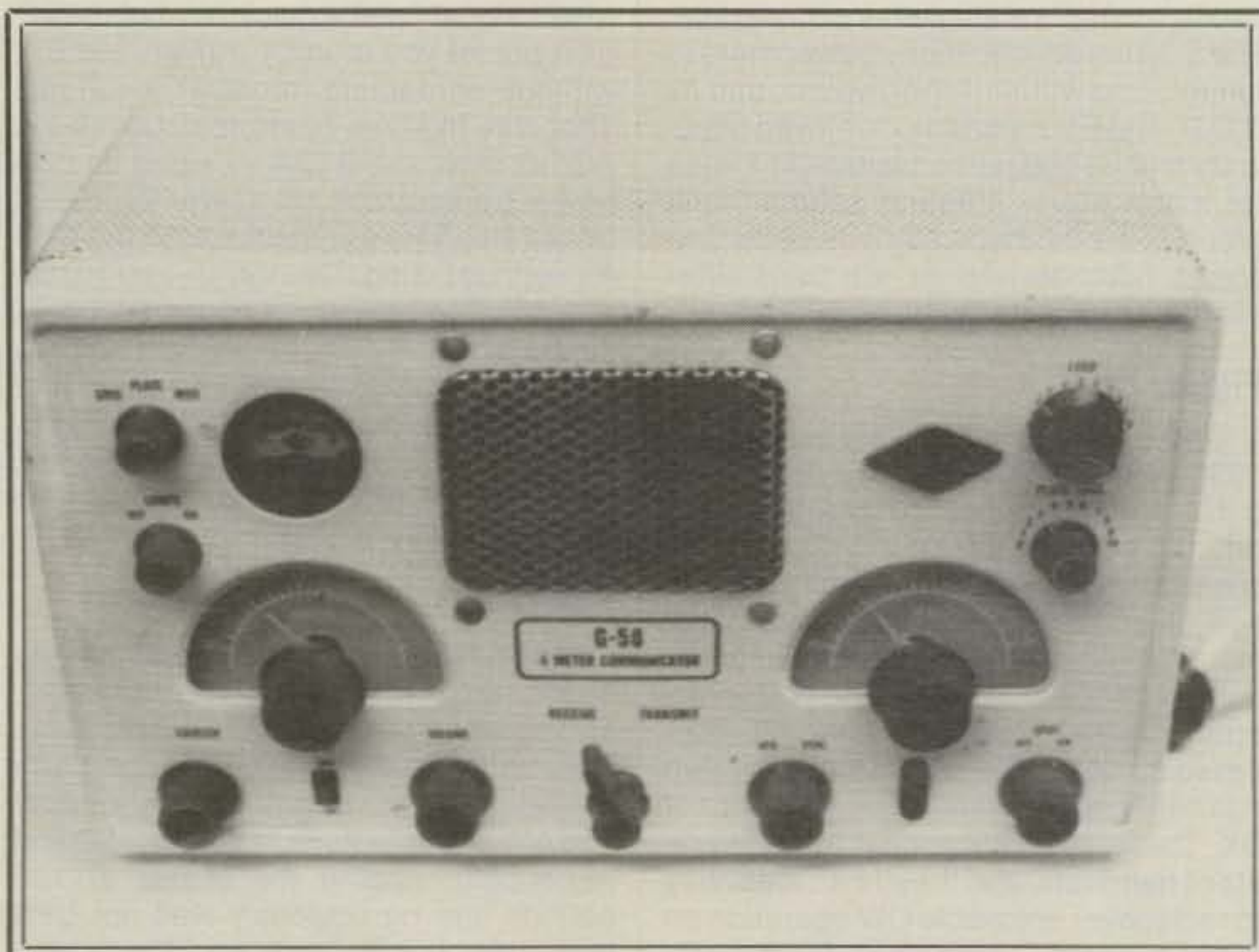


Fig. 7- Gonset's classic G-50 6 meter AM trans-receiver was a complete station in one box. Left dial controls receiver tuning. Right dial controls transmitter's VFO.

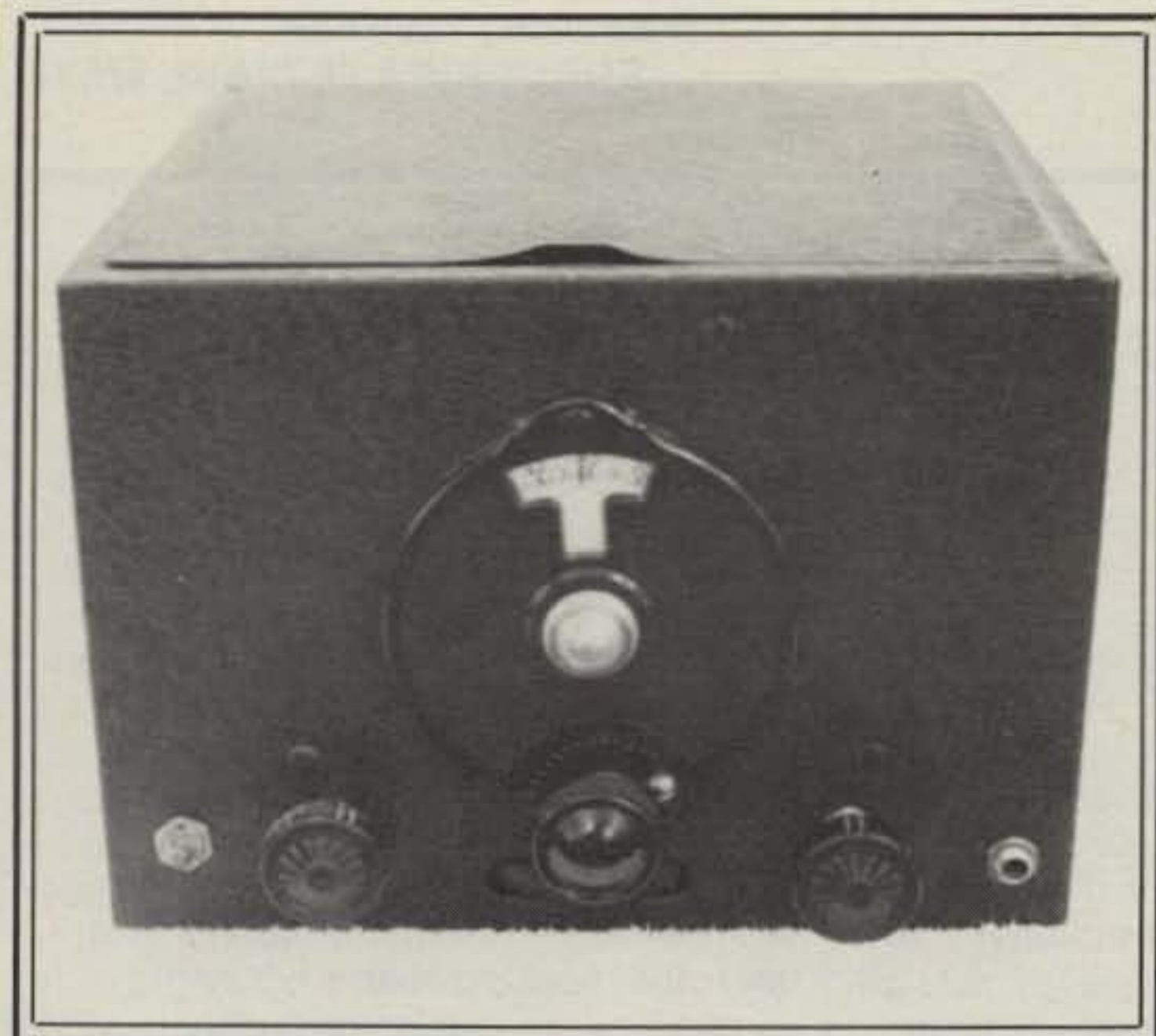


Fig. 8- National's ever-classic SW-3 "Thrill Box" receiver. Knurled knob below dial is RF gain. Ball-bearing-looking lever controls tuning rate. Three-tube regenerative design, and a real DX-getter!

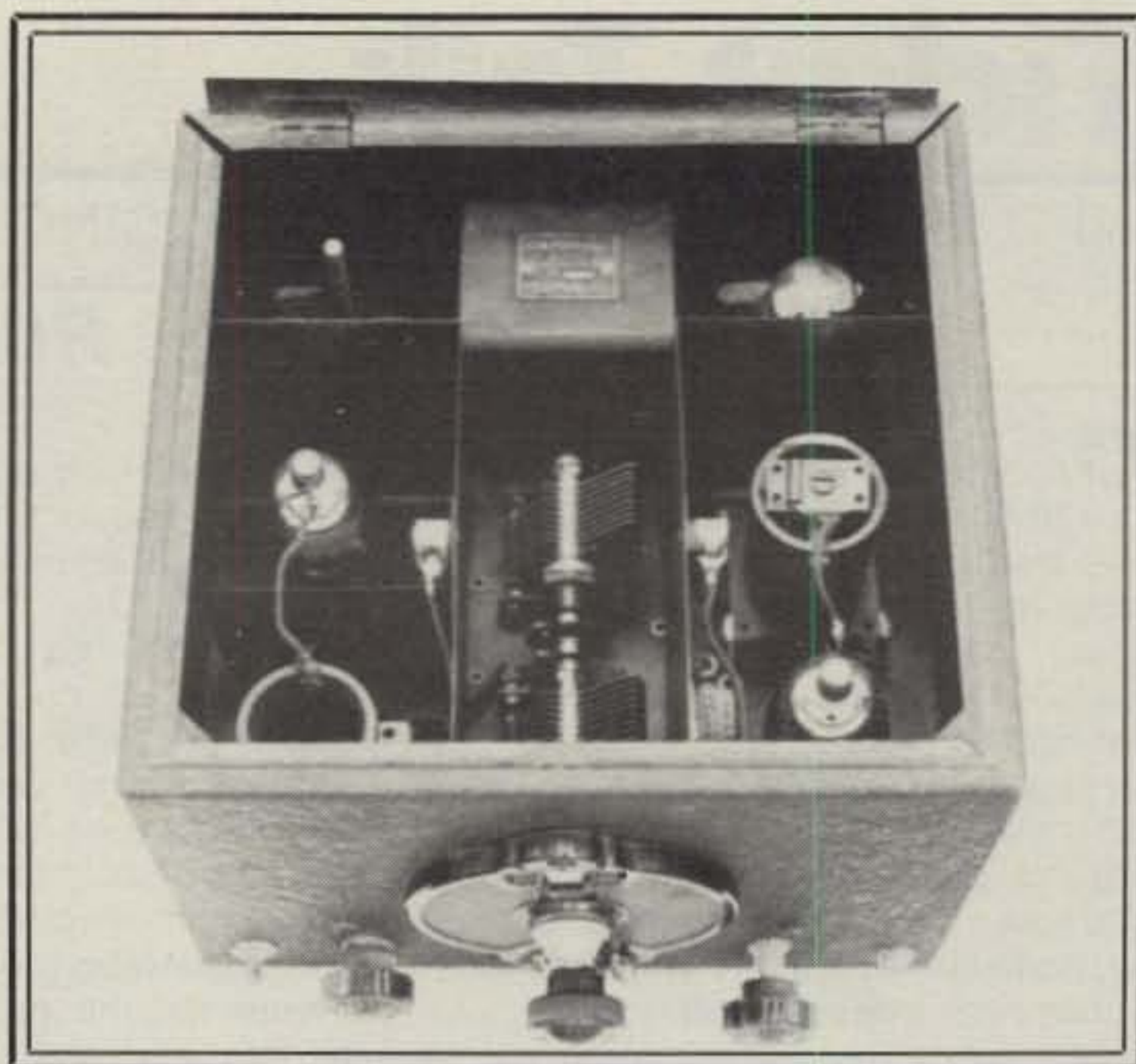


Fig. 9- Inside view of the classic SW-3 reveals perfect shielding of various stages and plug-in coils. Left back shaft selects AC/DC operation. Trimmer on right coil sets bandspread.

some noteworthy features. Its well-planned design included an internal AC supply and speaker, and its dual half-moon dials were a rather traditional style of the times. The G-50 ran almost 50 watts output on AM only. However, several Gonset owners added CW keying to the transmitter and used the little rig's "spot" function as an injected BFO for Morse operation. Needless to say, Gooey Boxes seemed to "fade into the woodwork" with the advent of SSB and FM activity on 6 meters.

Figures 8 and 9

Recognizing our genuine old timers,

let's now move from the "modern gear" views and review a *real* receiver of yesteryear: National's classic "Thrill Box," the SW-3. This three-tube regenerative beauty was popular during the 1930s and early 1940s; it included separate tubes for RF amplification, detection, and audio amplifications, plus an S-unit-calibrated RF gain control. The tuning rate was adjustable with a ball-bearing-looking front-panel lever. A wide variety of plug-in coils for general coverage of 9 to 3000 meter bands and bandspread coils for the 10 through 160 meter bands were available for the SW-3, allowing one to change bands in only a couple of minutes. What

an exciting era! Several tube line-ups were available for the SW-3, allowing AC, battery, or strictly portable use as desired. This little gem was ideal for rural amateurs, and there are rumors it was the first true mobile and/or Field Day receiver. What's your opinion?

Figure 10

So what kind of homebrew transmitter did an enthusiastic amateur of the late 1930s use with his trusty SW-3 receiver? A genuine TNT (Tuned plate, Not Tuned grid) with a number 10 tube, naturally! The TNT in this photo (built by your author four or five years ago) includes authentic capacitors, and shock absorbing tube socket. The transmitter includes a large copper tubing tank coil and covers the CW portion of 80 meters quite respectfully. I still enjoy putting this classic rig on the air occasionally, and those QSLs in the background were received after a few recent operating stints. The key's mainly cosmetic. I prefer a vintage bug.

That concludes our jaunt down memory lane for this time, but if your interest and words of encouragement warrant, we can go further. I must say, however, that preparing a pictorial of this type takes support. I'm not a one-person museum. Do you have some restored classic gear of interest, and would you shoot some good black-and-white pictures of it to share with others? If so, let us know! Everything from very early receivers and transmitters to "first SSB transceivers" (SBE-33, NCX-3, Galaxy III, etc.) is of interest. Let's keep those warm glows of our proud heritage alive and in the limelight for many generations henceforth!

73, Dave, K4TWJ



Fig. 10- Full classic setup featuring SW-3 and TNT transmitter. This 10 watt rig has worked over 10 countries on 80 meters since 1984.

INFO ON AMATEUR RADIO LICENSING

How FCC Rules Are Made

Changes are a part of every facet of life. Nothing stays the same. Progress, like evolution, marches on. Amateur radio is no different. Changes in technology, changes in amateur demographics (census), changes in equipment, changes in an existing condition, or maybe just a change in today's thinking that differs a little from yesterday can generate changes in the rules and regulations and how we as amateurs pursue our hobby. Sometimes changes are proposed to accomplish a desired end result.

Many of us are opposed to change. We know what the circumstances are now, but not what might happen if the change becomes reality. Being hesitant about change is also a fact of life. It is unfortunate, although understandable, that our thinking usually lags behind the times. Today's fantastic capability is tomorrow's out-of-date mode. It all happens very fast.

It seems that the rules affecting amateur radio are always changing. You can make a career out of reporting changes in government regulations. The *Federal Register*, the daily journal of governmental change, is tens of thousands of pages long every year! The government does a lot of rulemaking, seemingly in cycles. First it is regulation, then deregulation, and finally reregulation. Rules are relaxed, made stricter, initiated, eliminated. Many of you are confused as to how it is done and who makes the decisions. Actually, a lot of people and governmental bodies are involved.

The International Telecommunications Union

Since radio doesn't respect international boundaries, amateur radio is regulated not only by our own FCC (and §Part 97 of the Communications Act) but by agreement among most of the countries of the world. While national governments enact and enforce radio laws, this management must be performed within the framework of international agreements. Although interpretation is allowed up to a point, our government can't enact any rules which seriously conflict with these treaties. Thus, international agreement determines where our ham bands are located and what the basic requirements are for using them.

The worldwide body governing the

National Volunteer Examiner Coordinator, P.O. Box #10101, Dallas, TX 75207

electromagnetic spectrum is the *International Telecommunications Union*, a specialized agency of the United Nations. The ITU was formed in 1865 to facilitate telegraphic communication among 20 European countries. Handing telegrams to radio operators at national borders was not very efficient, but that is how it was done in the early days!

The two main functions of the ITU are the allocation of radio frequencies and the registration of frequency assignments for the purpose of eliminating harmful interference between stations in different countries. The first ITU frequency allocations were made in 1927, the same year that President Coolidge signed the Dill-White Radio Act.

The *Radio Act of 1927* created the five-member *Federal Radio Commission* with regulatory powers over radio, including the issuance of licenses and allocation of frequencies. The same act delegated radio station license examinations, inspections, and call sign issuance to the Department of Commerce. Telegraph and telephone operation came under the ICC, while telegraph rates were overseen by the Post Office Department.

In 1933 President Roosevelt appointed a committee to look into more efficient handling of radio regulation. He recommended to Congress that the Federal Communications Commission be created. Bills were introduced into Congress and S.3285 was passed on June 1, 1934. The Communications Act was signed by President Roosevelt on June 19, 1934. The Act coordinated all areas of telecommunications regulation into one agency. Although revised in 1952 and again in the early 1960s, the act is still with us even though originally it was intended as a *temporary* house-keeping measure.

The FCC

The Communications Act established an independent governmental agency, the *Federal Communications Commission* (FCC), on July 11, 1934 to regulate interstate and foreign wire and radio communications. The FCC is responsible only to Congress. Strangely, the Federal Communications Commission does not regulate radio operations of the federal government or the military. Another agency does that, but they coordinate their activities together.

The act requires the Commission to study new uses for radio and encourage

its development. To realize these objectives, the Commission has a policy of authorizing as many uses for radio as possible. The Amateur Radio Service is usually the training ground for any new technology. Amateurs have a history of being amazingly ingenious when it comes to implementing some new mode.

Operation of the FCC is conducted in accordance with the *Communications Act*, the *Administrative Procedures Act*, and other applicable acts of Congress. It is directed by five commissioners who are appointed by the President. These appointments must be approved by the Senate, and not more than three of the commissioners may be members of the same political party. Appointments are for five years. Until fairly recently there were seven commissioners appointed for seven years. The President designates one of the commissioners as chairman.

The FCC is organized into various bureaus and staff offices. Each bureau has sub-divisions and branch offices. The Amateur Radio Service falls under the *Private Radio Bureau's Personal Radio Branch* of the *Special Services Division*. The Commission has about 2,000 employees. About one-fourth of these are involved in field operations in various district offices located around the U.S.

Allocation of frequencies consists of dividing the spectrum into a number of segments, or frequency bands. Each band is reserved for a specific use or uses. The ITU allocation plan divides the world into three geographical regions. As a general rule, the FCC frequency allocations conform to those for Region 2.

Administrative Procedures Act

All federal administrative agencies are bound by the *Administrative Procedures Act*, which provides a series of rulemaking checks and balances. Enacted some 40 years ago, the Administrative Procedures Act seeks to bring the public into the rulemaking function. It provides for public notice of proposed rulemaking and allows the public to let their views be heard and considered. The FCC, however, is not bound by any comments submitted by the public.

Suggestions for changes to FCC rules and regulations can come from sources outside the Commission by legislation or court decision, or by *petition* for proposed rulemaking from the public. The FCC can also initiate rulemaking on its own. Anyone can suggest any rule or

amendment to an existing rule. You simply write your proposal and send it to the: Secretary, FCC, 1919 M Street NW, Washington, DC 20554. The law requires that it be given careful consideration. Petitions submitted by and comments from the public usually are in the same format. (See Table I.)

In the first paragraph it is a good idea to tell the Commission who you are, your qualifications, and what your interest is in the proceeding. A brief summary of your overall views should follow. Then go on to detail your experience and judgments or insights in the matter that would shed light on the issues and questions raised in the inquiry or rulemaking. A petition should show why your suggestion is in the public interest.

State the facts briefly, but fully. Clearly explain your experience and any additional evidence that supports your position. Your comments should be explicit. If the details of the proposed rules (or of only one of several provisions of the rules) are objectionable to you, make this clear. If the rule would be acceptable with certain safeguards, explain them and why they are needed. If there are other widespread views, explain why the public interest requires that the matter be resolved as you propose.

Arrange for your comments to reach the Commission on or before the comment date included in the Public Notice, Notice of Inquiry, or Notice of Proposed Rulemaking. Be certain that you sign and date your submitted comments. If you miss the comment deadline, you can still file comments and hope that they will be accepted. They must be accompanied by still another document, *Motion to Submit Late-Filed Comments*. The FCC will probably accept them if you give good reasons for being late and there is still time left before their final ruling.

Only one signature is needed on petitions or comments. Petitioners are allowed to reply to comments, so it is required that you also send the original petitioner a copy of your comments to the FCC. The Public Notice gives the address of where to send them. It is a good idea to indicate at the end of your comments that you have complied with this provision.

It is considered a formal comment if you send an original and five copies of your comments to the FCC. Additional copies should be submitted if you want each Commissioner to have a copy. The Commission will, however, accept and give consideration to informal comments, such as to a single handwritten letter if it clearly indicates it is a comment on or a petition for rulemaking. It is preferable, however, that you submit the original and five copies typed double-spaced on regular 8½" x 11" white bond paper.

It is important that you have some means of staying up to date on FCC pro-

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the matter of
[List the issue on which you are sending
in your comments, or the issue you are
petitioning for, such as:]

Creation of a new Consumer
Radio Service

[If comments on existing proceeding,
list docket or rulemaking number such
as:]

PR Docket No. 86-38
RM-5058

[Leave this area blank if a petition for
rulemaking.]

COMMENTS OF [Put your name here]
or
PETITION FOR RULEMAKING

*Table I - Suggested format for petitions
to be submitted to the FCC.*

ceedings. Rulemaking plays such an important part in our hobby that you really need to let the regulators know where you stand. Comment periods range from 30 days to 6 months, depending on the issue. Controversial issues get the longer comment periods.

Since magazines require longer lead time, it is advisable that you have some other means of staying on top of rulemaking. Many newsletters exist which publicize information on FCC proceedings, including one by your author, *The W5YI Report* (free sample for a two-stamp self-addressed envelope). The *Federal Register* is also available at most public libraries across the country, although recently only a summary of the various issues is listed in order to conserve the Commission's constantly dwindling financial resources. By law, all proposed rulemaking must be announced in the *Federal Register*.

Regulatory Vehicles

The following is a brief description of the principal rulemaking notices used by the FCC.

Petition: suggests a change to FCC Rules and Regulations, usually from the public. The FCC sends out a weekly *Public Notice* listing all meritorious petitions received and a 30-day public comment period authorized.

Petition for Reconsideration: provides additional information and asks the Commission to review its decision. Must be filed within 30 days of the decision. A request for partial reconsideration also can be requested. Newly adopted rules cannot be effective until the Commission has ruled on all Petitions for Reconsideration. You can further appeal to the federal courts if the FCC rules against your Petition for Reconsideration.

Rulemaking Number: a sequential file

number assigned to a public petition after the appropriate FCC bureau has reviewed the petition and found that it is worthy of further consideration (for example, RM-5234). A petition that has been found to have no merit is immediately dismissed and not assigned an RM-file number.

Notice of Inquiry (NOI): is issued (with a public comment period) when the FCC is seeking information on a broad subject or trying to generate ideas on a topic. After comments are evaluated, a *Notice of Proposed Rulemaking* can be issued or the inquiry concluded.

PRB-1, the FCC's declaration on transmitting antennas and their structures, was really a form of inquiry, although not designated as such. PRB-2 investigated commercial newsgathering on amateur spectrum. PRB-1 and 2 stand for *Private Radio Bureau* first and second study. It was something that the FCC simply made up as a regulatory vehicle.

Notice of Proposed Rulemaking (NPRM): proposes a specific change to FCC rules for the public to comment on. Major rule changes are always presented to the public in the form of an NOI or NPRM. Both are eventually followed up with a *Memorandum Opinion & Order* or a *Report and Order* after the comments are considered. If the FCC does not receive sufficient comments, a Further NOI or NPRM may be issued.

Docket Numbers: consist of the year that the proceeding began and then a sequential number. PR Docket 80-1 is the first *Private Radio Bureau* proceeding of 1980. Docket numbers are assigned if the FCC previously issued an NPRM or an NOI.

Memorandum Opinion & Order (MO&O): denies a petition for rulemaking, concludes an inquiry (NOI), modifies a decision, or denies a *Petition for Reconsideration*.

Report and Order: is issued by the Commission stating the new or amended rule, or stating that the rules will not be changed. The final rule frequently is not the same as originally proposed in the NPRM.

A proceeding may be terminated in whole or in part. *Further Report and Orders* are sometimes approved. A *Report and Order* can be adopted without public comment only in the case of minor editorial changes.

The FCC Commissioners frequently adopt new rules at meetings open to the general public, although most recently much has been adopted via *circulation*. The circulation route, as it is known, is when each Commissioner approves rulemaking as it circulates through his office.

We hope that this column has given you a little more insight into how the Amateur Radio Service is regulated by the Commission. Make it a point to participate in the rulemaking process.

THE SCIENCE OF PREDICTING RADIO CONDITIONS

Sunspot Cycle Non-Progress

The plateau in solar cycle activity reported last month continues. The Royal Observatory of Belgium reports a monthly mean sunspot number of 13.1 for May 1986. This results in a 12-month running smoothed sunspot number of 17 centered on November 1985. The cycle has remained stalled within one point of this level for eight months.

The median value of 10.7 cm (2,800 MHz) solar noise flux for May was 72.6, as reported by the Ottawa (Canada) solar observatory.

Regrettably, the stalled cycle will extend the present period of very low solar activity beyond the end of 1986. The latest consensus among the experts calls for the end of the current cycle, Cycle 21, to occur no earlier than mid-1987. Looking well into the future, scientists at the Space Environmental Services Center in Boulder, Colorado are calling for the peak of the next cycle, Cycle 22, to occur during mid-1991. They predict that the next cycle will be somewhat below average in magnitude, with a peak of approximately 100. The sunspot maximum for Cycle 21 occurred in December 1979 with a smoothed sunspot number of 164.5.

A smoothed sunspot number of approximately 9 is forecast for September 1986. Activity could be somewhat higher if the present solar plateau should continue.

September Propagation

This month's DX Propagation Charts cover the equinoctial period between September 15 and October 15, rather than the usual two-month span. A Short-Skip Propagation Chart for September and October is also included in this month's column.

Mid-September through mid-October marks the fall equinoctial period. A similar period occurs in the spring, between mid-March and mid-April.

The fall equinoctial period marks the time when the sun crosses the equator on its apparent travel into southern skies. During this period the hours of daylight and darkness are just about equal in length throughout the world. Sunrise should take place at approximately 6 a.m.

11307 Clara Street, Silver Spring, MD 20902

LAST MINUTE FORECAST

Day-to-Day Conditions Expected for September 1986

Propagation Index	Expected Signal Quality			
	(4)	(3)	(2)	(1)
Above Normal: 12, 19	A	A	B	C
High Normal: 4, 11, 18, 20, 24, 30	A	B	C	C-D
Low Normal: 1, 3, 5-7, 9-10, 13, 16-17, 21, 23, 25-28	A-B	B-C	C-D	D-E
Below Normal: 2, 8, 22, 29	B-C	C-D	D-E	E
Disturbed: 14-15	C-E	D-E	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 S1 and S3, and with considerable fading and noise.

E—No opening expected.

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 fair-to-good (B-C) on Sept. 1st, fair-to-poor (C-D) on the 2nd, fair-to-good again (B-C) on the 3rd, good (B) on the 4th, etc.

local time (7 a.m. daylight) and sunset at about 6 p.m. local time (7 p.m. daylight).

This results in an ionosphere of almost equal characteristics over large areas of the world, and is usually the best time of the year for long DX openings between the temperate regions of the northern and southern hemispheres, on all HF bands. Look for more frequent openings between the USA and South America, South Pacific, South Asia and southern Africa, especially on 20 meters for a few hours after sunrise and again during the early evening hours.

Long-path propagation is also usually optimum during the equinoctial period. In western states look for long-path openings from Europe and Africa on 20 meters shortly after sunrise and again during the evening. Stations in eastern states can expect some long-path openings to the South Pacific during the late afternoon and early evening, and to parts of eastern Africa and Asia just after sunrise. Long-path openings may also be possible on 40

meters during the sunrise and sunset periods.

In general, during September expect 20 meters to continue to be the best band for DX propagation. It should open in almost all directions for a few hours after sunrise, and remain open to several different areas of the world throughout most of the day and into the early evening. Signals should be a bit stronger than they were during July and August, but the band will close an hour or two earlier because of the shorter period of daylight.

A seasonal improvement is expected for DX conditions on 15 meters, but solar activity is so low that considerably fewer openings are expected compared to the past several years. Best time to check for DX openings is from a few hours before noon through the afternoon hours. Best bet is for fairly good openings towards South America, but openings to Africa, the South Pacific, and Europe could occur from time to time.

Solar activity is much too low for any real 10 meter DX openings, but some may be possible towards South America and other southern areas during the afternoon hours.

Improved nighttime DX propagation conditions are expected on 40, 80 and 160 meters as a result of increasing hours of darkness and a seasonal decrease in static levels. Forty should provide the best chance for DX from sunset through the sunrise period. Check 80 and 160 meters during the same time span, and especially an hour or so before sunrise.

For readers interested in short-skip conditions, for openings less than 250 miles try 80 meters during most of the day and 160 meters during the hours of darkness. Between 250 and 750 miles, 40 meters should be best from about 9 a.m. to 5 p.m. local daylight time, and 80 meters at other times. For openings between 750 and 1300 miles, try 20 meters during most of the daylight hours, 40 meters from sundown to about midnight, and 80 meters from midnight to sunrise. For openings beyond 1300 miles, 20 meters should be best during most of the daylight hours with 40 meters optimum during most of the hours of darkness.

VHF Ionospheric Openings

Auroral activity usually increases during the equinoctial periods. Look for some good 6 and 2 meter auroral-type

HOW TO USE THE SHORT-SKIP CHARTS

1. In the Short-Skip Chart, the predicted times of openings can be found under the appropriate distance column of a particular Meter band (10 through 160 Meters), as shown in the left hand column of the Chart. For the Alaska and Hawaii Charts the predicted times of openings are found under the appropriate Meter band column (10 through 40 Meters) for a particular geographical region of the continental USA, as shown in the left hand column of the Charts. An * indicates the best time to listen for 80 meter openings.

2. The propagation index is the number that appears in () after the time of each predicted opening. On the Short-Skip Chart, where two numerals are shown within a single set of parenthesis, 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) " " " between 14 and 22 days
- (2) " " " between 7 and 13 days
- (1) " " " on less than 7 days

Refer to the "Last Minute Forecast" at the beginning of this column for the actual dates on which an opening with a specific propagation index is likely to occur, and the signal quality that can be expected.

3. Times shown in the Charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 A.M.; 13 is 1 P.M., etc. On the Short-Skip Chart appropriate daylight time is used at the path midpoint. For example,

on a circuit between Maine and Florida, the time shown would be EDT; on a circuit between N.Y. and Texas, the time at the midpoint would be CDT, etc. Times shown in the Hawaii Chart are in HST. To convert to daylight time in other USA time zones, add 3 hours in the PDT zone; 4 hours in the MDT zone; 5 hours in CDT zone, and 6 hours in the EDT zone. Add 10 hours to convert from HST to GMT. For example, when it is 12 noon in Honolulu, it is 15 or 3 P.M. in Los Angeles; 18 or 6 P.M. in Washington, D.C.; and 22 GMT. Time shown in the Alaska Chart is given in GMT. To convert to daylight time in other areas of the USA, subtract 7 hours in the PDT zone; 6 hours in the MDT zone; 5 hours in the CDT zone and 4 hours in the EDT zone. For example, at 20 GMT it is 16 or 4 P.M. in N.Y.C.

4. The Short-Skip Chart is based upon a transmitted power of 75 watts c.w. or 300 watts p.e.p. on sideband; the Alaska and Hawaii Charts are based upon a transmitter power of 250 watts c.w. or 1 kw p.e.p. on sideband. A dipole antenna a quarter-wavelength above ground is assumed for 160 and 80 meters, a half-wave above ground on 40 and 20 meters, and a wavelength above ground on 15 and 10 meters. For each 10 db gain above these reference levels, the propagation index will increase by one level; for each 10db loss, it will lower by one level.

5. Propagation data contained in the Charts has been prepared from basic data published by the Institute for Telecommunication Sciences of the U.S. Dept. of Commerce, Boulder, Colorado, 80302.

**CQ Short-Skip Propagation Chart
September & October, 1986
Local Daylight Savings Time At
Path Mid-Point**

Band (Meters)	Distance Between Stations (Miles)			
	50-250	250-750	750-1300	1300-2300
10	Nil	10-20 (0-1)	10-20 (1)	10-20 (1-0)
15	Nil	10-20 (0-1)	08-10 (0-1) 10-17 (1-2) 17-22 (1)	08-10 (1) 10-17 (2) 17-19 (1) 19-22 (1-0)
20	Nil	08-10 (0-1) 10-12 (0-2) 12-15 (0-3) 15-17 (0-2) 17-22 (0-1)	08-10 (1-2) 10-12 (2-4) 12-15 (3-4) 15-17 (2-4) 17-20 (1-3) 20-22 (1-2) 22-08 (0-1)	08-09 (2-1) 09-10 (2) 10-14 (4-2) 14-16 (4-3) 16-17 (4) 17-18 (3-4) 18-20 (3) 20-22 (2) 22-00 (1) 00-06 (0-1) 06-08 (1)
40	08-10 (0-2) 10-12 (1-3) 12-16 (2-4) 16-18 (2-3) 18-20 (1-2) 20-22 (0-1)	08-10 (2-3) 10-12 (3) 12-16 (4-2) 16-18 (3) 18-20 (2-4) 20-22 (1-4) 22-00 (0-3) 00-03 (0-2) 03-06 (0-1) 06-08 (0-2)	08-10 (3-2) 10-12 (3-1) 12-16 (2-1) 16-18 (3-2) 18-20 (4-3) 20-22 (3-4) 22-00 (3-2) 00-03 (2) 03-06 (1-2) 06-08 (2-3)	08-10 (2-1) 10-16 (1-0) 16-18 (2-1) 18-20 (3-2) 20-00 (4-3) 00-06 (2-3) 06-08 (3-2)
80	07-09 (3-4) 09-12 (4) 12-19 (4-3) 19-22 (4) 22-04 (3-4) 04-07 (2-3)	07-09 (4-2) 09-12 (4-1) 12-17 (3-1) 17-19 (3-2) 19-21 (4-3) 21-04 (4) 04-06 (3-4) 06-07 (3)	07-09 (2-1) 09-17 (1-0) 17-19 (2-1) 19-21 (3-2) 21-22 (4-3) 22-04 (4) 04-06 (4-2) 06-07 (3-2)	07-09 (1) 09-17 (0) 17-19 (1) 19-21 (2) 21-22 (3-2) 22-04 (4-3) 04-06 (2) 06-07 (2-1)
160	17-19 (1-0) 19-21 (2-1) 21-06 (4) 06-08 (3-2) 08-10 (2-1) 10-12 (1-0)	18-20 (1-0) 20-21 (1) 21-03 (4-3) 03-06 (3-2) 06-08 (2-1) 08-10 (1-0)	20-21 (1-0) 21-23 (3-1) 23-03 (3) 03-06 (2-1) 06-08 (1)	21-23 (1-0) 23-03 (3-2) 03-06 (1) 06-08 (1-0)

**ALASKA
September & October, 1986
Opening Given in GMT #**

To	15 Meters	20 Meters	40 Meters	80 Meters
Eastern States	21-23 (1)	18-21 (1) 21-23 (2) 23-01 (1)	08-12 (1)	Nil

Central States	21-00 (1)	19-22 (1) 22-00 (2) 00-03 (1)	08-13 (1)	09-12 (1)
Western States	20-21 (1) 21-23 (2) 23-01 (1)	17-18 (1) 18-21 (2) 21-01 (3) 01-02 (2) 02-04 (1)	08-11 (1) 11-14 (2) 14-16 (1)	11-14 (1)

**HAWAII
September & October, 1986
Openings Given In
Hawaiian Standard TIME #**

To	15 meters	20 meters	40 meters	80 meters
Eastern States	11-14 (1)	05-06 (1) 06-08 (2) 08-13 (1) 13-16 (2) 16-18 (1)	17-19 (1) 19-21 (2) 21-00 (3) 00-02 (2) 02-03 (1)	19-20 (1) 20-23 (2) 23-02 (1)
Central States	08-12 (1) 12-15 (2) 15-16 (1)	05-06 (1) 06-09 (2) 09-13 (1) 13-15 (2) 15-17 (3) 17-18 (2) 18-19 (1)	17-19 (1) 19-21 (2) 21-02 (3) 02-04 (2) 04-05 (1)	19-20 (1) 20-01 (2)* 01-03 (1)
Western States	08-10 (1) 10-12 (2) 12-14 (3)** 14-15 (2) 15-17 (1)	06-07 (1) 07-10 (3) 10-12 (2) 12-14 (3) 14-16 (4) 16-17 (3) 17-18 (2) 18-20 (1)	17-18 (1) 18-19 (2) 19-00 (4) 00-03 (3) 03-06 (2) 06-07 (1)	18-20 (1) 20-22 (2)* 22-03 (3)* 03-04 (2)* 04-06 (1)

*See "How To Use Short-Skip Charts" in box at the beginning of this column.
Note: The Alaska and Hawaii Propagation Charts are intended for distances greater than 1300 miles. For shorter distances, use the preceding Short-Skip Propagation Chart.
* Indicates best time for 160 meter opening.
** Indicates best time for 10 meter opening.

**September 15 to October 15, 1986
Time Zone: EDT (24-Hour Time)
EASTERN USA TO:**

To	15 Meters	20 Meters	40 Meters	80 Meters
Western & Central Europe & North Africa	10-15 (1)	07-08 (1) 08-10 (3) 10-12 (2) 12-16 (3) 16-17 (2) 17-18 (1)	18-19 (1) 19-20 (2) 20-02 (3) 02-04 (2) 04-05 (1)	20-22 (1) 22-01 (2)* 01-04 (1)



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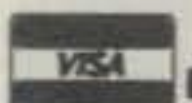
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HOW TO USE THE DX PROPAGATION CHARTS

1. Use Chart appropriate to your transmitter location. The Eastern USA Chart can be used in the 1, 2, 3, 4, 8, KP4, KG4 and KV4 areas in the USA and adjacent call areas in Canada; the Central USA Chart in the 5, 9 and 0 areas; the Western USA Chart in the 6 and 7 areas, and with somewhat less accuracy in the KH6 and KL7 areas.

2. The predicted times of openings are found under the appropriate meter band column (15 through 80 Meters) for a particular DX region, as shown in the left hand column of the Charts. An * indicates the best time to listen for 160 meter openings.

3. The propagation index is the number that appears in () after the time of each predicted opening. 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 Propagation column for the actual dates on which an opening with specific propagation index is likely to occur, and the signal quality that can be expected.

4. Time shown in the Charts are in the 24-hour system, where 00 is midnight; 12 is noon; 01 is 1 A.M., 13 is 1 P.M., etc. Appropriate daylight time is used not GMT. To convert to GMT, add to the times shown in the appropriate chart 7 hours in PDT Zone, 6 hours in MDT Zone, 5 hours in CDT Zone, and 4 hours in EDT Zone. For example, 14 hours in Washington, D.C. is 18 GMT. When it is 20 hours in Los Angeles, it is 03 GMT, etc.

5. The charts are based upon a transmitter power of 250 watts c.w., or 1 kw, p.e.p. on sideband, into a dipole antenna a quarter-wavelength above ground on 160 and 80 meters, and 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.

6. Propagation data, contained in the Charts has been prepared from basic data published by the Institute For Telecommunication Sciences of the U.S. Dept. of Commerce, Boulder, Colorado, 80302.

	15 Meters	20 Meters	40 Meters	80 Meters
Northern Europe & European USSR	10-13 (1)	07-08 (1) 08-10 (2) 10-12 (1) 12-16 (2) 16-17 (1)	18-20 (1) 20-04 (2) 04-05 (1)	21-04 (1)
Eastern Mediterranean & Middle East	10-14 (1)	07-08 (1) 08-09 (2) 09-14 (1) 14-16 (2) 16-17 (1)	19-21 (1) 21-00 (2) 00-01 (1)	22-00 (1)
Western Africa	09-11 (1) 11-13 (2)** 13-14 (3)** 14-15 (2) 15-16 (1)	08-10 (1) 13-15 (1) 15-16 (2) 16-19 (3) 19-20 (2) 20-21 (1)	20-23 (1) 23-02 (2) 02-04 (1)	22-03 (1)
Eastern & Central Africa	11-13 (1) 13-15 (2) 15-16 (1)	13-15 (1) 15-18 (2) 18-19 (1)	21-02 (1)	22-01 (1)
Southern Africa	09-11 (1) 11-14 (2)** 14-15 (1)	08-10 (1) 13-15 (1) 15-18 (2) 18-20 (1) 23-01 (1)	19-22 (1) 22-00 (2) 00-02 (1)	23-01 (1)
Central & South Asia	Nil	07-08 (1) 08-10 (2) 10-12 (1) 19-22 (1)	05-07 (1) 20-23 (1)	Nil
Southeast Asia	17-19 (1)	07-08 (1) 08-10 (2) 10-12 (1) 16-18 (1) 20-22 (1)	06-08 (1)	Nil
Far East	17-19 (1)	08-09 (1) 09-10 (2) 10-12 (1) 17-19 (1) 19-21 (2) 21-22 (1)	06-08 (1)	Nil
South Pacific & New Zealand	14-16 (1) 16-18 (2)** 18-19 (1)	07-08 (1) 08-11 (2) 11-14 (1) 16-20 (1) 20-23 (2) 23-01 (1)	01-02 (1) 02-03 (2) 03-06 (3) 06-08 (2) 08-09 (1)	03-05 (1) 05-07 (2)* 07-08 (1)

Australia	17-19 (1)**	07-08 (1) 08-10 (2) 10-12 (1) 14-16 (1) 16-18 (2) 18-21 (1) 21-23 (2) 23-01 (1)	02-04 (1) 04-06 (2) 06-07 (3) 07-08 (2) 08-09 (1)	04-05 (1) 05-06 (2)* 06-07 (1)
Caribbean, Central America & Northern Countries of South America	09-10 (1) 10-13 (2)** 13-16 (3)** 16-17 (2) 17-18 (1)	07-08 (1) 08-09 (3) 09-10 (4) 10-15 (2) 15-17 (3) 17-19 (4) 19-20 (3) 20-21 (2) 21-22 (1)	19-20 (1) 20-21 (2) 21-04 (4) 04-06 (3) 06-07 (2) 07-08 (1)	21-23 (1) 23-04 (2)* 04-07 (1)
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	09-10 (1) 10-11 (2) 11-14 (1) 14-17 (2)** 17-18 (1)	07-08 (1) 08-10 (2) 10-11 (1) 14-16 (1) 16-18 (2) 18-20 (3) 20-21 (2) 21-23 (1)	21-23 (1) 23-01 (2) 01-03 (1) 03-06 (2) 06-07 (1)	02-06 (1)*
McMurdo Sound, Antarctica	15-17 (1)	07-09 (1) 18-20 (1) 20-22 (2) 22-00 (1)	00-03 (1) 03-05 (2) 05-07 (1)	04-06 (1)

Time Zones: CDT & MDT (24-Hour Time) CENTRAL USA TO:

	15 Meters	20 Meters	40 Meters	80 Meters
Western & Central Europe & North Africa	10-14 (1)	07-08 (1) 08-10 (2) 10-13 (1) 13-14 (2) 14-15 (3) 15-16 (2) 16-17 (1)	18-20 (1) 20-23 (2) 23-01 (3) 01-02 (2) 02-04 (1)	21-23 (1) 23-01 (2)* 01-02 (1)
Northern Europe & European USSR	10-13 (1)	07-08 (1) 08-10 (2) 10-12 (1) 12-15 (2) 15-16 (1)	20-23 (1) 23-01 (2) 01-02 (1)	22-01 (1)
Eastern Mediterranean & Middle East	10-13 (1)	07-08 (1) 08-09 (2) 09-15 (1) 15-16 (2) 16-17 (1)	20-23 (1)	21-23 (1)
Western Africa	09-12 (1) 12-14 (2)** 14-15 (1)	07-09 (1) 13-15 (1) 15-16 (2) 16-18 (3) 18-19 (2) 19-20 (1)	20-23 (1) 23-01 (2) 01-02 (1)	23-01 (1)
Eastern & Central Africa	12-15 (1)	07-09 (1) 13-16 (1) 16-18 (2) 18-19 (1)	21-00 (1)	22-23 (1)
Southern Africa	09-11 (1) 11-14 (2)** 14-15 (1)	07-09 (1) 12-14 (1) 14-16 (2) 16-17 (3) 17-18 (2) 18-19 (1) 22-00 (1)	20-21 (1) 21-23 (2) 23-01 (1)	21-23 (1)
Central & South Asia	Nil	07-08 (1) 08-10 (2) 10-12 (1) 18-20 (1)	06-08 (1) 19-21 (1)	Nil
Southeast Asia	17-19 (1)	07-08 (1) 08-10 (2) 10-13 (1) 18-21 (1)	05-08 (1)	Nil
Far East	16-18 (1)	07-08 (1) 08-10 (2) 10-12 (1) 17-19 (1) 19-21 (2) 21-23 (1)	03-05 (1) 05-07 (2)	06-08 (1)
South Pacific & New Zealand	12-15 (1) 15-18 (2)** 18-19 (1)	07-08 (1) 08-10 (3) 10-12 (2) 12-18 (1) 18-20 (2) 20-22 (3) 22-00 (2) 00-02 (1)	00-01 (1) 01-07 (3) 07-08 (2) 08-09 (1)	02-04 (1) 04-07 (2)* 07-08 (1)

Say You Saw It In CQ

Australia	16-18 (1)**	06-07 (1) 07-08 (2) 08-09 (3) 09-11 (2) 11-17 (1) 17-18 (2) 18-20 (1) 20-22 (2) 22-00 (1)	02-03 (1) 03-05 (2) 05-07 (3) 07-08 (2) 08-09 (1)	05-06 (1) 06-07 (2)* 07-08 (1)
Caribbean, Central America & Northern Countries of South America	09-10 (1) 10-11 (2)** 11-13 (3)** 13-15 (4)** 15-16 (3)** 16-17 (2) 17-18 (1)	06-07 (1) 07-08 (3) 08-10 (4) 10-12 (3) 12-15 (2) 15-17 (3) 17-19 (4) 19-20 (3) 20-21 (2) 21-22 (1)	19-20 (1) 20-21 (2) 21-01 (3) 01-05 (4) 05-06 (3) 06-07 (2) 07-08 (1)	20-23 (1) 23-06 (2)* 06-07 (1)
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina and Uruguay	09-10 (1) 10-11 (2) 11-13 (1) 13-17 (2)** 17-18 (1)	07-08 (1) 08-09 (2) 09-11 (1) 13-16 (1) 16-17 (2) 17-20 (3) 20-21 (2) 21-23 (1)	21-23 (1) 23-02 (2) 02-04 (1) 04-06 (2) 06-07 (1)	23-02 (1) 02-04 (2)* 04-05 (1)
McMurdo Sound, Antarctica	15-17 (1)	17-20 (1) 20-22 (2) 22-00 (1) 08-10 (1)	00-03 (1) 03-05 (2) 05-07 (1)	04-06 (1)

South Pacific & New Zealand	12-15 (1) 15-16 (2)** 16-18 (3)** 18-19 (2) 19-20 (1)	07-08 (1) 08-10 (3) 10-11 (2) 11-14 (1) 14-18 (2) 18-20 (3) 20-22 (4) 22-23 (3) 23-00 (2) 00-02 (1)	21-22 (1) 22-23 (2) 23-00 (3) 00-05 (4) 05-07 (3) 07-08 (2) 08-09 (1)	23-02 (1) 02-07 (2)* 07-08 (1)
Australia	13-16 (1) 16-19 (2)** 19-21 (1)	01-07 (1) 07-08 (1) 08-10 (3) 10-12 (2) 12-13 (1) 17-19 (1) 19-20 (3) 20-23 (2) 23-01 (2)	00-02 (1) 02-03 (2) 03-06 (3) 06-08 (2) 08-09 (1)	02-04 (1) 04-07 (2)* 07-08 (1)
Caribbean, Central America & Northern Countries of South America	08-09 (1) 09-11 (2) 11-13 (3)** 13-15 (4)** 15-16 (3)** 16-17 (2) 17-18 (1)	07-08 (1) 08-09 (2) 09-10 (3) 10-15 (2) 15-16 (3) 16-18 (4) 18-20 (3) 20-22 (2) 22-23 (1)	18-21 (1) 21-22 (3) 22-02 (4) 02-04 (3) 04-06 (2) 06-08 (1)	20-22 (1) 22-02 (2) 02-04 (3)* 04-05 (2)* 05-06 (1)
Peru, Bolivia, Paraguay, Brazil, Chile, Argentina & Uruguay	09-10 (1) 10-11 (2) 11-13 (1) 13-17 (2)** 17-18 (1)	08-10 (1) 13-15 (1) 15-17 (2) 17-20 (3) 20-21 (2) 21-23 (1)	20-21 (1) 21-01 (2) 01-03 (1) 03-04 (2) 04-06 (1)	22-00 (1) 00-04 (2)* 04-05 (1)
McMurdo Sound, Antarctica	16-18 (1)	08-10 (1) 17-19 (1) 19-20 (2) 20-22 (3) 22-23 (2) 23-00 (1)	01-03 (1) 03-05 (2) 05-07 (1)	03-06 (1)

openings when conditions on the HF bands are Below Normal or Disturbed. Check the Last Minute Forecast at the beginning of this column for those days likely to be in these categories during September.

Although summer-time sporadic-E ionization should fall off considerably during September, an occasional 6 meter short-hf opening may still be possible over distances ranging between 1000 and 1300 miles. Best time to check is before noon and during the early evening, but don't expect too much.

No major meter showers are expected during September, so few, if any, meteor-scatter-type openings are likely to occur on the VHF bands.

CQ DX Contest Special

This year's CQ World-Wide DX Contest will be held on the following dates:

Phone section: October 25 and 26
CW section: November 29 and 30

Following the practice of the past 35 years, next month's Propagation column will be devoted to a special, comprehensive forecast which will cover both sections of the contest.

73, George, W3ASK

September 15 to October 15, 1986 Time Zone: PDT (24-Hour Time) WESTERN USA TO:

	15 Meters	20 Meters	40 Meters	80 Meters
Western & Southern Europe & North Africa	10-12 (1)	07-08 (1) 08-10 (2) 10-12 (1) 12-14 (2) 14-16 (1) 22-00 (1)	20-21 (1) 21-23 (2) 23-00 (1)	21-23 (1)
Central & Northern Europe & European USSR	10-12 (1)	08-09 (1) 09-10 (2) 10-12 (1) 12-14 (2) 14-15 (1) 22-00 (1)	20-00 (1)	21-23 (1)
Eastern Mediterranean & Middle East	Nil	08-12 (1) 12-14 (2) 14-16 (1) 20-22 (1)	20-23 (1)	21-22 (1)
Western Africa	11-14 (1)	07-08 (1) 08-09 (2) 09-14 (1) 14-17 (2) 17-18 (1)	21-00 (1)	22-23 (1)
Eastern & Central Africa	11-14 (1)	07-09 (1) 13-15 (1) 15-17 (2) 17-18 (1) 21-23 (1)	20-22 (1)	Nil
Southern Africa	10-14 (1)	07-09 (1) 12-14 (1) 14-16 (2) 16-18 (1) 22-00 (1)	19-20 (1) 20-22 (2) 22-23 (1)	20-22 (1)
Central & South Asia	17-19 (1)	08-09 (1) 09-11 (2) 11-13 (1) 17-19 (1) 19-21 (2) 21-22 (1)	06-08 (1) 19-21 (1)	Nil
Southeast Asia	16-19 (1)	07-08 (1) 08-10 (2) 10-11 (2) 11-12 (1) 21-22 (1) 22-00 (2) 00-01 (1)	01-03 (1) 03-06 (2) 06-08 (1)	03-06 (1)
Far East	16-19 (1)	07-08 (1) 08-10 (3) 10-13 (2) 13-18 (1) 18-19 (2) 19-21 (3) 21-22 (2) 22-23 (1)	01-02 (1) 02-06 (2) 06-07 (3) 07-08 (2) 08-09 (1)	02-05 (1) 05-07 (2)* 07-08 (1)

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SPECIAL FEATURES

- SOLID STATE ELECTRONICALLY REGULATED.
- FOLD-BACK CURRENT LIMITING Protects Power Supply from excessive current & continuous shorted output.
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- HEAVY DUTY HEAT SINK. • CHASSIS MOUNT FUSE.
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- REGULATION: ± 0.5 volts no load to full load & low line to high line.

Models	Continuous Duty (amps)	ICS* (amps)	Size (in.) H x W x D	Shipping Wt. (lbs.)
RS-50A, RS-50M, VS-50M	37	50	6 x 13 3/4 x 11	46
RS-35A, RS-35M, VS-35M	25	35	5 x 11 x 11	27
RS-20A, RS-20M, RS-20S, VS-20M	16	20	5 x 9 x 10 1/2	18
RS-12A, RS-12M, RS-12S	9	12	4 1/2 x 8 x 9	13
RS-10A	7.5	11	4 x 7 1/2 x 10 1/4	11
RS-7A, RS-7B	5	7	3 1/4 x 6 1/2 x 9 4 x 7 1/2 x 10 1/4	9
RS-4A	3	4	3 1/4 x 6 1/2 x 9	5

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NEWS OF COMMUNICATION AROUND THE WORLD

N4JF Wins First 50th Anniversary WAZ Award

The CQ DX Department is pleased to announce that Jerry Fiore, N4JF, of Birmingham, Alabama is the first to qualify for the special award commemorating the 50th anniversary of the Worked All Zones (WAZ) Award. Jerry's 40 QSLs were received by WAZ Award Manager Leo Haijsman, W4KA, on February 27, 1986. The CQ staff was greatly surprised that any amateur could qualify for WAZ in only 58 days at the low end of the sunspot cycle. N4JF not only worked all 40 zones, but also received the 40 QSL cards and submitted them to W4KA in this brief time period.

In addition to a handsome certificate, Jerry will receive a beautiful hand-engraved walnut plaque to commemorate his extraordinary achievement.

Qualifying for 50th anniversary certificate No. 2 was Al Hix, W8AH, of Charleston, West Virginia. Al has had one of the strongest signals from the 8th call district for over a quarter century. His application was received by W4KA on March 21, 1986.

The third DXer to qualify was William J. Gibbons, K2TQC, of Jamesville, New York. His cards were received on April 2, 1986.

The 40 WAZ zones were first conceived at *R9 Magazine* in 1934 as a better test than country totals for comparing the performance of amateur stations. The award was later announced in *Radio Magazine* in 1935 and 1936, but as a result of the intervention of World War II, it did not become firmly established as the premier DX award until the late 1940s. DXers who work the 40 zones at any time between January 1 and December 31, 1986 are eligible for the 50th Anniversary WAZ Award and are encouraged to apply for the certificate. Complete rules appear on page 56 of the February 1986 issue of CQ. Copies may be obtained by sending a self-addressed, stamped envelope to Leo Haijsman, W4KA, 1044 Southeast 43rd St., Cape Coral, FL 33904. Contacts for the award must be made before December 31, 1986, but applications will be accepted indefinitely.

DJ6SI Elected To CQ DX Hall of Fame

The CQ DX Department is pleased to announce the election of a great European DXpedition operator, Baldur Drob-



Jerry Fiore, N4JF, was the first DXer in the world to qualify for the 50th Anniversary WAZ Award. See story elsewhere in this column. Jerry is 45 years old and was first licensed in 1955 as KN4HPR, after which he held the call K4HPR for many years. He has been an Extra class licensee for 20 years. Jerry's rig is a Kenwood TS830-S and a homebrew linear. His antennas include a shunt fed tower and beverages for 160 meters, Delta loops and inverted Vees for 80 meters, a quad for 40 meters, and a KT34XA at 90 feet for 20, 15, and 10 meters. His QTH is on a mountaintop south of Birmingham, Alabama. N4JF is at the top of both the CQ CW and SSB DX Honor Rolls. He holds 5-Band WAZ #86. Jerry is a member of the Southeastern DX Club and the Birmingham ARC. By profession Jerry is an engineer with WBMG-TV, a UHF station in Birmingham. He and XYL, Carolyn, have three children. (Photo via N4QB)

nica, DJ6SI, to the DX Hall of Fame. Baldur is the second nominee elected to the Hall of Fame in 1986, and the sixth European DXer to receive this honor.

Hall of Fame balloting for 1986 ended in a virtual tie between DJ6SI and Jim Smith, P29JS/VK9NS. The election of Mr. Smith was announced in the June issue of CQ, and his plaque was presented to him at the Dayton Hamvention. The plaque for Mr. Drob-nica was presented to him at the Second First Class Operator's Club Continental Dinner in Asendorf, Germany (near Hamburg) on Saturday evening, May 17, 1986. The presentation was to have been made by the CQ DX Award's Advisory Committee Chairman K4IIF, but due to scheduling difficulties I was unable to attend, and the presentation was made to Baldur by Dieter Loffler, DK9KD,

50th Anniversary WAZ Award Winners

1. Jerry Fiore, N4JF
2. Al Hix, W8AH
3. William Gibbons, K2TQC



Runner-up, or second winner, of the 50th Anniversary WAZ Award is Albert (Al) Hix, W8AH, of Charleston, West Virginia. Al was originally licensed as W8PQQ in 1936 and has been a ham for 50 years. His antennas include a shunt fed tower on 160 meters, phased verticals on 75 and 80 meters, 4 elements on 40, 4 elements on 20, 5 elements on 15, and 5 elements on 10 meters. He holds over 200 awards including 5-Band WAZ, 5-Band DXCC, and 160 meter DXCC. He operated the first ham station ever on the air from Andorra as 7B4QF immediately after World War II and returned to Andorra again in 1950 as PX1AR. Al is a retired Lt. Colonel from the Army Signal Corps and a registered electrical engineer. He holds an amateur Extra class license.

of the Cologne DX Group. We are grateful to Dieter for filling in for us so ably at the last minute.

Baldur Drob-nica was nominated for the DX Hall of Fame independently by two major DX clubs, the Northern California DX Club and the Cologne DX Group, and several individuals. Most letters based their nominations on his some 30 DXpeditions to 20 different DXCC countries over the past 2 decades. In a letter nominating Baldur, dated June 25, 1984, Josephine Clarke, Secretary of the Northern California DX Club, wrote, "The Club feels Baldur has not only furnished many amateurs with new countries by operating from locations such as Mount Athos (1975), Mali (1981), Glorioso (1981), Juan de Nova (1981), Mayotte (1981), Guinea (1982), Togo (1982-83), Cameroon

P.O. Box 205, Winter Haven, FL 33882

The DX Hall of Fame

Gus M. Browning, W4BPD
Nov. 1, 1967

John M. Cummings, W2CTN
March 23, 1968

Stewart S. Perry, W1BB
Aug. 16, 1968

Richard C. Spenceley, KV4AA
March 1, 1969

Danny Weil, VP2VB
Sept. 15, 1969

H. Dale Strieter, W4DQS
May 23, 1970

Stuart Meyer, W2GHK
Oct. 31, 1970

Martin Laine, OH2BH
Jan. 22, 1972

Ted Thorpe, ZL2AWJ, and
Chuck Swain, K7LMU
Aug. 6, 1972

C.J. (Joe) Hiller, W4OPM
March 30, 1973

Ernst Krenkel, RAEM
April 14, 1974

Frank Anzaone, W1WY
June 19, 1976

Lloyd Colvin, W6KG, and
Iris Colvin, W6QL
Nov. 12, 1976

Geoff Watts, Editor and Publisher
June 11, 1977

Don C. Wallace, W6AM
Sept. 23, 1978

Joe Arcure, Jr., W3HMK
Dec. 1, 1979

Hugh Cassidy, WA6AUD
April 26, 1980

Eric A. Sjolund, SM0AGD
April 21, 1981

Frank Langner, DJ9ZB
May 9, 1982

Dr. Sanford E. Hutson, K5YY
Jan. 22, 1983

Rodney H. Newkirk, W9BRD
Feb. 25, 1984

Ronald W. Wright, ZL1AMO
April 20, 1985

Herb Becker, W6QD
April 20, 1985

Jim Smith, P29JS/VK9NS
April 26, 1986

Baldur Drobnica, DJ6SI
May 17, 1986



John-Ivar Winbladh, SM7CRW, recently qualified for 80 Meter Single Band WAZ #34 on SSB. He also holds Single Band WAZ certificates for 20 and 15 meters, plus some 250 other awards. His antennas include monobanders for 10, 15, 20, and 40 meters, plus a sloper system for 80 meters. His most difficult zone for 80 Meter WAZ from Sweden was Zone One. John is a Lutheran Minister.

dated December 4, 1985, cited all of Baldur's DXpeditions and indicated that these "have consumed all of his spare time and holidays and much of his personal funds for the past many years in a quest to provide new countries for the world's DXers." John Troster, W6ISQ, commented that "I like DJ6SI's style. Without hoopla, self-aggrandisement, promotion bulletins, etc., Baldur just goes out and gets to work."

Henry Jakob, DL8CM, cited Baldur's DXpeditions with emphasis on the Spratley Island disaster which showed so dramatically the dangers which DXpeditions can encounter.

A complete list of the DJ6SI operations through 1985 is as follows:

1963-78: LX3BD, LX9SI, DJ6SI/LX, HB0XHW, DL0FOC/HB0, DJ6SI/HB0, DJ6SI/OH0.

April 1975: SV1DB/A—CW only.

April 1980: FH0FLP Mayotte, FR0ACB Glorioso.

September 1980: FR0DZIG Glorioso, FR0DZIJ Juan de Nova, FH0DZ Mayotte.

March 1981: C5ADZ, DJ6SI/TZ, 6W8 /DJ6SI.

September 1981: 5V7HL/DJ6SI.

November 1981: TJ1GH—CW.

1982: DJ6SI/3X, DJ6SI/5V, C5ADZ, C5ADU, DJ6SI/6W8, C5DZ & C5DU, DJ6SI/T5.

1983: DJ6SI/9L, 9L0WCY.

1984: DJ6SI/6W8, DJ6SI/EA6.

1985: DJ6SI/5V, 5X5BD, DJ6SI/TK, DL0MAR/9G.

Rare and Special-Event Prefixes

AZ1: AZ1ARU was one of the callsigns used to commemorate the anniversary of the Argentine Radio Union; QSL this station to LU4AA. AZ1A was a station in the South Orkney Islands; QSL to LU8DTQ.

C39: This was a special prefix used by Andorran radio amateurs during the month of May 1986.

DP0: DP0GVN is the German Antarctic Station.

The WPX Program

Mixed

1218 KF4BU 1221 NI2N
1219 KY3U 1222 JR7XBN
1220 JA9IFF

S.S.B.

1817 EA2IA 1821 KB1HC
1818 VE4AKN 1822 YB5NOF
1819 F3VX 1823 YB6MF
1820 I4UYL

CW

2383 DL1MCD 2385 PA3DCS
2384 KS3F

Endorsements

Mixed: 450 KY3U. 500 KY3U. 550 KY3U. 600 KY3U. VE7EIK. 650 KY3U. AC2J. 700 KY3U. AC2J. KN1I. 750 KY3U. KN1I. 800 KN1I. 1200 K2OLG. K2POF. 1400 KL7AF. 1500 DJ4XA. 1550 DJ4XA. 1600 DJ4XA. 1650 DJ4XA. 1700 DJ4XA. 1750 DJ4XA. 1800 DJ4XA. 2150 N4NO. 2200 N4NO. 2250 N4NO.

S.S.B.: 350 W4WKQ, LU8AEJ, KB1HC, YB5NOF, HA8UB, YB6MF. 400 W4WKQ, LU8AEJ, KD9OT, KB1HC, YB5NOF, HA8UB. 450 W4WKQ, LU8AEJ, YB5NOF. 500 W4WKQ, YB5NOF. 550 WA3GNW, W4WKQ. 600 W4WKQ. 650 AC3T. 700 AC3T. 750 I2EOW. 800 EA4KK, EA3BOX. 850 EA4KK. 1000 K5RPC. 1150 KL7AF. 1200 DJ4XA. 1250 DJ4XA, NJ0C. 1300 DJ4XA. 1350 DJ4XA. 1400 DJ4XA. 1500 I8YZP. 1550 I8YZP. 1600 I8YZP. 1850 N4NO. 1900 N4NO. 1950 N4NO. 2150 K2POA.

C.W.: 350 I5SMX, DL1MCD. 400 I5SMX, DL1MCD. 450 I5SMX, DL1MCD. 500 I5SMX, DL1MCD. 550 I5SMX, DL1MCD. 600 I5SMX. 650 I5SMX. 700 I5SMX. 750 I5SMX, JA7FFN. 800 I5SMX, WA2CNF. 850 I5SMX. 950 EA2IA, HA8UB. 1000 EA2IA, KL7AF, K2POF, HA8UB. 1050 EA2IA. 1100 EA2IA. 1150 EA2IA, DJ4XA. 1200 DJ4XA, EA2IA. 1250 DJ4XA, EA2IA. 1300 DJ4XA, EA2IA. 1350 DJ4XA, EA2IA. 1600 N4NO. 1650 N4NO. 1700 N4NO.

15 meters: JA9IFF.
40 meters: DL1MCD.
80 meters: DL1MCD, KD9OT.
160 meters: PA3BFH.

Asia: I3ZSX, DL1MCD, JA9IFF, PA3BFH, I4CSP.
Africa: I2EOW, DL1MCD, I4CSP.
No. America: VE4AKN, KS3F, I4CSP.
So. America: K2POF, I4CSP.
Europe: I3ZSX, JA9IFF, I4CSP, YB6MF.
Oceania: I4CSP.

Award of Excellence 160 Meter Endorsement: N4NO

Award of Excellence Holders: WB4SIJ, DL7AA, ON4QX, YU2DX, OK3EA, OK1MP, N4NO, ZL3GQ, W4BQY, I0JX, WA1JMP, K0JN, W4VQ, KF2O, W8CNL, W1JR, F9RM, W5UR, CT1FL, W8RSW, WA4QM, W8ILC, VE7DP, K9BG, W1BWS, G4BUE, N3ED, LU3YLW4, NN4Q, KA3A, VE7WJ, VE7IG, N2AC, W9NUF, N4NX, SM0DJZ, DK5AD, WD9IC, W3ARK, LA7JO, VK4SS, K6JG, N4MM, I8YRK, W4CRW, SM0AJU, K5UR, K6XP, N5TV, K2VV, VE3XN, W6OUL, DL1MD, DJ7CX, DL3RK.

Award of Excellence Holders with 160 Meter Endorsement: W8RSW, W8ILC, W1BWS, G4BUE, LU3YLW4, VE7WJ, W9NUF, N4NX, SM0DJZ, DK5AD, W3ARK, LA7JO, W4VQ, K6JG, W4CRW, N4MM, SM0AJU, KF2O, K5UR, OK1MP, N5TV, W8CNL, W1JR, W6OUL, W4BQY, W5UR, N4NO.

Complete rules and application forms may be obtained by sending a business-size, self-addressed, stamped envelope (foreign stations send extra postage if air-mail desired) to CQ WPX Awards, P.O. Box 1351, Torrance, CA 90505-0351 U.S.A.

DV: DV is a special limited-privilege Philippine prefix for use above 14275 kHz.

DW: DW is a special limited-privilege Philippine prefix for use on 40 meter CW only.

FT8: FT8YA has been reported from France's Dumont d'Urville Base in the Antarctic. QSL via FE6DZU.

FV6: FV6NDX is a special call for use by the French DX publication *Les Nouvelles*

(1981), Somalia (1982), Sierra Leone (1983) and others including the ill-fated Spratley expedition, but also that he represents the finest of CW operating standards and ethics. It is a pleasure to listen to this fine operator work with true style, one which is an inspiration to others. Election of DJ6SI to your Hall of Fame would be a fitting recognition of these outstanding qualities."

The Cologne DX Group's nomination,



The family of Ezzat Sayed Ramadan, SU1ER, is believed to consist of the most active DXers in Egypt. The left-hand photo is OM Ezzat, SU1ER, and the right-hand photo is daughter Magi, SU1MR. Other family members with callsigns are YL Rehab, SU1RR, and YL Sali, SU1SR. QSLs for all the above go to P.O. Box 78, Heliopolis, Cairo, Egypt. Thanks to Charles Signer, WA9INK, for the photos. Sig is studying the problem of licensing from Egypt.

The WAZ Program

15 Meter Phone

235 DK9KK

20 Meter Phone

561 DK9KK 563 WD4MLW
562 OK2RU 564 SB9E

80 Meter Phone

36 EA2AA

10 Meter CW

56 JH7LVK

20 Meter CW

242 WB4MAI 243 AB9E

40 Meter CW

57 AB9E

All Band WAZ

SSB

3025 SP6CZ 3029 IK1ABM
3026 YB3CEV 3030 JA2GSQ
3027 JG3RPL 3031 JA5RKB
3028 KG6AR 3032 I6KK

Phone and CW

5970 OK1DBM 5974 G4KHB
5971 JH7MSQ 5975 KS9Y
5972 I2IWM 5976 IK4COU
5973 HA0LM

Applications and reprints of the latest rules may be obtained by sending a self-addressed stamped envelope (39 cents) size 4 1/2 x 9 1/2 to the WAZ Manager, Leo Haijsman, W4KA, 1044 S.E. 43 Street, Cape Coral, Florida 33904. Applicants forwarding QSL cards either direct to the WAZ manager or to a check point should include sufficient postage for safe return of their QSL cards. The processing fee for all C.O. awards is \$4.00 for subscribers and \$10 for non-subscribers. In order to qualify for the subscriber rate, please enclose your latest CQ mailing label with your application.

DX during 1986 in contests and from the French islands.

HF0: HF0POL is the Polish Antarctic station and will be active from King George Island in the South Shetlands through October.

HI0: HI0JR was the official station from the Central American and Caribbean games. QSL to HI3JR, Box 945, Santiago, Dominican Republic.

HI60: HI60RCD is the special callsign commemorating the 60th anniversary of the Radio Club Dominicano. QSL to Box 1157, Santo Domingo, Dominican Republic.

HJ0: Carlos, HJ0LFD, has been on the



This photo was taken at DXPO 85 in Atlanta, Georgia late last year. On the left is Gary Dixon, K4MOG, 5 Band WAZ winner #2. Right is John Devoldere, ON4UN, 5 Band WAZ #1. (Photo by K4DLI)

air from San Andres Island. QSL to Box 124, San Andres Island, Columbia.

HL8: HL8AG will be the official station from the Olympic Games in Seoul. The Korean Amateur Radio League plans special events and certificates.

LY4: LY4L was a special-event station in Russia celebrating Lenin's 116th birthday.

TF1: This very rare Icelandic prefix has been activated by Thor, TF1PS. Listen on 14 MHz SSB around 14187-14198 kHz.

TR0: TR0A was the callsign used by TR8JLD, TR8LD, and TR8SA during last spring's CQ WPX contests.

TV6: TV6KAR commemorated the 100th anniversary of France's gift of the Statue of Liberty to the U.S.A. The event ended July 4, 1986.

XE86 & 6F2: These were special prefixes to celebrate the World Cup Soccer Games in Mexico.

XE0: The callsign XEFJTW was assigned to Bruce Draper, AA5B, by the Mexican government for use until mid-1986. It counts as XE0 for WPX purpose. Bruce used this call during the CQ WPX Contest in March.

ZS25: South African stations used this special prefix in May to celebrate the 25th year of the South African Republic.

ZY: ZY2LQB was on 20 meter CW dur-

5 Band WAZ

Standings as of June 1, 1986

All 200 zones worked:

1. ON4UN	41. I4RYC	81. DJ9RQ
2. K4MOG	42. ZL1BIL	82. EA5SP
3. SM4CAN	43. I4EAT	83. EA2IA
4. AA6AA	44. ZL1BQD	84. SP3BQD
5. W8AH	45. TG9NX	85. LZ1NG
6. W6KUT	46. XE1J	86. N4JF
7. EA8AK	47. F5VU	87. CT2AK
8. LA7JO	48. W3AP	88. HB9CIP
9. EA3SF	49. YO3AC	89. OK1MG
10. OH1XX	50. K3TW	90. CT4BD
11. EA8OZ	51. XE1OX	91. VK6HD
12. W0SD	52. VE7IG	92. EA6ET
13. K0ZZ	53. OK1ADM	93. VK3QI
14. ON6OS	54. CT1FL	94. LZ2DF
15. OK3TCA	55. WA1AER	95. ON4QX
16. K6SSS	56. N4RR	96. SM0DJC
17. ZL3GQ	57. UW0MF	97. CT3BM
18. OK3CGP	58. W4DR	98. K2TQC
19. SM0AJU	59. OK1MP	99. EA8XS
20. OZ3PZ	60. W1NW	100. HA9RE
21. I3MAU	61. OE1ZJ	101. SM4CTT
22. I2ZGC	62. HB9AHL	102. A71AD
23. 4Z4DX	63. HB9AMO	103. LZ2CC
24. N4KE	64. LA6OT	104. SM4CLE
25. K5UR	65. UR2QD	105. LZ1HA
26. K9AJ	66. UK2RDX	106. SM5AKT
27. SM3EVR	67. ZS5LB	107. CT4NH
28. LA5YJ	68. F6DZU	108. ZL4BO
29. DL3RK	69. DL4YAH	109. I1BSN
30. N4WJ	70. LA7ZO	110. DF6CY
31. G3MCS	71. W9ZR	111. DK5AD
32. SM5AQD	72. W1NG	112. DL6EN
33. W0MLY	73. VK9NS	113. SM6CVX
34. I0RIZ	74. N4KG	114. LU8DPM
35. ON5NT	75. YU7DX	115. SM6DYK
36. OH6JW	76. DL8MAG	116. DL7XS
37. OK1AWZ	77. OK3DG	117. DF7NM
38. IV3PRK	78. ZL1BOQ	118. UA3TT
39. DJ6RX	79. EA9IE	119. OK1DDS
40. OH3YI	80. DL7HZ	120. YU2TW

The top 16 contenders for 5 Band WAZ are:

1. JA1BWA, 199	9. SP7KTE, 199
2. JA3EWU, 199	10. ZP5JCY, 199
3. N4WW, 199	11. LU6GV, 198
4. K6YRA, 199	12. K4CEB, 198
5. W8UVZ, 199	13. W2YY, 198
6. F6BEE, 199	14. G3GIQ, 198
7. JA0CWZ, 199	15. K7UR, 198
8. W6GO, 199	16. W3GG, 198

377 Stations have attained the 150 zone level.

ing the CQ WPX Contest in May. QSL to Box 53031, 08201 Sao Paulo, Brazil.

3G: The Chilean 3G prefix was used for the first time as 3G3DX by CE3ESS.

4V: The 4V prefix was used by Haitian amateurs during the Haitian Flag Day Party. QSLs go to Box 1484, Port-au-Prince, Haiti.

4X38: This special prefix was used by the 4X4HQ Youth Club in Tel Aviv in May 1986 to celebrate the 38th anniversary of Israel's independence.

7S: Sweden's FRO commemorated its 40th anniversary with the special event prefix 7S. Active stations included 7S1FRO through 7S0FRO.

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• Band and
Memory Scan



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Size
• 1 Watt
• Opt. 500 M.A.
Battery

TM-2570



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Autodialer • 23 Channel Memory • Front
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TS-940S "DX-cellence"

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• 40 Channel Memory
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- ALINCO
- ASTRON
- AVANTI
- B&W
- BENCHER
- BUTTERNUT
- CUSHCRAFT
- DAIWA
- HAM-KEY
- HUSTLER
- HYGAIN
- ICOM
- KANTRONICS
- KDK
- KENPRO
- KENWOOD
- KLM
- LARSEN
- MFJ
- MIRAGE
- NYE VIKING
- QUATRON
- SANTEC
- WELZ
- YAESU

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• Compact



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• Duo-Band Full Duplex
• 25 Watt

FRG-9600



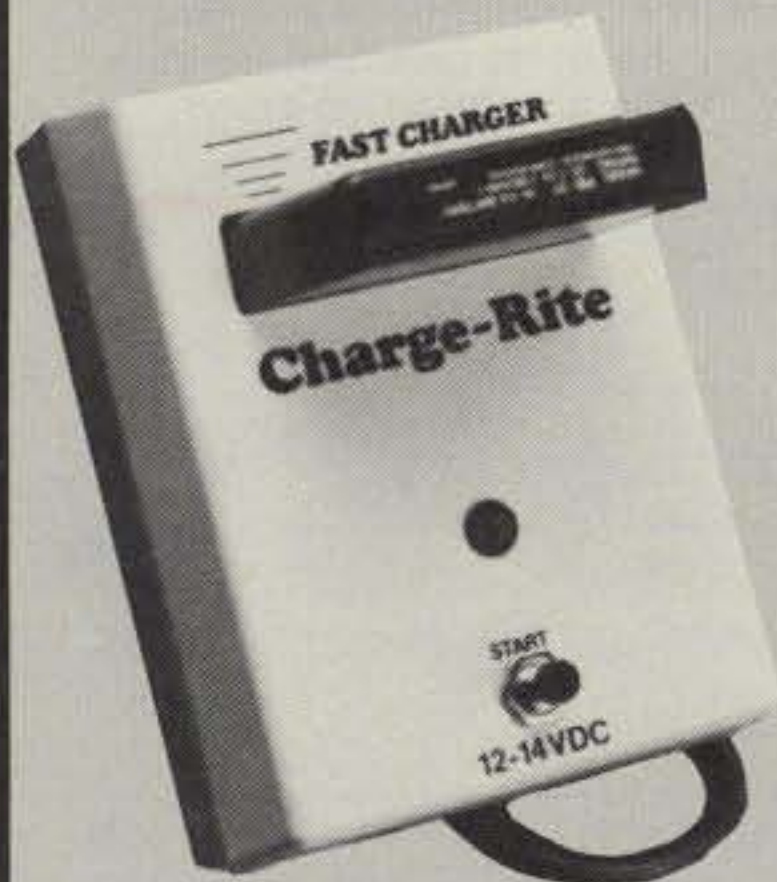
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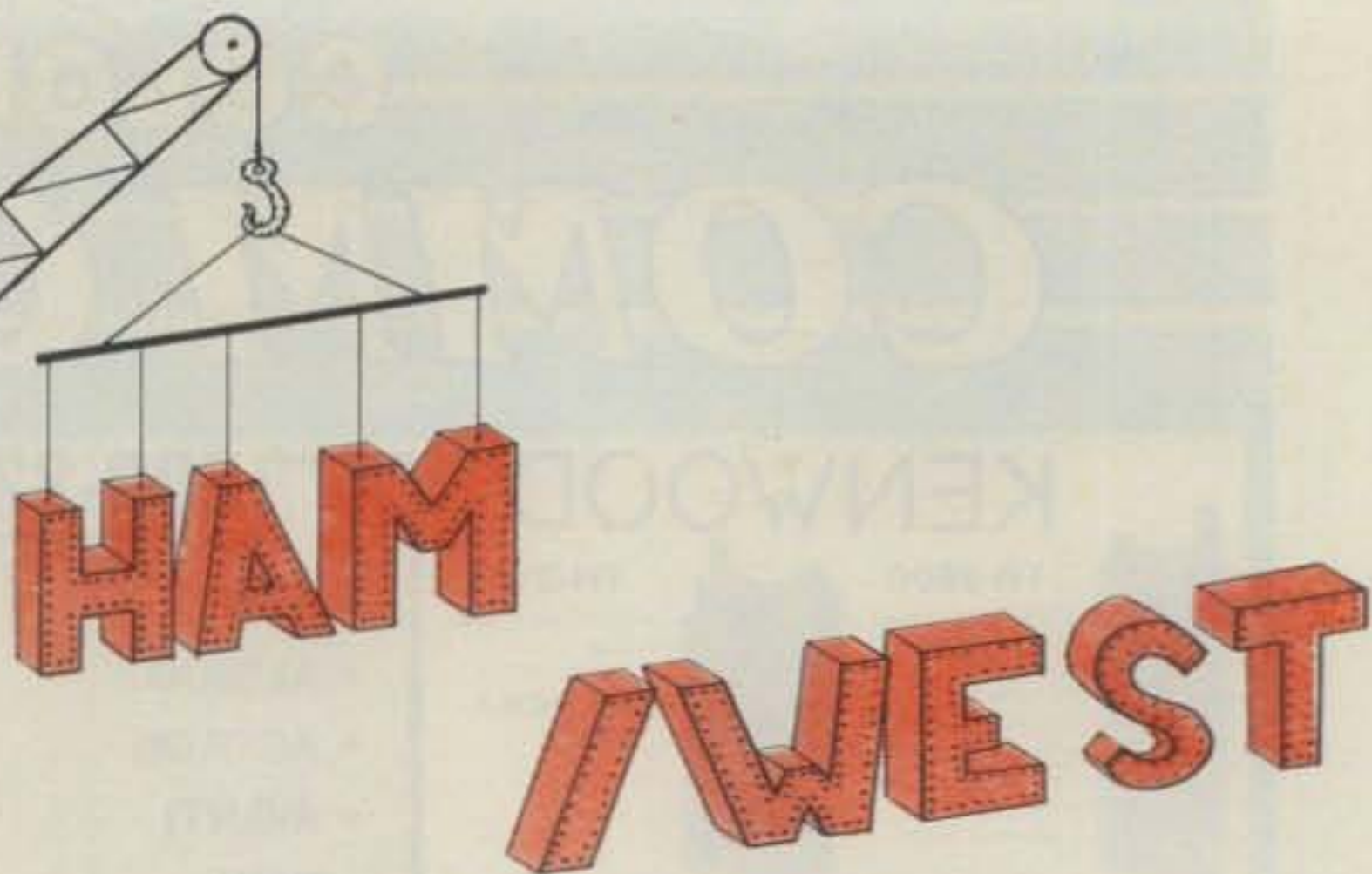
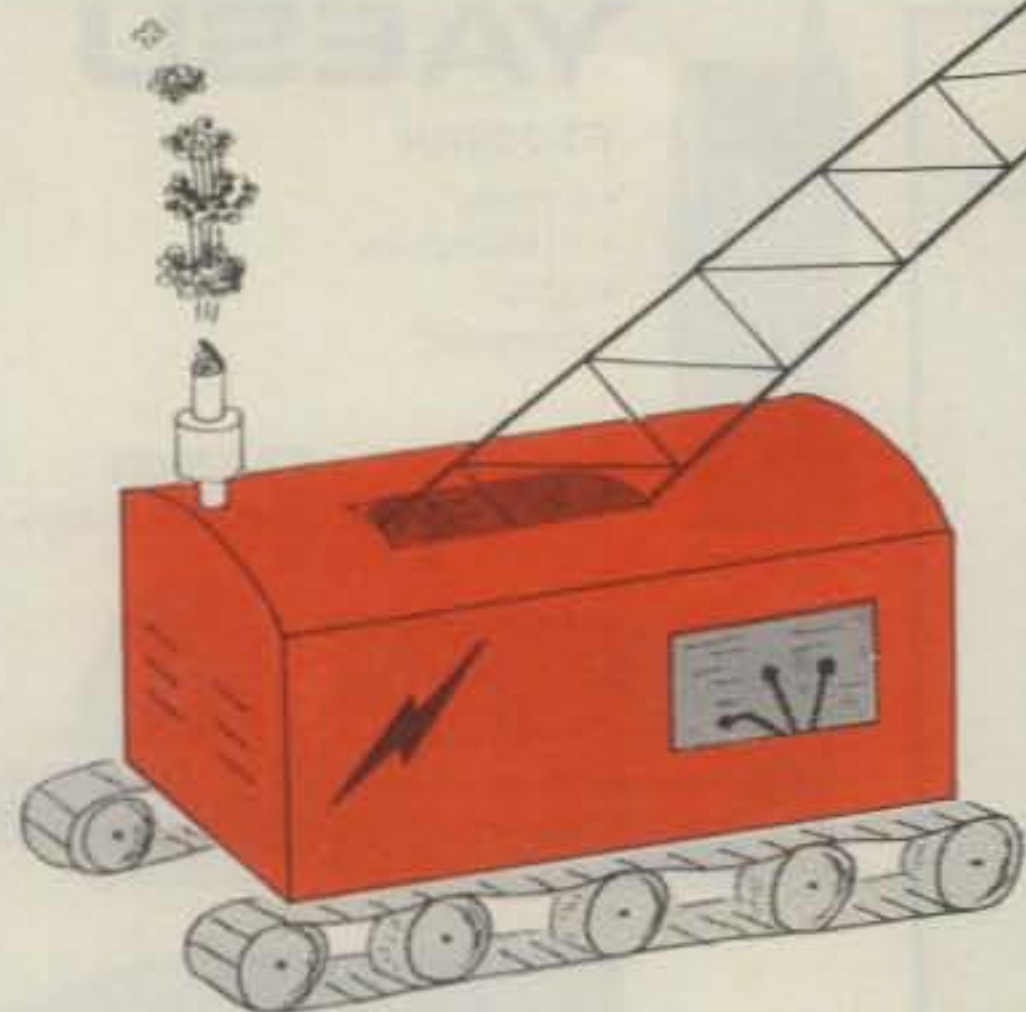
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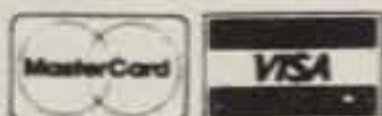
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CQ DX Honor Roll

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 316. 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.

C.W.

ON4QX	316	W4BQY	312	AB4H	304	W9RY	293	I5XIM	280
W9DWQ	316	W6ID	311	W0IZ	303	N5DX	291	W2LZX	280
W6PT	316	K4XO	311	WA8DXA	302	K8LJG	291	W9NUF	280
K4CEB	316	W2FXA	311	YU2TW	301	I3OBO	290	W6YQ	280
N4JF	316	DL3RK	310	SM3EVR	300	WA4JTI	290	HB9AFI	279
K9MM	315	AA6AA	309	W6SN	300	W1WLW	289	WA4DAN	278
N4PN	315	N4MM	308	WB4RUA	300	W4BV	289	DL1QT	277
DL7AA	315	W9BW	308	W0SR	300	N8MC	288	G2GM	276
N6AV	315	K1MEM	308	W7CNL	298	WA2HZR	286	NN4Q	276
W3GRS	314	OK1MP	308	K3FN	298	W0HZ	286	KA3R	276
W8KPL	314	SM6CST	308	K3UA	298	WD9IIC	284	I8WY	276
K6LEB	314	W4OEL	307	K9IW	298	K4CX	283	K4SE	275
K6JG	314	W1NG	306	DJ7CX	297	K1VHS	281	N4AH	275
N6CW	313	K9QVB	306	EA2IA	297	JH1VRQ	281	KQ9W	275
K9AB	313	K8PYD	305	WD9IIX	294	K7ZR	280	K9BWO	275
K6EC	312	N4KG	305						

SSB

K2FL	316	K5OVC	313	N4KE	306	DJ7CX	298	EA3KW	287
W4EEE	316	YU1AB	313	WA0DCQ	306	K9SM	298	AB9E	287
K6WR	316	F2MO	312	VE3MRS	306	I8LEL	298	W5LLU	287
W4UG	316	K8PYD	312	VK3JF	306	K8NA	298	N3ARK	286
W6EUF	316	W0SD	312	KB5FU	306	JH4PRU	298	K4LR	286
VE3MR	316	K9RF	312	EA1QF	305	K8VFX	298	N8BQJ	286
DL9OH	316	K8LJG	312	NA5W	305	EA9IE	298	VE3DLR	286
N4JF	316	K4MQG	312	KZ8Y	305	XE1NI	298	VE3CYX	285
I0ZV	316	N4MM	312	KB8KW	305	HP1JC	297	KE4HX	285
KD8VM	316	I8ACB	312	XE1OX	305	K5DUT	297	K9MNT	285
I0AMU	316	VE7WJ	312	K3UA	305	KB3OQ	297	WA2FKF	284
F9RM	316	W9SS	312	XE1J	304	YU7KV	297	KB5RF	284
T12HP	316	N2SS	312	WBIMZ	304	KE3A	296	AG9S	284
KS2I	316	LA7JO	312	W6SN	304	WB3GPR	296	KD8V	284
YV1KZ	316	OE2EGL	312	VE7HP	304	KC8EU	296	WB3HAZ	283
W3GRS	315	K4XO	312	W4UNP	304	KQ9W	296	VE3MV	283
VE3MJ	315	LU3YL	312	W6NLG	304	KB3KV	296	IN3ANE	283
I8AA	315	K6EC	311	NY5L	304	W4BOY	296	AE5B	282
4Z4DX	315	W4SSU	311	I4EAT	304	W9OKL	296	CT1UA	282
W9DWQ	315	I4LCK	311	XE1KS	303	I3OBO	295	KC8YM	282
W9JT	315	W0SR	311	W2LZX	303	K7LAY	295	A19R	282
ZL1AGO	315	K9BWO	311	KR9O	303	W0IYR	295	TG9EP	282
W4NKI	315	K6XP	311	WB3DNA	303	KK0C	295	N1ALR	282
VE2WY	315	K9AB	311	K0GT	303	KA9ABC	295	W6YQ	281
K6YRA	315	W1LQQ	311	K1MEM	302	I8ZTE	294	K9TI	280
W3AZD	315	W7FP	311	N5FG	302	NN4Q	294	N5FW	280
XE1AE	315	N6OC	311	W6FET	302	WD0BNC	294	ZL1BOQ	280
VE3GMT	315	DK2BL	310	W2FGY	302	I5BDE	294	G4FAM	280
ZL3NS	315	IV3YRN	310	K9HOM	302	I0SGF	294	VE6PW	280
I8YRK	315	AA6AA	310	WA4DAN	302	WD8PUG	294	KA8T	279
DJ9ZB	315	W8JXM	310	I8KCI	302	WB3CQN	294	KB5DN	279
W4DPS	315	DL6KG	310	K9UAA	302	K4SE	293	EA6DE	279
I4ZSO	315	WA4JTI	310	NJ2C	302	KC8JH	293	W9OKL	279
OK1MP	315	N4PN	309	KP4EQF	302	A1SI	293	JH8NYK	279
ZS6LW	315	K1UO	309	A1BM	302	I1POR	293	KX5V	279
I8KDB	315	H4HG	309	VE3FJE	301	W9NUF	293	K4BYK	278
N4WF	314	W6DN	309	WB4NDX	301	WA4LOF	292	I5EFO	278
OZ3SK	314	W7OM	309	WA3HUP	301	AC0A	292	VE3IUE	278
K9MM	314	ZL1BIL	309	K8CMO	301	I2MOP	292	K3LUE	278
YV5DFI	314	W1NG	308	W8ILC/QRPp	301	VE3FEA	292	KB8O	278
K6JG	314	VK4VC	308	W9RY	301	VP9CP	292	WB0UFL	277
CT1FL	314	YV5AIP	308	YU2TW	301	W8LKG	292	W4PTT	277
OZ5EV	314	N6AV	308	N4CRU	301	XE1OW	292	KB0SY	277
W2SUA	314	W2CC	308	N8BKF	301	K1VHS	292	I8XTX	277
W0SFU	314	A18S	308	W4OHZ	300	W0ULU	292	K2JF	277
W0YDB	314	N4KG	308	I5EFO	300	VE3IPR	291	N7ASL	276
OE3WWB	314	K8NA	308	K9QVB	300	N5AWS	291	WA6DTG	276
W9BW	314	WA4WTG	308	KB9KD	300	WB6GFJ	291	WA4OPW	276
VE3XN	314	VE4SK	307	K3UA	300	W4JFE	291	A19U	276
VE1YX	314	WB1DOC	307	VE4AT	300	W6MFC	291	KC2RS	276
N7RO	314	I0MBX	307	WZ4I	300	KB0U	291	WA9IVU	276
W3GG	314	WD9IIX	307	I2ZGC	300	K2JLA	291	K0HOW	276
I2LLD	314	SM4CTT	307	WB4UBD	300	VE3CKP	290	I8INW	275
K9LKA	313	KV2S	307	KZ2P	300	KD5ZM	290	WB1EAZ	275
ON5KL	313	WD8MGO	307	W6BCQ	300	JA5PUL	289	VE7BSM	275
EA2IA	313	G4CHP	307	WA2MID	300	W9TA	289	K8NWD	275
W8ILC	313	KB9OC	307	NW5K	300	K8ZZU	289	G3XTT	275
EA4LH	313	KB8DB	307	WA0TKJ	299	OK1AWZ	288	G4GED	275
OZ8BZ	313	KU9I	307	I6PLN	299	I8KCI	288	VE5FX	275
N6AW	313	K9IW	306	JH1VRQ	299	K13L	287	KS0Z	275
W8PCA	313								

CQ DX Awards Program

SSB

1480	YB5OZ	1483	KP4CZ
1481	YB5NOF	1484	N5GAP
1482	YB6MF	1485	LU8DPM

CW

666	YU7DR	668	W2FXA
667	AA4LI		

SSB Endorsements

310	I2LLD/314	275	EA3KW/287
310	W8PCA/313	275	VE3DLR/286
310	YU1AB/313	250	LU8DPM/266
300	K9IW/306	250	WD9IIC/264
300	I8KCI/302	150	G3UKH/150
275	K13L/287	150	KP4CZ/150

CW Endorsements

310	W2FXA/311	275	WD9IIC/284
275	W7CNL/299	200	SM5DAC/206
275	K9IW/298	150	YU7DR/161

Total number of active countries is 315. 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 s.a.s.e. 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.

Here and There

DX-Press: Best wishes to John Fung-Loy, PA3CXC, on becoming editor of VERON's *DX-Press*, and our sincere thanks to former editor Gerben Menting, PA0GAM, for all the help and news he provided over the years.

New YASME Foundation Officers: Guiding mentors for YASME this year are W6KG, President; Danny Weil, Vice President; W6RGL, Secretary; and W6BSY, Treasurer. directors are K3ZO, K5RC, W6OAT, W6QL, W7NG, W0MLY, JA1KSO, OH2BH, and VK2HD.

QSL Manager Lists: If you are having difficulty finding the correct route for a much needed QSL, you might try one or more of the following excellent references.

The W6GO/K6HHD QSL Manager List: P.O. Box 700, Rio Linda, CA 95673.

The WB4KCL QSL Manager Directory: Fred Smith, 2265 Sweetbriar Dr., Alexandria, VA 22307.

The SM5CAK/SM5DQC QSL Manager's List: Lars E. Bohm, SM5CAK, Stora Angesby, S-591 90 Motala, Sweden.

The Most Complete QSL Manager's List Ever Printed: Also via Lars E. Bohm, SM5CAK.

QSL Report—Hiromichi Katsurashima, JH1HWN, No. 2 Kikyo-Bldg 401, 2-1-1 Odai, Miyamae-Ku, Kawasaki-City, Kanagawa 213, Japan.

Zone 2: This is by far the most difficult of the North American zones for WAZ and is always needed by DXers on other continents. Some good contacts are VE8HL, 14025 kHz at 1830 UTC and VE2FGG, 3507 at 0200 GMT.

Zone 23: Some stations active from rare WAZ zone 23 include UA0YAG, 14008

kHz at 1345 UTC; UA0YO, 14062 at 2330 UTC; JT1BG, 14210 at 0030 UTC; JT1BS, 14195 at 0100 UTC; and JT1KAI, 14182 at 0100 UTC.

Macquarie Island: VK0SJ will be active, on phone only, until the end of the year. QSL via VK7RM.

Franz Josef Land: Max, RZ1OWA, works near 14228 kHz for North and South American stations until about 0200 UTC. QSL to P.O. Box 88, Moscow, U.S.S.R.

Falkland Islands: VP8WTW will be on the air through the end of 1986. QSL to G4ZCN.

Albania: Rumors of operations from Albania frequently come to naught, but an operation by OK2AOP and others for 9 days, starting September 23 or 24, is a distinct possibility.

NCDXF: The Board of Trustees of the Northern California DX Foundation announced that Bob Ferrero, W6RJ, has been elected as president. Bob replaces Jack Troster, W6ISQ, who recently resigned after 15 years as Foundation Chairman. In recognition of Jack's outstanding contributions to NCDXF over the years, the Board of Trustees has elected him Trustee Emeritus. Troster will continue to act as NCDXF Advisor and to head all activities relating to the Foundation's Beacon Network operating worldwide on 14,000 kHz.

QSL Information

AH9AC to W1ISD
 BY1QH to Box 2654, Beijing, Peoples Republic of China
 BY4AA to Box 205, Shanghai, Peoples Republic of China
 BY5QA to Box 507, Fuzhou, Peoples Republic of China
 CE0ZIG to Jaime, Box Airport, Easter Island, Chile
 D68WS to Walter Skudlarek, DJ6QT, An der Klostermauer 3, D-6476, Hirzenheim 1, Federal Republic of Germany
 FG/K2BS/FS (French St. Martin) to W2GHK
 FO0WVR to N6VR
 FO0XX to Box 2025, Castro Valley, CA 94546
 HBB/DA1WA U.S. stations QSL to DA2HS, Box 4205, APO New York 09633
 HF0POL to SP5PWK
 HMA to W2KF
 HK3MAE to HK7IMB, P.O. Box 864, Bucaramanga, Columbia
 HK0BKX to WB9NUL
 HV3SJ to I0DUD
 JH5EES/JD1 (Minami Torishima) to P.O. Box 2, Seya, Yokohama, Japan
 KX6DS to Northern Alabama DX Club, Box 4563, Huntsville, AL
 NH6FU/KH9 to Box 86, Wake Island 96898
 OX3LX to OZ1DJJ
 OY1R to W2KF
 ST2SA to DJ9ZB
 SU1ER to P.O. Box 78, Heliopolis, Cairo, Egypt
 SU1MB to Eddy Johnson, A Company, C-60 Infantry, Ft. Lewis, WA 98433
 T2ITA to N4FJL
 TA1C to Box 188, Istanbul, Turkey
 TA1G to Box 1288, Istanbul, Turkey

TA2G to Box 14, Amek, Ankara, Turkey
 TJ1AF to SP7EWL, Zbigniew Adamski, skr. poczt. 21, 25-324 Kielce 25, Poland
 TT8CW to F6AJN
 TU4BR to KN4F
 TV6KAR to F6GLL
 UA10T (Franz Josef Land) to UB5KW, Box 88, Moscow, U.S.S.R.
 VP2MM & VP2MIU to AB1U
 VP2MU to W1SD
 VP8AEN (South Georgia Is.) to GM3ITN
 VP8BGO to G0BAU
 VP8PTG to G4PTG
 VQ9EC to W7LAN
 VR6YL to W6HS
 XE86NJ to XE1NJ
 XX9CW to DK7PE
 XX9XY to WB5KWL
 ZC4CZ to G4MCO
 ZF2JI to W4KA
 ZK2JB to Box 181, Niue Island, South Pacific
 ZP5JAL to KO2A
 ZS3BI to DF2AL
 4U1UN to W2MZV
 5H3BH to SM0EAI
 5H3HM to VE5VJ
 5H3ZR to OH6IQ
 5N8ALH to G4HVE
 5T5SR to N4GMR
 5V7HL to Box 8062, Tokoin, Lome, Togo, West Africa
 5W1DZ to WB2LVB
 6F2AQ to XE2AQ
 6F2FL to XE2FL
 6F2MX to K6VNX
 6Y5HN to KE3A
 6T2BA to Box 1533, Khartoum, Sudan
 6T2MG to Box 49, Khartoum North, Sudan
 7J1ABS to WG6P
 9M2HB to N4FFN

73, John, K4IIF

HAMFEST - RADIO EXPO 86 - HAMFEST

RADIO EXPO 86



WA9ORC

RADIO EXPO 86 will be held on SATURDAY and SUNDAY, SEPTEMBER 27TH and 28TH, at the Lake County Fairgrounds, Rts. 120 and 45, Grayslake, IL. Flea market opens at 6 AM & Exhibits at 9 AM.

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Contest Calendar

a monthly feature by
FRANK ANZALONE, W1WY

NEWS/VIEWS OF ON-THE-AIR COMPETITION

I have no excuse or explanation for the snafu of the dates of the All Asian Phone Contest back in June. Guess I misinterpreted the date of the third weekend in June. It was impossible to make a correction in the column, but fortunately some of the weekly bulletins were able to make the correction in time before the contest.

A couple of activities that did not meet the deadline for the August issue were the Wild Bunch 160 Meter SSB Contest (August 2-3, the ARCI QRP Summer Daze Sprint (August 9th), and also the ARCI Novice CW Sprint (August 16th). In case you did participate, you have until September 7th to send your 160 SSB logs to: Rob Koziomkowsi, KA1SR, 5 Watson Dr., Portsmouth, RI 02871. Your ARCI QRP logs go to: Eugene Smith, KA5NLY, P.O. Box 55010, Little Rock, AR 72225-0010. Deadline for the Summer Daze Sprint is September 9th and September 16th for the Novice Sprint.

Sorry, fellows, I would have been happy to give your announcement full coverage, but your material was received way beyond the deadline I indicate each month.

And now a more detailed report about Andy Malashuk, W1PM, who became a Silent Key on June 8th. Andy was an avid DXer and DXCC Hall of Fame member. Most of us, however, will remember him as one of the active members of the World-Wide Contest Committee back in the late '50s and early '60s. His call at that time was W1GYE. He was also active as one of the operators at super multi-multi station K2GL.

The last few years illness and extensive surgery devastated his once healthy and robust body, and he lost the desire to be active in amateur radio. In spite of his handicap he continued working as an electronic engineer until the last day. It was reported as a peaceful death—a heart attack in his sleep at home on Sunday, June 8th.

Those of us who knew Andy will remember him as always being ready to give a helping hand when called upon to do so. May he rest in peace.

Be sure to check elsewhere in this issue for this year's CQ World-Wide Contest announcement. There were no changes in the rules, but there is an updated trophy list.

Deadline for activities in December is September 15th, and October 15th for

14 Sherwood Road, Stamford, CT 06905

Calendar of Events

- * Sept. 3-5 YLRL "Howdy Days"
- Sept. 6-7 160M. Bulletin SSB Contest
- * Sept. 13-14 European Phone Contest
- Sept. 13-15 Wash. State QSO Party
- Sept. 13-15 ARRL VHF QSO Party
- Sept. 14 North American CW Sprint
- Sept. 20&21 CRRL CAN-AM Contest
- Sept. 20-21 Scandinavian CW Activity
- Sept. 21 North American SSB Sprint
- Sept. 27-28 Scandinavian SSB Activity
- Sept. 27-28 California QSO Party
- Sept. 27-28 Delaware QSO Party
- Sept. 28-29 Classic Radio Exchange
- Oct. 4-5 IRSA World Championship
- Oct. 4-5 "Middle of World" Contest
- Oct. 4-5 VK/ZL/Oceania SSB
- Oct. 11-12 VK/ZL/Oceania CW Contest
- Oct. 11-12 Pennsylvania QSO Party
- Oct. 12 RSGB 21/28 MHz SSB
- Oct. 12-13 Illinois QSO Party
- Oct. 15-17 YLRL Anniv. CW QSO Party
- Oct. 18 RSGB 21 MHz CW Contest
- Oct. 18-19 ARCI QRP CW Contest
- Oct. 18-19 Boy Scout Jamboree
- Oct. 18-20 CARTG RTTY Contest
- Oct. 25-26 CQ WW DX Phone Contest
- Oct. 25 -Nov. 1 Cayman Is. Pirates Week
- Oct. 29-31 YLRL Anniv. SSB QSO Party
- Nov. 1-2 IPA Radio Club Contest
- Nov. 8 ALARA YL/OM Contest
- Nov. 8-9 European RTTY Contest
- Nov. 15-16 AOEC 160 Meter Contest
- Nov. 15-16 Oceania QRP CW Contest
- Nov. 29-30 CQ WW DX CW Contest

* Covered last month.

the January issue. Sending material to my home address will give you a few more days leeway.

73 for this time, Frank, W1WY

160 Meter Bulletin SSB Contest

0000Z Sat. to 2400Z Sun., Sept. 6-7

Evidently, this one is run by the same group behind the Wild Bunch 160 meter activities. It's still a little early in the season for 160, but September could produce a good weekend.

Classes: Both single and multi-operator.

Exchange: RS and QTH.

Scoring: 10 points per QSO.

Multiplier: States, VE provinces, DX countries, and continents.

Awards: Certificates to the top scorers in each of the above areas. Plaques to the overall single operator and multi-operator winners.

Mailing deadline for logs is October

CW WPX Contest Correction

We wish to report a correction for the CW WPX Contest Results printed in the May issue. Station KI6P was operated by WA6VEF.

31st to: The 160 Meter Bulletin, c/o R. Koziomkowski, KA1SR, 5 Watson Drive, Portsmouth, RI 02871.

ARRL VHF QSO Party

1800Z Sat. to 0300Z Mon., Sept. 13-15

All bands 50 MHz and up can be used for this one. The August issue of QST should have had all the details.

It is recommended that you send for official summary and log sheets. A large SASE will get you a supply. Send to the ARRL, VHF Contest, 225 Main St., Newington, CT 06111.

Wash. State QSO Party

0100Z to 0700Z Sat., Sept. 13

1300Z to 0700Z Sat./Sun., Sept. 13-14

1300Z to 0100Z Sun./Mon., Sept. 14-15

This is the 21st annual party sponsored by the Boeing Employees ARS (BEARS). The same station may be worked on each band and mode for QSO and multiplier credit. Wash. stations may work other in-state stations for QSO points.

Exchange: QSO no., RS(T), and QTH. County for Wash.; state, province, or country for others.

Scoring: Phone contacts are worth 2 points, CW contacts 3 points, mobile 5 points.

Wash. stations multiply total QSO points by number of states, VE provinces, and DX countries worked. Others use Wash. counties for their multiplier (maximum of 39). There is an additional multiplier of one (1) for each group of 8 contacts with the same Wash. county for non-Wash. stations.

Frequencies: CW—3560, 7060, 14060, 21060, 28060. Phone—3925, 7260, 14280, 21380, 28580. Nov ice—3725, 7125, 21150, 28160.

Awards: Certificates to the top scorers, both single and multi-operator, in each state, VE province, DX country, and Wash. county. Additional awards where warranted.

The Worked Five Bears Award is available to anyone working 5 club members before, during, or after the party. The



Getting contest plaques to winners sometimes presents a problem, but this one was easy. We took advantage of Peter Watson, ZL3GQ's visit to the States last May. Here's Bill, G2FDF, FOC President, presenting the CQ 1984 WW CW Contest, Maui Radio Club Award to Peter at the FOC annual dinner at Danbury, CT. (Photo by W1RM)

Worked Three Cubs Award is available for working 3 Novice club members.

Include a check sheet with your entry if you made 200 or more contacts. Results will be mailed to all entrants, no SASE required.

Mailing deadline is October 15th to: BEARS, c/o David Long, N7FNG, 6738 Fifth Ave. NW, Seattle, WA 98117.

(Note: Above awards taken from last year's list. None indicated in this year's announcement. Probably an oversight.)

Scandinavian Activity Contest

C.W.: Sept. 20-21 Phone: Sept. 27-28
1500Z Saturday to 1800Z Sunday

It's the world working the Scandinavians in this the 28th SAC. The same station may be worked on each band for QSO and multiplier credit.

The prefixes used in Scandinavia are: LA, LB, LG, LJ (Norway); JW (Svalbard & Bear Is.); JX (Jan Mayen); OF, OG, OH, OI (Finland); OH0 (Aland Is.); OH0M (Market Reef); OX (Greenland); OY (Faroe Is.); OZ (Denmark); SJ, SK, SL, SM (Sweden); TF (Iceland).

Bands: 3.5, 7, 14, 21, 28 MHz according to IARU band plans; 3560/3600, 3650/3700, 14060/14125, and 14300/14350 kHz should be kept free of contest activity.

Classes: Single operator and multi-operator single transmitter, all band only. Multi-operator must remain on the same band for at least 10 minutes. Also QRP single operator (maximum of 10 watts output) and SWL (only SAC stations may be logged).

Exchange: RS(T) plus a QSO number starting with 001.

Points: European stations score 1 point for each SAC contact. Non-Europeans score 1 point on 14, 21, and 28 MHz, and 3 points on 3.5 and 7 MHz.

Multiplier: Each call area in the above list of SAC countries worked on each band (call areas, *not* prefixes).

Final Score: The sum of QSO points from all bands times the sum of the multiplier from each band. Scoring for SWL's same as above.

Awards: Certificates to the winning station in each class, both CW and phone, in each country and each U.S.A. call area. QRP stations will be listed in one common list. The non-SAC SWL winner will be awarded. Plaques to the top-scoring station in each continent.

The usual disqualification criteria will be observed. Include a summary sheet and a dupe sheet for logs with more than 200 QSOs, and a signed declaration. Mailing deadline is October 30th to: EDR Contest Manager OZ1LO, Leif Ottosen, Bankevejen 12, Kong, DK-4750 Lundby, Denmark.

North American "Sprint"

CW: Sept. 14 SSB: Sept. 21
Sunday 0000Z to 0395Z (Sat. night)

This is the fall edition of the "Sprint" run by the National Contest Journal. As the name implies, it's a shorty, only four hours long.

North Americans will be contacting other North American stations as well as stations in other countries, single operator only. North American boundaries are as defined by the rules used in the CQ WW DX Contest.

Exchange: Call, QSO no., name, and

QTH (state, Canadian area, or country).

Scoring: Multiply total QSOs by the sum of states, Canadian areas, and other North American countries worked for your final score. (U.S. and VE not countries; KH6 not a state.) There are eight Canadian multipliers: VE1/VO1/VO2, VE2-VE7, VY1/VE8. Non-North American countries do not count as a multiplier.

Frequencies: Three bands only: 80, 40, and 20 meters. CW—3540, 7040, 14040. SSB—3900, 7225, 14280. (Plus or minus QRM.)

Awards: A trophy to the highest scoring entrant. Certificates to the top scorer in each U. S. call area, Canada, and other country. Also to the ten top scores, to each member of the winning team, and the highest scoring entrant on each team.

Team competition is limited to a maximum of 10 operators as a single unit. Pre-contest registration is required for each team before the start of the contest—with W6OAT for the CW and K7GM for the SSB.

There are other detailed rules, a special QSY rule, disqualifying penalties, etc. I suggest you write to W6OAT or K7GM if you do not have a copy of the *Contest Journal*.

Entries must be received no later than 30 days after the end of each "Sprint." The CW go to: Rusty Epps, W6OAT, 948-H Kiely Blvd., Santa Clara, CA 95051. The SSB go to: Rick Niswander, K7GM, 4520 N. Central, Suite 500, Phoenix, AZ 85012.

CRRL CAN-AM Contest

Phone: Sept. 20 CW: Sept. 21
0000Z to 2400Z Sat. and Sun.

This year's CAN-AM Contest is sponsored by the Ontario Contest Club and the Canadian Radio Relay League to increase friendship between American and Canadian amateurs. Use all 6 bands between 1.8 and 28 MHz in the U.S. General portion of each band.

Categories: Single operator, all band, single band, and QRP. And multi-operator, single transmitter.

Single operator stations are limited to 20 hours with one or two rest periods. Multi-operator stations can operate the full 24 hours.

Exchange: RS(T) plus a QSO number starting with 001, and state or province abbreviation (use CN for Caribbean and PC for Pacific U.S. possessions).

Points: U.S. to U.S. and VE to VE QSOs 2 points. U.S. to VE QSOs 3 points.

Multiplier: 50 U.S. states, 2 U.S. possessions (CN & PC), 10 VE provinces, 2 VE territories (VE8 & VY1), 1 VE island (Sable/St. Paul). Total of 65 per band.

Final Score: Total QSO points times the sum of the multiplier from each band. (Phone and CW are separate contests. However, combined score from phone

The Total Mobile Antenna System

Reduced size yet high performance HF antennas are becoming increasingly popular among today's radio amateurs, and ICOM is proudly responding to those needs with a deluxe antenna system: The AH-2. This all band and fully automatic antenna package is especially designed for luxury style mobiling, portable activities such as vacationing, or operating from environmentally sensitive areas such as apartments or condos.

Mobiling in top fashion hasn't been more attractive, and ICOM's "all in one" design boasts numerous advantages over conventional "mixed components" -type setups. Whether pursuing fixed station or mobile activities, the flexibility and convenience of this fully remote controlled and automatically tuned antenna opens new horizons in limited antenna HF operations. Since the AH-2 system is packed with unique features and is a relatively new idea, we would like to discuss its innovative designs in a step-by-step manner.

There are five components in the ICOM AH-2 system. The package can be purchased complete or minus the mobile mount and whip for auto or fixed station use as desired. The full system consists of a small rig-attached control unit, a remote actuated and microprocessor controlled antenna tuning unit, an approximate nine-foot stainless steel whip, a universal and heavy duty auto frame mount, and an interconnecting cable set.

An optional OPC-137 cable interface is available for the IC-751 or IC-745 HF transceivers. When using the system's stainless whip, operation on all amateur bands between 3.5 and 30MHz is possible. When the radiating whip is replaced with a random wire 40 feet or longer, 1.8MHz operation is also possible. During operation, you merely select a band and frequency, push the remote unit's "tune" button, and one of over 260,000 LC combina-

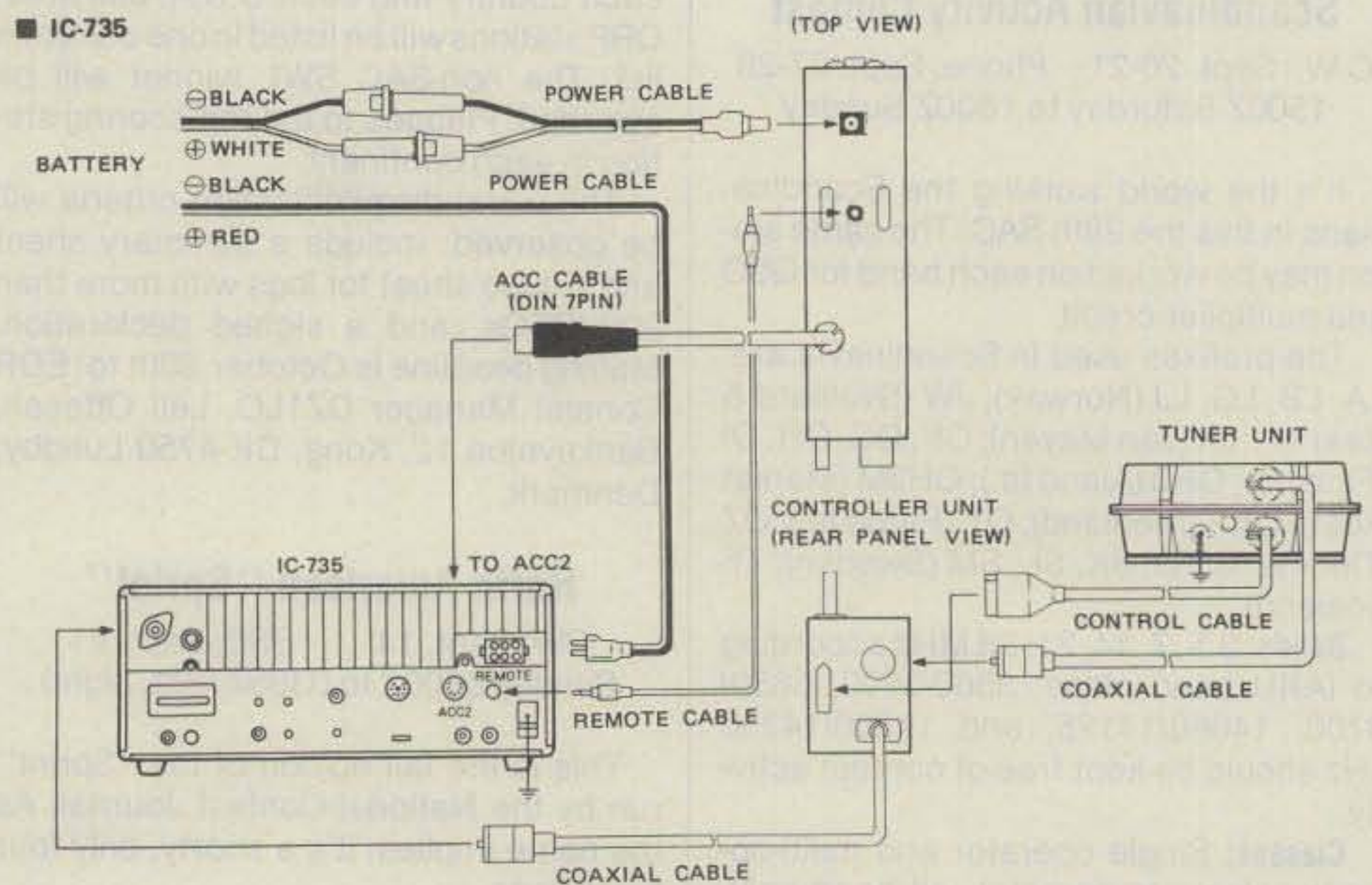
tions is digitally selected for optimum transmit antenna performance. Tuning actions require only ten watts of RF power, and the resulting SWR is 1.5:1. Usual tuning time is less than six seconds. The antenna tuning unit's microprocessor stores that LC data in one of eight internal memories, so that information is recalled in less than two seconds when the HF transceiver retunes a preselected range. An additional microprocessor in the rig-attached remote control unit handles automatic transceiver tune mode switching and the RF power output control.

Notice the tuner's capabilities are used during **both transmit and receive**. Its four sensors (impedance, phase, forward and reflected power) are designed to optimize **both single longwires and whips or random wires shorter than 1/4 wavelength**: a difficult task for many automatic tuners. Notice, also, the precise use of microprocessor selected fixed capacitors rather than motor driven variables. This overall concept

provides superb antenna tuning and the highest possible performance.

The system's whip and mount truly give new clarity to the terms "universal" and "heavy duty." They can be quickly installed on a TV mast, boat or one of today's "bumperless" autos. The mount's bracket bolts to an existing hole in an auto's rear frame, a very strong pipe bolts into the bracket, and the antenna's base section bolts to the pipe's remaining end. The pipe's length is fully adjustable to fit various autos. The antenna base section, incidentally, stands 15 inches tall and weighs approximately nine pounds. "Rugged" is truly an understatement!

Whether assembled as an all-band mobile system or employed in fixed station use when large arrays are unfeasible, ICOM's dual microprocessor controlled AH-2 will keep you communicating in high style. ICOM is bridging new areas in communications, and wants **you** to enjoy this leading edge in modern technology!



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ICOM HF Transceiver

IC-735



Ultra Compact

The new ICOM IC-735 is what you've been asking for...the most compact and advanced full-featured HF transceiver with general coverage receiver on the market. Measuring only 3.7 inches high by 9.5 inches wide by 9 inches deep, the IC-735 is well suited for mobile, marine or base station operation.

More Standard Features

Dollar-for-dollar the IC-735 includes more standard features...FM built-in, an HM-12 scanning mic, FM, CW, LSB, USB, AM transmit and receive, 12 tunable memories and lithium memory backup, program scan, memory scan, switchable AGC, automatic SSB selection by band, RF speech processor, 12V operation, continuously adjustable output power up to 100 watts, 100% duty cycle and a deep tunable notch.

Superior Performance

It's a high performer on all the ham bands, and as a general coverage receiver, the IC-735 is exceptional. The IC-735 has a built-in receiver attenuator, preamp and noise blanker to enhance receiver performance. PLUS it has a 105dB dynamic range and a new low-noise phase locked loop for extremely quiet rock-solid reception.

Simplified Front Panel

The large LCD readout and conveniently located controls enable easy operation, even in the mobile environment. Controls which require rare adjustment are placed behind a hatch cover on the front panel of the radio. VOX controls, mic gain and other seldom used controls are kept out of sight, but are immediately accessible.



Options. A new line of accessories is available, including the AT-150 electronic, automatic antenna tuner and the switching PS-55 power supply. The IC-735 is also compatible with most of ICOM's existing line of HF accessories.

See the IC-735 at your authorized ICOM dealer. For superior performance and innovative features at the right price, look at the ultra compact IC-735.

CIRCLE 47 ON READER SERVICE CARD



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and CW will be used for overall competition.)

Awards: Certificates to the winners in each multiplier area on each mode in the single operator category, and to the top five multi stations in each country for combined phone/CW scores. There are four trophies for the U.S. and Canadian combined scores to the single and multi-operator champions.

QRP is limited to a maximum of 10 watts input.

The usual disqualification rules will be observed. It is suggested you send for official rules, sample log forms, check sheets, and summary sheets. Include a large SASE (do not glue U.S. stamps to envelope).

Mailing deadline is 30 days from end of the contest to CRRL CAN-AM Contest, Att: VE3BMV, P.O. Box 65, Don Mills, Ont., Canada M3C 2R6.

Delaware QSO Party

1700Z Sat. to 2300Z Sun., Sept. 27-28

The Delaware ARC is again sponsoring this party with rules the same as they have been for the past couple of years.

Stations may be worked once per band and mode for QSO and multiplier credit.

Exchange: QSO no., RS(T), and QTH. County for DE stations, ARRL section or country for others.

Scoring: DE stations score one point for each QSO. Multiply total by number of ARRL sections and DX countries worked. Others get 5 points for each DE contact. Multiply total by the number of DE counties worked on each band and on each mode (maximum of 36 multipliers possible). There are three DE counties: Kent, New Castle, and Sussex.

Frequencies: CW—1805, 3740, 7070, 14070, 21070, 28070. SSB—1815, 3975, 7275, 14325, 21425, 28650. Novice—3720, 7120, 21120, 28120.

Awards: Appropriate awards will be given to the top scorers. In addition, certificates will be awarded to all stations working all three Delaware counties. Include two 22¢ stamps and an address label with your application for the "WDEL" award.

Mailing deadline for all entries is October 31st, and they go to Charles Sculley, AE3H, 103 E. Van Buren Avenue, New Castle, DE 19720. Include an SASE for a copy of the results.

California QSO Party

1600Z Sat. to 2200Z Sun., Sept. 27-28

This year's party is again being sponsored by the Northern California Contest Club. All efforts are being made to activate all CA counties and make this the most successful of all state parties.

Operating time is limited to 24 out of the 30-hour contest period for single operator stations. Multi-operators may use the full 30 hours. Off times must be at least 15 minutes and clearly indicated in the log.

The same station may be worked on each band and mode, and CA stations may contact other in-state stations for QSO and multiplier credit. CA mobiles may be worked in each county change.

Exchange: QSO no. and QTH. County for CA stations; state, province, or DX country for others.

Scoring: Two points for phone contacts; 3 points on CW.

Multiplier: CA stations use states (50) and VE call areas (8). VONE1-7 and VY1/VE8. Out-of-state use CA counties (maximum of 58).

Final Score: Total QSO points times the sum of the multiplier.

Frequencies: 160 meters through 2 meters, except 30 and 12 meter bands. CW—1805 and 50 kHz up from band edge. Phone—1815, 3850, 7230, 14250, 21300, 28500. Try CW on the half hour, 160 at 0500Z, and 80 at 0700Z.

Awards: Certificates to the highest scoring single operator in each state, province, and country. Also each CA county and stations scoring 100 or more QSOs.

Trophies galore. Single operator, top three out-of-state, and CA top three. Also CA county expedition, and the WA6VEF

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FALCON produces 8 different Base/Repeater and 9 different Mobile amplifiers. Six of these amplifiers are for the 220 MHz operator.

For example, consider the following two MOSFET Base/Repeater amplifiers. Remember, FALCON is the only manufacturer bringing you amplifiers with the advantages of RF power MOSFET's.

Model 4112C

RF Power In 1 W to 15 Watts
RF Power Out 10 Watts in - 100 Watts out
3 Watts in - 50 Watts out

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RF Power In 300 mW to 3 Watts
RF Power Out 2 Watts in - 100 Watts out
1 Watt in - 70 Watts out

Features:

- Frequency range 220-225 MHz
- New, long life MOSFET transistors
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special award for the CA station making the most CW QSOs. Multi-single and multi-multi winners in CA and county expedition. And the CA mobile team making the most QSOs.

Include a summary sheet showing the scoring, etc., a dupe sheet if you make more than 200 QSOs, and a large SASE for a copy of the results.

Mailing deadline is November 1st and entries go to: NCCC c/o Gary Caldwell, WA6VEF, 1830 Polk Street, Concord, CA 94521.

Classic Radio Exchange

2000Z Sun. to 0300Z Mon., Sept. 28-29

This is the fall edition of this unusual event. The format is still the same as it has been for the past years. Object is to restore and operate older equipment with like-minded hams, not required in the exchange, but a distinct advantage in the scoring.

A classic radio is any equipment at least 10 years old (25 years would be more realistic, Stu—ed.)

The same station may be worked on each band and each mode, and with different equipment combinations. Non-contesters may be worked for credit also.

Exchange: Name, RS(T), QTH, receiver and transmitter type, and other interesting conversation.

Scoring: Multiply total QSOs by total

number of receivers, transmitters, state/provinces/countries worked on each band and mode. Multiply that total by your Classic Multiplier, the total age of all receivers and transmitters used. Three QSOs minimum per unit. Multiply age by two if gear is a transceiver.

Frequencies: CW—60 kHz up from low edge of band. Phone—3910, 7280, 14280, 21380, 28580. Novice/Tech.—3720, 7120, 21120, 28120.

Awards: Certificates and appropriate memorabilia are awarded for highest scores, longest DX, exotic equipment, best excuses, and other unusual achievements.

Send logs, comments, anecdotes, etc., to: Stu Stephens, K8SJ, 1407 Hollywood Road, Sandusky, OH 44870. Include a large SASE for a copy of the "Classic Radio Newsletter" with the results.

IRSA World Radio Championship

Phone: Oct. 4 CW: Oct. 5
0000Z to 2400Z, Sat. & Sun.

This is the 1st contest sponsored by the International Radiosport Association. It's a worldwide-type contest with a wide assortment of multipliers, making it possible for a big score. Phone and CW are separate contests, but scores can be combined for special awards.

Single operators are limited to 22 hours out of the 24-hour contest period.

The 2 hours off time can be taken in one or two periods and must be indicated in your log. Multi-stations can operate the full 24 hours. Use all six bands, 1.8-28 MHz (except WARC bands).

Classes: Single operator, single and all band. Multi-operator, single and multi-transmitter. Club competition. There are three power divisions: high 1000 watts; low 100 watts; and QRP 5 watts output.

Exchange: RS(T) and QSO number starting with 001.

Points: Two for each completed phone contact; three if it's a CW contact.

Multiplier: Each DXCC country and call areas in the following countries worked on each band: USA, Japan, Canada, Australia and the RSFR-USSR. Also each land, maritime, and aeronautical mobile.

Final Score: Total QSO points from all bands times the total multiplier from each band.

Awards: First-place certificates to the winners in each category and power group in every participating country, call area, and mobile group. Stations having the highest combined score will receive a free one-year subscription to *Radiosporting* magazine. There are also trophies and plaques to the highest scoring stations in all categories. The W2PV Memorial Trophy donated by the IRSA goes to the multi-operator, multi-transmitter world champion.

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operating in the different categories, but this is not essential for participation. Multi-stations keep separate logs and contact numbering on each band, but single operators are requested not to use separate log sheets for each band. Indicate the multiplier only the first time it is worked on each band, and check your log for duplicate contacts and multipliers.

It is suggested you send for a Contest Form Kit. An SAE and one "green stamp" or three IRCs will get you all the details and forms.

You are encouraged to submit your log regardless of the score. A one-year subscription to *Radiosporting* will be awarded to the 10 stations selected by a drawing from the logs received.

Mailing deadline is no later than 30 days after the contest to: IRSA WRC Contest, Att: Walt McGugan, W3FG, P.O. Box 7, Odenton, MD 21113-0007.

Middle of The World Contest

0000Z Sat to 2359Z Sun., Oct. 4-5

This is a new one organized by the

Guayaquil Radio Club of Ecuador. It's the world working the Ecuadorians on 7 MHz and 14 MHz SSB only.

There will be four "Middle of the World" stations on the Equator line active during the contest: HD1GRC, Equator Line; HD0GRC, Cayambe Volcano; HD7GRC, Equadorian Amazon; and HD8GRC, Galapagos Island. These are worth 20 points per QSO.

Classes: Single operator on 7 MHz or 14 MHz or both bands. Multi-operator, both bands.

Exchange: RS plus a 3-digit QSO number starting with 001.

Scoring: For non-Ecuadorian stations.

Points: Contacts with HC stations, 10 points; with HD stations, 20 points.

Multiplier: Is rather unusual. It's described as "the sum of the numeral of HC zones worked, only once per band." There are 8 call areas in Ecuador, HC1-HC8. Therefore, HC1 would be one multiplier and HC8 would count as 8 multiplier points. A possible 36 per band.

Final Score: Total QSO points on each band times the multiplier from that band.

Awards: A trophy and diploma for first- and second-place winners on 7 MHz, 14 MHz, and both bands for single operators. And first- and second-place on both bands for multi-operator winners. There is a special award for stations making 30 or more HC contacts, and a minimum of 3 HD contacts. Work at least 5 HC zones and you will be awarded the "WHC" certificate.

Use a separate log for each band and include a summary sheet and a signed declaration with your entry. Include 5 IRCs to cover cost of any award.

Logs must be received by December 31st and go to: Middle of the World Contest, Guayaquil Radio Club, P.O. Box 5757, Guayaquil, Ecuador.

VK/ZL/Oceania DX Contest

SSB: Oct. 4-5 CW: Oct. 11-12
1000Z Saturday to 1000Z Sunday

This year's contest commemorates the 60th Anniversary of the NZART, and the 51st year of the VK/ZL contest. The following rules are for overseas stations.

A maximum of 12 hours operating time is permitted in the 24-hour contest period, to be taken in one-hour blocks based on the "even hour to even hour" (1000Z to 1100Z/1300Z to 1400Z, etc.) in minimum periods of one hour. (SSB and CW are separate contests.)

Use all bands, 1.8-28 MHz, except WARC bands.

Oceania stations can work anyone. The rest of the world can work VK, ZL, and Oceania stations only. The same station may be worked on each band for QSO and multiplier credit.

Exchange: RS(T) plus a three-figure QSO number starting with 001.

Points: Two points per QSO for everyone.

Multiplier: Each VK/ZL/O prefix worked on each band.

Final Score: Total QSO points from all bands times the sum of the prefix multiplier from each band.

Awards: Special large, color certificates to top scorers in each country. Plaque to each continental winner. A participation certificate to all on request (1 IRC, please).

There is an SWL section. Only VK/ZL/O stations are logged. Call of station being worked and RS(T) being sent must be reported. Scoring same as above but both SSB and CW scores are combined for final score (maximum total of 24 hours).

Use a separate log sheet for each band and underline each new VK/ZL/O prefix as it is worked on each band. Include a summary sheet showing the scoring and other essential information, and the usual signed declaration that all rules and regulations have been observed.

This year your logs go to: NZART Contest Manager, Jock White, ZL2GX, 152 Lytton Road, Gisborne, New Zealand.

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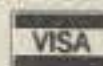
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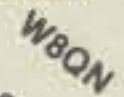
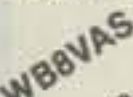
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2- " " " " " " " " " " " "	40 ft. "	\$ 35 "
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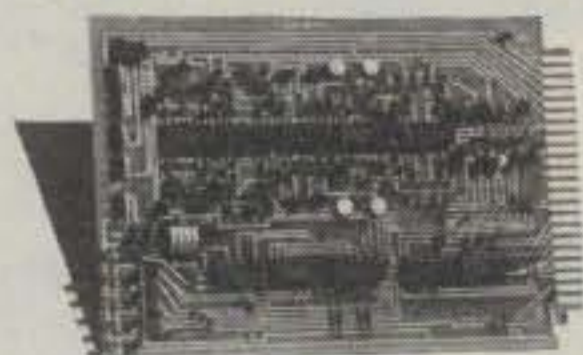
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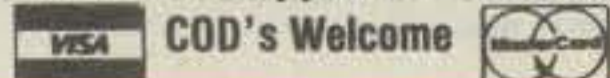
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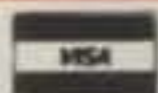


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