ICD-08635

POPULAR COMMUNICATIONS

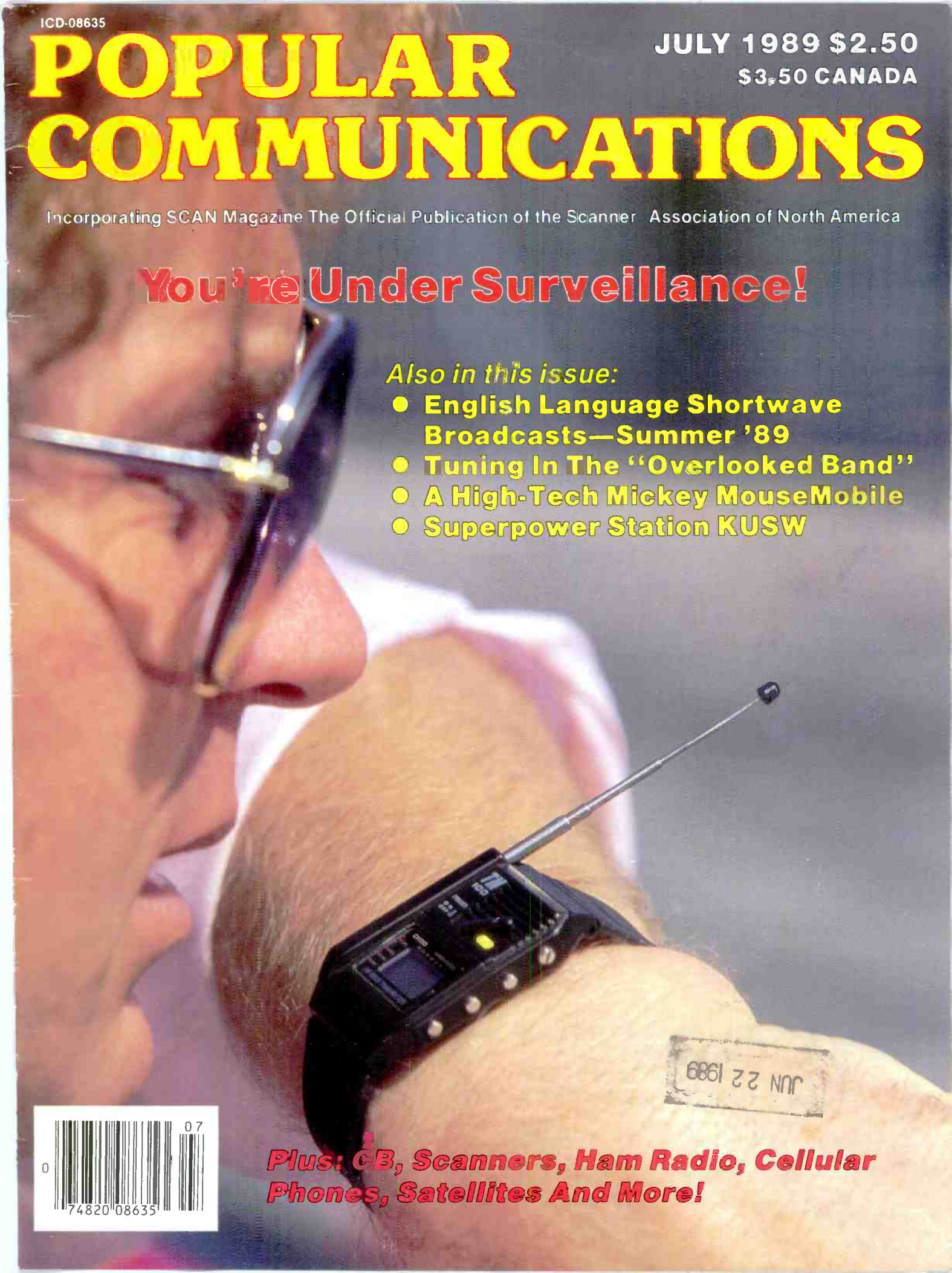
JULY 1989 $2.50
$3.50 CANADA

Incorporating SCAN Magazine The Official Publication of the Scanner Association of North America

You're Under Surveillance!

Also in this issue:

- English Language Shortwave Broadcasts—Summer '89
- Tuning In The "Overlooked Band"
- A High-Tech Mickey MouseMobile
- Superpower Station KUSW



0 74820 08635 07

Plus: CB, Scanners, Ham Radio, Cellular Phones, Satellites And More!

OPTOELECTRONICS

COUNTER THEORY

Affordable, compact, and ultra-sensitive. More and more people are discovering new applications for our counters than ever before. Now used by technicians, engineers, law enforcement officers, private investigators, two-way radio operators, scanner hobbyists, and amateur radio operators, just to name a few.

Over 15 years of service, quality, experience and dedication has proven you can count on us.

Hand Held Series Frequency Counters and Instruments

MODEL	2210 *New*	1300H/A	2400H	CCA	CCB *New*
RANGE: FROM	10 Hz	1 MHz	10 MHz	10 MHz	10 MHz
TO	2.2 GHz	1.3 GHz	2.4 GHz	550 MHz	1.8 GHz
APPLICATIONS	GENERAL PURPOSE AUDIO-MICROWAVE	RF	MICROWAVE	SECURITY	SECURITY
PRICE	$199	$169	$249	$299	$99
SENSITIVITY					
1 KHz	< 5 mv	NA	NA	NA	NA
100 MHz	< 3 mv	< 1 mv	< 3 mv	< .5 mv	< 5 mv
450 MHz	< 3 mv	< 5 mv	< 3 mv	< 1 mv	< 5 mv
850 MHz	< 3 mv	< 20 mv	< 5 mv	NA	< 5 mv
1.3 GHz	< 7 mv	< 100 mv	< 7 mv	NA	< 10 mv
2.2 GHz	< 30 mv	NA	< 30 mv	NA	< 30 mv
ACCURACY ALL HAVE +/– 1 PPM TCXO TIME BASE.					

All counters have 8 digit red .28" LED displays. Aluminum cabinet is 3.9" H x 3.5" W x 1." Internal Ni-Cad batteries provide 2-5 hour portable operation with continuous operation from AC line charger/power supply supplied. Model CCB uses a 9 volt alkaline battery. One year parts and labor guarantee. A full line of probes, antennas, and accessories is available.

OPTOELECTRONICS INC.
5821 N.E. 14th Avenue
Fort Lauderdale, FL 33334
(800) 327-5912 IN FL (305) 771-2050

MasterCard VISA

CIRCLE NO. 145 ON FREE INFORMATION CARD

EEB THE NATION'S #1 SWL SUPPLIER
ORDERS 800-368-3270

NEW

ICOM R9000
THE ULTIMATE RECEIVER

- 100 kHz to 2000 MHz
- CRT Multi-Function Display
- Spectrum Slope ± 100 kHz
- 1000 Memories-10 Banks of 100
- 4 Antenna Inputs
- Watch ICOM Ads for Detailed Specifications
- Suggested List $5495 Call for Quote

NEW

PANASONIC RFB 65-SSB

$259.95

Top of the Line Portable Now with CW/SSB • .155-30 MHz • 36 Memories • Keyboard Entry
RFB40 $189.95 RFB20 $119.95 RFB10 $89.95

NEW

SANGEAN ATS-808

PLL-All Band LW-MW-SW-FM • 45 Memory Keyboard Entry • Compact Size FM Stereo with Headset
Introductory Priced $229.95

NEW

SONY ICF SW20

Compact AM-FM 7 SW Bands • Shirt Pocket Size (Replaces ILF4920)
Price $99.95 + $5 UPS

NEW

GRUNDIG 500

• Synchro Detection • All Band All Mode • Superb Audio • Keyboard Entry
Introductory Priced $499.00 + $5 UPS

FREE

1989 Catalog.
Get All The Details.
36 Pages.
Sent 1st Class.
FREE in USA.
Canada $1.00.
All Others $3.00.

ICOM

R71A-This is our best seller. ICOM R71A has all the features one expects in a world class receiver. All mode AM, SSB, CW, RTTY, FM (OPT). Complete coverage. 1 to 30 MHz. 3 Filter positions, direct keyboard entry. 32 memory channels, PLL tuning in 10 Hz steps for exact frequency. Many ICOM options plus EEB high performance package. (CALL)
ICR71A $849.00 + $12 UPS

R7000-There is nothing to compare with the R700 under $12,000. This is the most sophisticated V/UHF receiver ever offered to the public. No wonder it's our best selling V/UHF receiver. All mode AM, SSB, CW, FMW, FMN-25 to 2000 MHz (20 kHz to 2 GHz w/NOVEX FC7100), direct keyboard entry. 99 memory channels, many ICOM options plus EEB options and high performance package deal. (CALL)
ICR7000 $1019.00 + $12 UPS

JRC-NRD

A high-class, general coverage receiver with expandability looking to the future. The **NRD-525** will change your shack into a new universe! 0.09 MHz to 34 MHz. Pass band shift. 200 memories. Direct keyboard entry. AM, FM, CW, SSB, RTTY, SSB. Notch filter. V/UHF converter option. Filter options.
NRD525 $1179.00 + $12 UPS

KENWOOD

The **KENWOOD R5000** is the new high performance receiver from the leader in communications technology. 150 kHz to 30 MHz. 100 memories. Keyboard entry. AM, FM, USB/LSB, CW, FSK. VHF 108-174 Opt VC20. **$849.95 + $10 UPS**

The **KENWOOD R2000** 150 kHz to 30 MHz. 10 memories. AM, FM, SSB, CW. VHF 118-174 MHz opt VC10.
R2000 $649.95 + $10 UPS

YAESU

FRG8800 offers functionality and operating convenience for the serious shortwave listener. 150 kHz to 29.999 MHz. Direct keyboard entry. Dual Clocks/Timers. Wide/Narrow Filter. 12 Memories. AM, SSB, CW, FM. VHF 118-174 MHz option $119.95. **FRG8800 $649.95 + $10 UPS**

FRG9600 VHF/UHF General Coverage Receiver. 60-905 MHz. 100 Memories. **FRG9600 $529.95 + $6 UPS**

GRUNDIG

The **Satellit 650 International** is the ultimate in German crafted portable radios. Excellent audio. 510 kHz to 29.999 MHz. 24 hour clock/calendar. 3 Bandwidths. 60 Memories. AM, FM, SSB, CW. Keyboard Entry. PLL Control. Nicad Battery Option.
New Low Price $849.00 + $12 UPS

The **Satellit 400**, with its rounded corners and smooth lines is the obvious "style leader" in personal portables, covers all shortwave bands plus MW and FM. 24 Memories. Keyboard Entry.
New Low Price $319.95

SANGEAN

ATS803A. So much HITECH in one package, a super value. Covers all SW Bands. Tunes .150-30 MHz + FM 88-108. 9 Memories Auto Scan. Keyboard Entry. Stereo w/Headset or Line output. AC Adapter included.
ATS803A $199.95 + $4 UPS

SG789. Slightly larger than SONY ICF 4920 same coverage plus stereo w/headset. **SG789 $69.95 + $4 UPS**

MS101. All new mini set similar to Panasonic RFB10. 9 Band, AM, FM, 7SW, stereo w/headset **MS101 $79.95 + $4 UPS**

MS103. Same as MS101, 9 SW Bands. **MS103 $99.95 + $4 UPS**

CLOSE-OUT

JIL SX 400 Close Out Save $300. 26-500 MHz (.1-1300 MHz w/opt. call) Digital keyboard - Readout memory scan 13.8 VDC. Much More Call. SX400 List **$695** while they last **$399** + $6 UPS

SONY-THE ONE AND ONLY

ICF2010 is the market leader of portables, our best selling portable. Full coverage. .15 to 30 MHz, FM 76-108 MHz, Air Band 116-136 MHz. AM, FM, CW, SSB. Sync Detection. 32 Memories. Keyboard Entry. Many Features.
ICF2010 $369.95 + $6 UPS

ICF2010

ICFSW1S

ICF2003

ICFSW1S. The newest in miniaturization only 2¾" × 4¾". Tests show it as best of sub-compact case, active antenna, world AC Power Pack, Phone, SWL Book, Travel with the "SYSTEM" or just the Radio, Complete coverage to 30 MHz FM 88-108. Keyboard Entry. LCD Readout/Clock.
ICFSW1S $319.95 + $4 UPS

ICF2003 delivers most performance of all portables in the mid-size class. .15-30 MHz. AM, CW, SSB. 76-108 MHz FM. 10 Memories. Keyboard Entry. Paperback book size. Optional AC Adapter.
ICF2003 $279.95 + $4 UPS

PRO 80 looks like a scanner • Covers .15-108 MHz + 115-223 MHz with supplied converter • Multi-Mode AM-FM-CW-SSB • 10 Memories • 4AA Power Opt Nicad EAC Adapter.
PRO80 $399.95 + $4 UPS

MAGNAVOX

D2999. .146-30 MHz FM 88-108. Keyboard entry. 16 Memories. Multi-mode AM, CW, SSB, FM, Scan. 12/24 Hour clock.
D2999 $299.95 + $6 UPS

D2935. Rated best value in a portable (IBS). Covers all SW Bands. .146-30 MHz, 9 Memories. AM, FM, CW, SSB. Keyboard Entry. **$189.95**

ANTENNAS

DATONG AD370 HF. .1-30 MHz outdoor active, rated #1 by IBS. **AD370 $129.95 + $4 UPS**

SONY AN1. HF .1-30 MHz outdoor active. Our #1 seller for 3 years. **AN1 $84.95 + $6 UPS**

EAVESDROPPER. Outdoor passive trapped dipole. 9 SW Bands. 43 ft. long. 100 ft. lead. Everything you need. Best Seller **SWL $59.95 + $4 UPS**

ALPHA DELTA SLOPER DXSWL $69.95 + $5 UPS

NOVEX NEW PRODUCTS

CRIS 6000. Computer Radio Interface System. The ultimate HITECH computer (IBM PC) system for control, logging, scanning, spectrum analysis. Using most current radios. Free CRIS Newsletter (CALL).
CRIS R7000 $499.95 + $8 UPS

RACKMOUNT. Novex RM Series Rackmount hardware for most popular radios ICOM, KENWOOD, YAESU receivers and transceivers.
Prices from $79.95 + $5 UPS

EEB

ELECTRONIC EQUIPMENT BANK.
NEW RETAIL LOCATION
137 CHURCH ST. N.W.
VIENNA, VA 22180

ORDERS: 800-368-3270
LOCAL TECH: 703-938-3350
FAX: 703-938-6911

- PRICES SUBJECT TO CHANGE
- PRICES DO NOT INCLUDE FREIGHT
- SORRY, NO CODs
- RETURNS SUBJECT TO 15% RESTOCK FEE

POPULAR COMMUNICATIONS

Now Incorporating SCAN Magazine

JULY 1989 VOL. 7, NO. 11

17

26

60

FEATURES

This month's cover: *FM spy radio transmitter built into a wrist watch. It will transmit conversation in the immediate. Photo by Larry Mulvehill.*

DEPARTMENTS

Offices: 76 North Broadway, Hicksville, NY 11801. Telephone 516 681-2922. FAX (516) 681-2926. Popular Communications (ISSN 0733-3315) is published monthly by CQ Communications, Inc. Second class postage paid at Hicksville, NY and additional offices. Subscription prices: Domestic—one year $18.00, two years $35.00, three years $52.00. Canada/Mexico—one year $20.00, two years $39.00, three years $58.00. Foreign—one year $22.00, two years $43.00, three years $64.00. Foreign Air Mail—one year $75.00, two years $149.00, three years $223.00.

Postmaster: Please send change of address to Popular Communications, 76 North Broadway, Hicksville, NY 11801.

UNIVERSAL SHORTWAVE

Monitor More With Advanced Equipment From Universal!

COMMUNICATIONS RECEIVERS

❒ **Japan Radio NRD-525**

For the communications connoisseur. Covers .1-34 MHz. Incredible performance and features. In stock. $1199.95 (+$11 UPS)

❒ **Kenwood R-5000**
A powerful receiver for the serious DXer. An exceptional value. $849.95 (+$11 UPS)

❒ **Kenwood R-2000**
Many features: mems., scan, sweep, FM mode, 24 hr. clock etc. $649.95 (+$10 UPS)

❒ **Icom R-71A**
A well-respected time-tested performer. PBT, notch, 2 VFOs, keypad. $849.95 (+$9 UPS)

❒ **Yaesu FRG-8800**
Beautiful LCD display, keypad, memories and more. $699.95 (+$9 UPS)

PORTABLE RECEIVERS

❒ **Sangean ATS-803A**

Keypad, memories, BFO, clock, RF gain, etc. A strong performer and unbeatable value. $189.95 (+$5 UPS)

❒ **Sony ICF-2010**
Super high performance and features. VHF air too. $359.95 (+$5 UPS)

❒ **Magnavox D2935**
A highly rated low cost fully loaded portable for every budget. $189.95 (+$5 UPS)

❒ **Grundig Satellit 500**
Hi-tech with beautiful fidelity and style. Synchronous tuning. $499.00 (+$5 UPS)

Note: Radios listed above are all LW-MW-SW-FM digital. Contact us for other models

SHORTWAVE ANTENNAS

❒ **Alpha Delta DX-SWL Sloper**
MW + 11 SW bands. ..... $67.95+$4

❒ **Eavesdropper** Specify twin lead or coax type
9 SW bands (60-10 meters). ..... $59.95+$4

❒ **McKay Dymek DA100D Active Antenna**
The Cadillac of active antennas! .. $179.95+$4

Note: Many more antennas available. See catalog.

COMMUNICATIONS BOOKS

❒ **Passport To Worldband Radio 1989 Ed.**
By L.Magne. Graphic presentation of all SWBC stations. Receiver reviews too. $14.95

❒ **Shortwave Receivers Past & Present**
By F.Osterman. Your guide to 200 receivers with new-used value, specs, features. $6.95

❒ **World Radio TV Handbook 1989 Edition**
All SWBC stations by country with schedules, addresses, power, etc. Reviews too. .. $19.95

❒ **Shortwave Listening WithThe Experts**
By G.Dexter. A massive reference on all types of listening. 22 Chapters. List $22.95 ..... $19.95

❒ **Complete SWL's Handbook Third Edition**
By Bennett, Helms, Hardy. Nearly 300 pages on all aspects of SWL'ing. $16.95

❒ **Guide to Utility Stations 1989 7th Edition**
By J.Klingenfuss. The definitive guide to utility stations- CW, SSB, FAX and RTTY..... $26.95

❒ **Guide To Facsimile Stations**
By J.Klingenfuss. The complete guide to FAX with freqs., schedules and addresses. $17.95

❒ **Shortwave Listening With The Experts**
By G.Dexter. Over 500 pages and 25 chapters of in-depth info. on all aspects of DXing. $19.95

❒ **Soviet Maritime RTTY Dictionary**
By G.Gorka & F.Osterman. Find, decode and understand Russian radioteletype. $11.95

❒ **The World Below 500 Kilohertz**
By P.Carron. An introduction to LW. $4.95

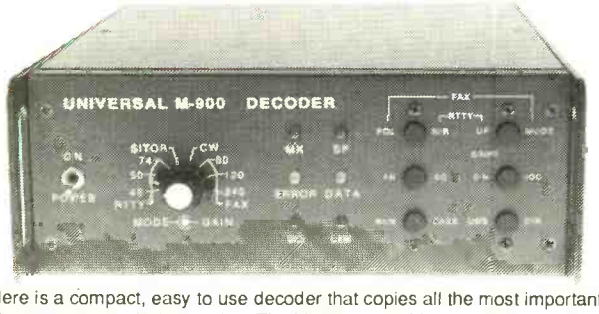
✓ *Please add $1 per title for shipping.*

MULTI-MODE CONVERTERS — ❒ Universal M-7000

The Universal M-7000 will permit you to intercept and decode Morse code, various forms of RTTY, FDM and FAX. Simple connections to your receiver and video monitor will enable you to monitor with the most sophisticated surveillance decoder available. No computer is required. See the world of shortwave excitement you have been missing. Requires 115/230 AC 50/60 Hz. Starting at $999.00. **Please write for full details.**

- ✦ Morse Code (CW)
- ✦ Regular Baudot RTTY
- ✦ Variable Speed Baudot
- ✦ Bit Inverted Baudot
- ✦ ASCII Low & High Speed
- ✦ Sitor Mode A (ARQ)
- ✦ Sitor Mode B (FEC)
- ✦ ARQ 2&4 chan. (TDM)
- ✦ ARQ-E and ARQ-E3
- ✦ VFT Modes (FDM)
- ✦ Russian 3rd Shift Cyrillic
- ✦ Facsimile (FAX) AM/FM
- ✦ Packet 300 & 1200 AX.25
- ✦ Remote Terminal
- ✦ Literal & Databit Modes
- ✦ Variable & Standard Shift
- ✦ Automatic Tuning
- ✦ Diversity Reception

MULTI-MODE CONVERTERS — ❒ Universal M-900



Here is a compact, easy to use decoder that copies all the most important shortwave transmission modes. The M-900 covers Morse code for monitoring hams, ships and coastal stations. Baudot RTTY is included for decoding weather and international press broadcasts. Both Sitor A and Sitor B are supported for monitoring the extensive maritime and diplomatic traffic. Facsimile (to the printer only) lets you receive maps and pictures from around the world. Requires 12 VDC @.8A Text output to video monitor. **$549.95 (+$8)**

- ✦ Morse Code (CW)
- ✦ Regular Baudot RTTY
- ✦ Sitor Mode A (ARQ)
- ✦ Sitor Mode B (FEC)
- ✦ Facsimile (FAX) FM
- ✦ Variable & Standard Shift

M-900 System Components
A complete M-900 system would require:

- ➤ Universal M-900
- ➤ 12 VDC Power Supply
- ➤ Your SW Receiver
- ➤ Video Monitor
- ➤ Parallel Printer
- ➤ Cables for above

Please write to Universal for full information on the M-900 and the above optional items. Full system prices are available.

SHORTWAVE LISTENER CATALOG

Universal offers a huge 52 page shortwave catalog covering all types of monitoring equipment including receivers, antennas plus RTTY and FAX equipment. All major brands are represented including Kenwood, Icom, Yaesu, JRC, AEA, MFJ, Sony, Grundig, Sangean and Magnavox. Plus an unbeatable selection of books, parts and accessories. Big 8½" by 11" format.

★ **Available for $1 postpaid** ★

AMATEUR RADIO CATALOG

Here is everything for the ham: HF-VHF-UHF transceivers, handhelds, antennas, receivers, RTTY and packet gear, books and accessories. All major brands; with prices! 48 page 8½" by 11" format.

★ **Available for $1 postpaid** ★

STORE HOURS
Monday - Friday 10:00-5:30
Except Thursday 10:00-8:00
Saturday 10:00-3:00

· We ship worldwide · In business
· Visa, MC, Discover since 1942!
· Prices & specs. are · Used equip.
subject to change. list available

Universal Shortwave Radio
1280 Aida Drive Dept. PC
Reynoldsburg, Ohio 43068 U.S.A.
Ohio: 614 866-4267 **Toll Free: 800 431-3939**

Please send all reader inquiries directly.

BEAMING IN AN EDITORIAL

BY TOM KNEITEL, K2AES

SWL's: Lost And Found

Years ago, the general assumption was that anybody with a shortwave receiver and no transmitter was a peg that fit neatly into one of three holes. A, the person was studying to pass the ham license exam, or B, had failed the exam and given up on it, or C, was too lazy or dullwitted to study for the exam. Hams seemed to assume that shortwave listeners ("SWL's") were hopeful, prospective, or potential hams. To be sure, many SWL's, if they had their druthers, would have preferred being radio people of the two-way persuasion, rather than be counted among those who listened, but weren't able to transmit.

Still, there had always been a segment of the SWL community consisting of persons who had amassed complex monitoring stations of considerable size and merit, insisting to one and all that they hadn't any aspirations to transmit. They saw monitoring the various bands as satisfactory to their needs. They rejected all suggestions that their hobby was no more than the fetal state of those naturally evolving into a noble ham existence.

I suspect it wasn't always easy for hams to appreciate the sincerity of those who delighted at listening, but denied they were interested in being able to transmit. So many hams started out as SWL's and later came to feel that, to them, hamming was far more enjoyable than listening without being able to say anything back.

Today, maybe we are better able to appreciate the feeling on both sides of the fence when we say that ham radio is an *interactive* hobby, while SWL'ing isn't. Maybe they didn't have this handy word years ago to explain as well why some communications hobbyists don't need to do anything more than just receive in order to achieve nirvana. Obviously, some folks just don't enjoy being interactive with a radio, others do, and yet others can shift into either mode. Nevertheless, SWL's note that there are still those who minimize their hobby, or express regret for SWL's who never got "beyond" being listeners.

Like many, I began an SWL and then branched into ham radio. I never lost my fascination with communications and scanner monitoring. I know that there are many others like me. However, much of the time, once the magic ham license arrives, the person's interest in SWL'ing nosedives.

All of these various factors combined to produce some very negative results. To be candid, it gave SWL'ing the unfortunate and untrue image of being, basically, some sort of idiot half-brother to ham radio. To make matters worse, the hobby kept losing people to ham radio.

Panasonic's RF-B65 worldband-type portable receiver.

It was a hobby with problems in the area of image, self-esteem, and direction Yet, it had a nucleus of serious, devoted, long-term participants. Another glitch was that the monitoring hobby had been ignored for so long that it had become somewhat ill-defined, scattered, and fragmented. Magazines that had, from the 1940's through the 1960's, provided coverage of the monitoring hobby (such as Radio News, Electronics Illustrated, and the original Popular Electronics) were long gone. It was a hobby adrift. Nobody knew what to make of it, how to write for it, produce equipment for it, or reach its adherents. There were those who said it no longer existed except in the form of a handful of scattered and isolated diehards, and small clubs.

In the summer of 1982, we at what would emerge that September as the first edition of Popular Communications, decided to give the hobby a shake to wake it up again. Our approach was to produce a publication covering international broadcasting, scanners, "utility" stations, and other related topics. We were attempting to create and define the parameters of a hobby that we knew was exciting and enjoyable, and which we were sure was still out there *somewhere* waiting to be found.

We wanted to rally its existing members, fire the imagination and sharpen the focus on this hobby, attract to it new members, rekindle the interest of former members who had left for ham radio, or quit because they had felt the hobby had been abandoned by publishers and manufacturers. And we wanted to show that monitoring was a viable and interesting hobby that was, in fact, an excellent end unto itself for those who wished to regard it as such.

Our efforts produced results. The magazine reached old-timers, has brought in newcomers, awakened the interest in may who had drifted out of the hobby as long as twenty years ago, and we reminded hams that they can get a lot more use out of their receivers by tuning them beyond the edges of the ham bands. Just look at the great monitoring equipment that has been introduced within the past couple of years to satisfy SWL's now that it's apparent that there really are enough of us to make a difference.

Interestingly, in addition to the newcomers joining the ranks of the technically inclined SWL's using formidable communications receivers from Kenwood, Yaesu, ICOM, and JRC, the revitalization of interest in DX listening has produced an entirely and excitingly new category of monitoring enthusiasts.

These are people who, instead of watching TV or playing the stereo, have discovered that it's timely, exciting, informative, and entertaining to tune in on English language programs from the BBC, Radio Sweden, HJCB, KUSW, DW, Kol Israel, RCI, WRNO, RHC, Radio Moscow, Radio Beijing, and scores of other stations whose powerful signals pour over North America at all times.

There's some feeling that it's pretty risky to tell these people about QSL's and just about anything SWL'ish except on the most basic where-to-tune level. This same logic dictates that it's counterproductive to toss around the dreaded "S" word (shortwave) in front of these folks because it's probably going to scare them off by conjuring up intimidating images of dials and meters on hard-to-operate equipment, large antenna arrays, sparks flashing across gaps, the need for licenses, and various other things best left to engineers.

The "S" word is sometimes replaced by the descriptive word *worldband* so as to be able to explain the ability of a radio to suddenly begin picking up London, Quito, Moscow, or Melbourne.

Then there is the impressive parade of consumer-oriented, user-friendly, portable all-band receivers that are often referred to as *worldband* radios. Many have digital tuning and do a really fine job. Worldband-type receivers come from Panasonic, Sony, Sangean, Toshiba, G.E., Grundig, Realistic, Siemens, Sharp, Philips, and dozens of other companies. You can get them at many communications equipment suppliers, but mainstream merchandisers from K-Mart to Nieman-Marcus are there to supply them to those whom a communications shop is an as-yet undiscovered delight.

I'll admit then when I first heard the term worldband, it struck me as a needless sugar

(Continued on page 74)

uniden®

$12,000,000 Scanner Sale

Uniden Corporation of America has purchased the consumer products line of Regency Electronics Inc. for $12,000,000. To celebrate this purchase, we're having our largest scanner sale in history! Use the coupon in this ad for big savings. Hurry...offer ends September 30, 1989.

★★★ MONEY SAVING COUPON ★★★

COUPON COUPON

Get special savings on the scanners listed in this coupon. This coupon must be included with your prepaid order. Credit cards, personal checks and quantity discounts are excluded from this offer. Offer valid only on prepaid orders mailed directly to Communications Electronics Inc., P.O. Box 1045 – Dept. UNI6, Ann Arbor, Michigan 48106-1045 U.S.A. Coupon expires September 30, 1989. Coupon may not be used in conjunction with any other offer from CEI. Coupon may be photocopied. Add $11.00 for shipping in the continental U.S.A.

Regency TS2-T $259.95
Regency INF5-T $79.95
Regency R2060-T1 ..... $114.95
Regency UC102-T $109.95
Regency RH606B-T $419.95
Regency RH256B-T $294.95
Bearcat 200XLT-T $249.95
Bearcat 100XLT-T $184.95
Bearcat 800XLT-T $249.95
Uniden HR2510-T $229.95
Uniden PRO500D-T1 ..... $32.95

COUPON COUPON

★★★★ VALUABLE COUPON ★★★★

Bearcat® 760XLT-T

List price $499.95/**CE price $244.95/SPECIAL**
12-Band, 100 Channel • Crystalless • AC/DC
Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
The *Bearcat* 760XLT has 100 programmable channels organized as five channel banks for easy use, and 12 bands of coverage including the 800 MHz. band. The *Bearcat* 760XLT mounts neatly under the dash and connects directly to fuse block or battery. The unit also has an AC adaptor, flip down stand and telescopic antenna for desk top use. 6-5/16" W x 1⅝" H x 7⅜" D. Model **BC 590XLT-T** is a similar version without the 800 MHz. band for only $194.95. Order your scanner from CEI today.

NEW! Regency® Products

R4030-T *Regency* 200 ch. handheld scanner $254.95
R4020-T *Regency* 100 ch. handheld scanner $189.95
R4010-T *Regency* 10 channel handheld scanner $114.95
R1600-T *Regency* 100 channel mobile scanner $244.95
P200-T *Regency* 40 channel CB Mobile $38.95
P210-T *Regency* 40 channel CB Mobile $56.95
P220-T *Regency* 40 channel CB Mobile $79.95
P300-T *Regency* 40 channel SSB CB Mobile $137.95
P400-T *Regency* 40 channel SSB CB Base $174.95
PR100-T *Regency* visor mount radar detector $54.95
PR110-T *Regency* "Passport" size radar detector $114.95
PR120-T *Regency* "micro" size radar detector $144.95
MP5100XL-T *Regency* 40 Ch. marine transceiver $139.95
MP5510XL-T *Regency* 60 Ch. marine transceiver $159.95
MP6000XL-T *Regency* 60 Ch. marine transceiver $209.95
MP2000XL-T *Regency* handheld marine trans. $189.95

Regency® RH256B-T

List price $799.95/**CE price $299.95/SPECIAL**
16 Channel • 25 Watt Transceiver • Priority
The *Regency* RH256B is a sixteen-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to 16 frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH256 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A *60 Watt* VHF 150-162 MHz. version called the **RH606B-T** is available for $429.95. A UHF 15 watt, 16 channel version of this radio called the **RU156B-T** is also available and covers 450-482 MHz. but the cost is $454.95.

★★★ Uniden CB Radios ★★★

The *Uniden* line of Citizens Band Radio transceivers is styled to compliment other mobile audio equipment. Uniden CB radios are so reliable that they have a two year limited warranty. From the feature packed PRO 810E to the 310E handheld, there is no better Citizens Band radio on the market today.

PRO310E-T *Uniden* 40 Ch. Portable/Mobile CB $83.95
PRO330E-T *Uniden* 40 Ch. Remote mount CB $104.95
PRO500D-T *Uniden* 40 Channel CB Mobile $38.95
KARATE-T *Uniden* 40 channel rescue radio $53.95
GRANT-T *Uniden* 40 channel SSB CB mobile $166.95
MADISON-T *Uniden* 40 channel SSB CB base $244.95
PC122-T *Uniden* 40 channel SSB CB mobile $119.95
PRO510XL-T *Uniden* 40 channel CB Mobile $38.95
PRO520XL-T *Uniden* 40 channel CB Mobile $56.95
PRO530XL-T *Uniden* 40 channel CB Mobile $79.95
PRO540E-T *Uniden* 40 channel CB Mobile $97.95
PRO640E-T *Uniden* 40 channel SSB CB Mobile $137.95
PRO710E-T *Uniden* 40 channel CB Base $119.95
PRO810E-T *Uniden* 40 channel SSB CB Base $174.95

★★★ Uniden Radar Detectors ★★★

Buy the finest *Uniden* radar detectors from CEI today.
TALKER-T *Uniden* talking radar detector $184.95
RD7-T *Uniden* visor mount radar detector $99.95
RD9-T *Uniden* "Passport" size radar detector $114.95
RD9XL-T *Uniden* "micro" size radar detector $144.95
RD25-T *Uniden* visor mount radar detector $54.95
RD500-T Uniden visor mount radar detector $74.95

Bearcat® 200XLT-T

List price $509.95/**CE price $254.95/SPECIAL**
12-Band, 200 Channel • 800 MHz. Handheld
Search • Limit • Hold • Priority • Lockout
Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
The *Bearcat* 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 10 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the **BC 100XLT-T** for only $189.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

Bearcat® 800XLT-T

List price $549.95/**CE price $259.95/SPECIAL**
12-Band, 40 Channel • No-crystal scanner
Priority control • Search/Scan • AC/DC
Bands: 29-54, 118-174, 406-512, 806-912 MHz.
The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9¼" x 4½" x 12½". If you do not need the 800 MHz. band, a similar model called the **BC 210XLT-T** is available for $178.95.

Bearcat® 145XL-T

List price $189.95/**CE price $94.95/SPECIAL**
10-Band, 16 Channel • No-crystal scanner
Priority control • Weather search • AC/DC
Bands: 29-54, 136-174, 406-512 MHz.
The *Bearcat* 145XL is a 16 channel, programmable scanner covering ten frequency bands. The unit features a built-in delay function that adds a three second delay on all channels to prevent missed transmissions. A mobile version called the **BC560XLT-T** featuring priority, weather search, channel lockout and more is available for $94.95. CEI's package price includes mobile mounting bracket and mobile power cord.

President® HR2510-T

List price $499.95/**CE price $239.95/SPECIAL**
10 Meter Mobile Transceiver • Digital VFO
Full Band Coverage • All-Mode Operation
Backlit liquid crystal display • Auto Squelch
RIT • Preprogrammed 10 KHz. Channels
Frequency Coverage: 28.0000 MHz. to 29.6999 MHz.
The *President* HR2510 Mobile 10 Meter Transceiver made by Uniden, has everything you need for amateur radio communications. Up to 25 Watt PEP USB/LSB and 25 Watt CW mode. Noise Blanker. PA mode. Digital VFO. Built-in S/RF/MOD/SWR meter. Channel switch on the microphone, and much more! The HR2510 lets you operate AM, FM, USB, LSB or CW. The digitally synthesized frequency control gives you maximum stability and you may choose either pre-programmed 10 KHz. channel steps, or use the built-in VFO for steps down to 100 Hz. There's also RIT (Receiver Incremental Tuning) to give you perfectly tuned signals. With receive scanning, you can scan 50 channels in any one of four band segments to find out where the action is. Order your HR2510 from CEI today.

NEW! President® HR2600-T

List price $599.95/**CE price $299.95/SPECIAL**
10 Meter Mobile Transceiver • New Features
Delivery for this new product is scheduled for June, 1989.
The new *President* HR2600 Mobile 10 Meter Transceiver is similar to the *Uniden* HR2510 but now has repeater offsets (100 KHz.) and CTCSS encode.

BC760XLT
800 MHz. mobile scanner
SPECIAL!

★★★ Facsimile Machines & Phones ★★★

FAX3300-T *Pactel* Fax machine with phone $1,099.95
XE750-T *Uniden* Cordless Phone with speaker $99.95
XE550-T *Uniden* Cordless Phone $79.95
XE300-T *Uniden* Cordless Phone $69.95

★★★ Extended Service Contract ★★★

If you purchase a scanner, CB, radar detector or cordless phone from any store in the U.S. or Canada within the last 30 days, you can get up to three years of extended service contract from Warrantech. This service extension plan begins *after* the manufacturer's warranty expires. Warrantech will perform all necessary labor and will not charge for return shipping. Extended service contracts are not refundable and apply only to the original purchaser. A two year extended contract on a mobile or base scanner is $29.99 and three years is $39.99. For handheld scanners, 2 years is $59.99 and 3 years is $79.99. For radar detectors, two years is $29.99. For CB radios, 2 years is $39.99. For cordless phones, 3 years is $34.99. Order your extended service contract today.

OTHER RADIOS AND ACCESSORIES

BC55XLT-T *Bearcat* 10 channel scanner $114.95
BC70XLT-T *Bearcat* 20 channel scanner $159.95
BC175XLT-T *Bearcat* 16 channel scanner $156.95
R2060-T *Regency* 60 channel scanner $149.95
TS2-T *Regency* 75 channel scanner $269.95
UC102-T *Regency* VHF 2 ch. 1 Watt transceiver $114.95
BPS5-T *Regency* 16 amp reg. power supply $179.95
BP205-T Ni-Cad batt. pack for BC200/BC100XLT $49.95
B8-T 1.2 V AA Ni-Cad batteries (set of eight) $17.95
FBE-T Frequency Directory for Eastern U.S.A. $14.95
FBW-T Frequency Directory for Western U.S.A. $14.95
RFD1-T Great Lakes Frequency Directory $14.95
RFD2-T New England Frequency Directory $14.95
RFD3-T Mid Atlantic Frequency Directory $14.95
RFD4-T Southeast Frequency Directory $14.95
RFD5-T N.W. & Northern Plains Frequency Dir. $14.95
ASD-T Airplane Scanner Directory $14.95
SRF-T Survival Radio Frequency Directory $14.95
TSG-T "Top Secret" Registry of U.S. Govt. Freq. $14.95
TTC-T Tune in on telephone calls $14.95
CBH-T Big CB Handbook/AM/FM/Freeband $14.95
TIC-T Techniques for Intercepting Communications $14.95
RRF-T Railroad frequency directory $14.95
EEC-T Embassy & Espionage Communications $14.95
CIE-T Covert Intelligence, Elect. Eavesdropping $14.95
MFF-T Midwest Federal Frequency directory $14.95
A60-T Magnet mount mobile scanner antenna $35.95
A70-T Base station scanner antenna $35.95
A1300-T 25 MHz.–1.3 GHz Discone antenna $109.95
USAMM-T Mag mount VHF ant. w/ 12' cable $39.95
USAK-T ¾" hole mount VHF ant. w/ 17' cable $35.95
Add $4.00 shipping for all accessories ordered at the same time.
Add $11.00 shipping per radio and $4.00 per antenna.

BUY WITH CONFIDENCE

To ***get the fastest delivery from CEI*** of any scanner, send or phone your order directly to our Scanner Distribution Center.™ Michigan residents please add 4% sales tax or supply your tax I.D. number. Written purchase orders are accepted from approved government agencies and most well rated firms at a 10% surcharge for net 10 billing. All sales are subject to availability, acceptance and verification. All sales on accessories are final. Prices, terms and specifications are subject to change without notice. All prices are in U.S. dollars. Out of stock items will be placed on backorder automatically unless CEI is instructed differently. A $5.00 additional handling fee will be charged for all orders with a merchandise total under $50.00. Shipments are F.O.B. CEI warehouse in Ann Arbor, Michigan. No COD's. Most items listed have a manufacturer's warranty. Free copies of warranties on these products are available by writing to CEI. Non-certified checks require bank clearance. Not responsible for typographical errors.

Mail orders to: Communications Electronics,™ Box 1045, Ann Arbor, Michigan 48106 U.S.A. Add $11.00 per scanner for U.P.S. *ground* shipping and handling in the continental U.S.A. For Canada, Puerto Rico, Hawaii, Alaska, or APO/FPO delivery, shipping charges are three times continental U.S. rates. If you have a Discover, Visa, American Express or Master Card, you may call and place a credit card order. 5% surcharge for billing to American Express. Order toll-free in the U.S. Dial 800-USA-SCAN. In Canada, dial 800-221-3475. FAX anytime, dial 313-971-6000. If you are outside the U.S. or in Michigan dial 313-973-8888. Order today.

Scanner Distribution Center™ and CEI logos are trademarks of Communications Electronics Inc.
Sale dates 3/8/89 — 9/30/89 AD #030889-T

For credit card orders call 1-800-USA-SCAN

COMMUNICATIONS ELECTRONICS INC.™

Consumer Products Division

P.O. Box 1045 □ Ann Arbor, Michigan 48106-1045 U.S.A.
For orders call 313-973-8888 or FAX 313-971-6000

MAILBAG LETTERS TO THE EDITOR

Each month we select representative reader leters for our Mailbag column. We reserve the right to condense lengthy letters for space reasons. All letters submitted for consideration must be signed and show a return address. Upon request, we will withhold sender's name should the letter be used in Mailbag. Address letters to Tom Kneitel, Editor, Popular Communications Magazine, 76 North Broadway, Hicksville, NY 11801.

No Code Ham License Thoughts

I read your March editorial with interest. I enjoyed reading it and am in complete agreement with the ideas you had in support of a no-code ham license and the reasoning you presented. Have been a ham for 51 years and mostly on CW. I grew up with CW and am comfortable with it, but agree with you that ham radio fails to intrigue young people today, and being faced to learn Morse code is a large part of the problem. I am pessimistic about anything constructive being done about it, however, if those of us who are concerned about this problem and its adverse affect on increasing the numbers of licensed hams continue to speak out, it may eventually do some good. Many of us are inclined to look back to earlier times with nostalgia, but the "good old days" are with us now. Lets hope we can open up our great hobby to thousands and thousands of others who will enjoy it as much as we do.

Charles Ken Kurtz, W4KMC
Melbourne, FL

After reading you no-code comments, I laughed so hard it almost brought tears to my eyes. I no (sic) POP'COMM is directed to a lot of non-hams who should have no influence with the FCC on making no-code exam decisions. Non-hams have a right to an opinion, but hams should have the final (next to the FCC) say in setting our regulations. Most hams say "no" to any no-code entry exam. We just don't care what non-hams think. Why doesn't POP'COMM just stick to SWL information, the ham field is doing just fine the way it is. Stay in your own league.

Mark Bills, NY0E
Mystic, IA

I subscribe to almost all the amateur, broadcast, monitoring, and other electronics-oriented magazines. POP'COMM is only one of two I read from cover to cover. I've been interested in what all magazine editors are saying about a no-code ham license. Your March issue editorial was one of the better ones. A few months ago I was dead set against a no-code license. I admit it was mostly for "traditional" and "I had to learn it, and everyone else should" reasons. However, in the last couple of months, I have completely changed my thinking. I do agree that we must increase our ranks so that amateur radio can survive, and about the only reasonable way to do that is with a no-code license.

Randy Kaeding, K8TMK
Stevensville, MI

You've done it this time. If the CW requirement is abandoned for amateur licensing, the resulting chaos will insure CW is the only way people can communicate on the ham bands. Ignoring this likelihood, the main reason amateurs are allowed to exist is because of the potential for public service. In the event of a natural disaster, or civil disturbance, supply and repair shops may be unavailable. A "no-code" ham without a microphone isn't a ham. Morse code does not require a radio, light or sound will do. If you don't care to use CW, you probably don't care to contact foreign stations who don't hear your A3 signals. While this is plausible, it doesn't say much for your skills or ability to meet the challenges of the real world. Mastering CW takes the same discipline as building your station, or getting it on the air. Call yourself a radioman? Hah! Stick to editing!

Charles A. Ottinger, AF5L
(Address Not Submitted)

I have followed your opinions for many years and wanted to say thanks, especially on your thoughts about modernizing the ham license entry requirements. You did an excellent job. The code test is the reason I'm not a ham. I went to Signal Corps radio operator school in WWII and after passing the test, I never had a single occasion to ever use this skill, in the army or later. I hate CW, it irritates me. It had its place where I was stationed in Africa. The OSS used a line of modified HT-4's to work around the world with about 350 watts input. Before the war ended, they had switched over to almost all RTTY. The First Class Commercial 'Phone exam I took had outdated questions about spark gap transmitters. The Q/A book I studied from was an antique, so I did just fine, but maybe it's time for all of this to move into a more modern format. Stick to your guns and maybe someday I might get a ham license to enjoy my retirement without di-di-dum-dum-di-di and QLF. The tech exam should be tough.

Alex T. Yates,
Radio and Television Engineering
Memphis, TN

I was monitoring a group of operators on the 80 meter ham band debating the possibilities of a no-code grade ham license. One who was against the idea said, "At least that guy Kneitel at the magazine hasn't taken a position on it yet—he's sure to be in favor of the idea." Then another operator chimed in something like, "Yeah, and you guys better pray that he doesn't get involved." That line of chatter continued on for another five minutes with the general feeling that you'd certainly put a fire under the issue when, and if, you got to tossing in your opinion. A few weeks later, my March issue of POP'COMM arrived with your thoughts. Made me think this fellow's worst nightmares had come true. Thanks for making my day.

(Name Withheld by Request.)
Gatlingboro, TN

I understand about CW being an old way of communicating and that it isn't a good litmus test of determining who is suited to have a ham license. But if there was a no-code ham license, then repeaters would be totally tied up by individuals within small cliques. Hams will lose linear amplifier, autopatch privileges, and the sense of accomplishment that comes with learning the code. The FCC isn't big enough, nor does it have the funds, to police the ham bands the way it should if no-code operators be allowed entry. My XYL and I are are new hams and we both did what was necessary to obtain the license. Just because Canada did it, we shouldn't feel pressured to follow along. Pay no attention to FCC threats about "use it or lose it."

James Eide
Lee's Summit, MO

PRO-2004 Comments

In your December issue, you ran a feature about increasing the number of channels in the Realistic 2004 from its original 300 to a full 400. Although I'm not electronically inclined, I still thought I'd try this myself. Overwhelmingly, the modification worked and greatly added to my scanning pleasure.

(Name withheld by request.)
Mequon, WI

The PRO-2004 expansion from 300 to 400 channels you ran in December is an easy modification and it does work well. Has anyone determined what the operating parameters of the CPU are in regard to what it is fully capable of? I'd like to "restore" the 240 MHz of "missing" UHF-TV coverage in the PRO-2004.

Kevin Rickens, N4SWM,
Hanahan, SC

Press Liaison Volunteers Needed

Often we receive requests here at SCAN from the press for help. Newspapers, radio and TV stations from around the country are frequent callers to SCAN for assistance. Often it is in connection with a late breaking story. For instance, during the Eastern Airlines strike we had calls from the press looking for the business frequencies used by Eastern in various cities. We had no record in our frequency data bank here at SCAN, yet we were sure that there were SCAN members out there who could have helped out. We simply didn't have a list of members to send these reporters to. Occasionally these reporters need some gentle guidance to help them avoid breaking laws they may not be aware of, such as Section 705 of the Communications Act. Remember, you cannot report what you have heard. But, in general, you'll usually just need to provide some information on frequencies, slang, codes and procedures used. Then they are on their own.

We are also getting more frequent requests for information about monitoring and scanner use from the general media. Usually this includes a request to visit an active scanner user for an interview and filming or photography of the monitoring station. It is a public relations activity that can be useful for us all in building public understanding and enlisting new scanner enthusiasts. Only on rare occasions have we run into a reporter looking for an expose type story about the "evils of eavesdropping". If you volunteer to be a public relations representative you should have an exceptionally neat looking station, but by no means must it be elaborate. You should also be able to point out all the positive uses for scanners, including Neighborhood Watch programs, etc. As worthwhile as your other hobbies—such as shortwave listening or Amateur Radio—may be, this is a situation where you should keep the focus on scanning.

SCAN needs help in both areas to develop a referral list where we can send the press in your area when they call for assistance. If you can help out and would like to be put on a referral list, please let me know. To be helpful in news gathering you should have knowledge of an extensive list of frequencies (beyond that contained in frequency directories). If you concentrate on areas, such as transportation, federal law enforcement agencies, etc. please note that. You will need to give us daytime and nighttime phone numbers . . . and you should be aware that the information is usually needed within minutes or at the most a few hours. Therefore, there usually isn't time to respond with "I'll get back to you tomorrow". Once it is old, news is of little value.

If you would like to be a volunteer in either category (or both), please print your name and address clearly on a file card. Include both your nighttime and daytime phone numbers with the hours you can be reached. On the back of a 3 × 5 file card please clearly indicate your areas of interest, such as "neat looking set-up, active as volunteer fireman" or "extensive list of industrial and transportation frequencies". That way we can zero the reporter into the member who can be of most help. Put the file card into an envelope and mail to Media Volunteer, SCAN, P.O. Box 414, Western Springs, IL 60558. Please be sure to use a file card and the code words "media volunteer" on the envelope so that it will be filed correctly for future use.

Update On FBI Raid Story

We now have some more details on the information we received about the FBI call made on a scanner dealer. This particular dealer was advertising that he would modify scanners before delivery for full frequency coverage (including cellular frequencies). The information we had was that the FBI had threatened to confiscate the equipment and close down the operation, apparently at the request of the Cellular Telephone Industry Association (CTIA) who cited advertising run by the dealer. This was of particular interest to us, since SCAN fought long and hard to have a manufacturing ban excluded from the Electronic Communications Privacy Act (ECPA). With the help of generous contributions to the SCAN Legal Defense Fund and some excellent representation in Washington, we were successful. So it came as quite a surprise when we heard about an attempt to ban the sale of equipment from no less than a U.S. Government Agency like the FBI.

The reason the FBI felt that CTIA had a valid case revolves around an interpretation of the ECPA. As we've said before, there is much to be learned about how the courts, various regulatory and enforcement agencies will interpret ECPA. This is a good example. The ECPA *does* prohibit the manufacture and sale of receivers *solely* designed to receive cellular phone calls. (Even that is subject to some interesting interpretation because the FCC has said that in some areas the cellular phone frequencies could be put to other uses.) However, in this case the dealer was advertising a wide range unit modified to restore the cellular frequencies which had been blanked out by the manufacturer. The CTIA convinced the FBI that this was a case of manufacturing and selling a device solely to receive cellular phone calls. The logic is that since the ad focused on the restored frequencies and the only manufacturing done by the dealer was to permit reception of the cellular frequencies, it was illegal. We think that there is a good chance that the courts would have thrown this case out. The dealer in this case simply agreed not to do it any more and the case was dropped. But you can't blame the dealer for folding his tent and not fighting. After all, he is simply trying to make a decent living and can't be expected to spend his resources challenging a government agency—no matter how serious the future impact on the freedom to listen may be. That is the danger of something like ECPA, which has a way of slowly eating away at our freedoms because nobody challenges it. If another situation like this occurs, we would certainly like to hear about it here at SCAN before the case is settled.

Space Shuttle Provides Interesting Listening

Now that the Shuttle is flying, scanner owners have the chance to listen in again as few people do. Thanks to Amateur Radio networks and 2-meter repeaters you can hear the Shuttle and Mission Control communications live and uncensored. There is an entire different feeling between the brief radio news clips or edited TV spots and being able to listen into the actual goings on up there on the Shuttle. Yes, there are frequent periods of silence and some of the communications is not very interesting, but overall it is a fascinating listening experience. If you invite some of your friends and neighbors over you will find that they are really intrigued. It's been known to be the spark that gets some people into scanning!

If your scanner tunes 146-148 MHz (2-meters) and can receive your local Amateur ("Ham") repeater frequencies, you're in business. No special antennas or equipment is needed. Chances are that one of the local Amateur repeaters will be putting the Shuttle communications channel on the air continuously . . . you'll just

(Continued on page 74)

You're Under Surveillance!

You Probably Don't Know The Many Frequencies That Might Be Used During A Surveillance

BY HARRY CAUL, KIL9XL

Time was that many monitoring fans, seeking to listen in on a police stakeout, would automatically assume that 39.06 MHz was the frequency of choice for such activities. And so it was. It's still allocated for low power (2 watts) use by handheld transceivers and is still used by many departments for surveillance and other purposes. Note that licensees on 39.06 MHz are not listed in some scanner frequency guides, so just because your local department isn't listed there, don't assume that the frequency isn't used your area. In any event, the 2-watt transmitters will operate only over short ranges.

Many scanner owners also fail to realize that other unlisted frequencies may also be in use. FCC regulations 90.19(6)(g)(3) permit state, county, and local law enforcement agencies to use 2-watt transmitters on *any* Police Radio Service mobile frequencies that lie between 40 and 952 MHz. If the agencies are using the transmitters in connection with physical surveillance, stakeouts, raids and other such activities, they don't need any specific FCC authorization or license for operation on those frequencies. This includes more than 100 frequencies available for such possible use, none of which will be listed for your area agencies in any frequency registry, or even in FCC records!

Also, note that many law enforcement agencies are now using cellular mobile phones for surveillance and stakeout operations. These units, which work through limited-range repeaters in the 869 to 894 MHz portion of the spectrum, are coming into ever-increasing use.

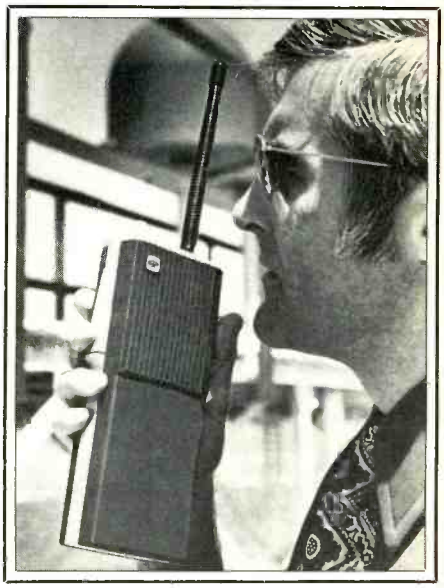
Agencies use these various techniques so as not to tie up their regular channels and interfere with their routine use. While some larger law enforcement agencies have listed "tactical," "surveiallnace," or "detective" frequencies that are used for surveillance work, the unlisted or cellular frequencies are used to supplement those facilities, and/or to discourage unauthorized monitoring of such operations.

Several agencies known to us make regular use of low-power "hands-free" FM transceivers that operate on the 49 MHz band. The following frequencies are available: 49.67, 49.77, 49.83, 49.845, 49.86, 49.875, 49.89, 49.93, 49.97, and 49.99 MHz. These units make excellent surveillance rigs and usually offer a certain amount of communications privacy.

Inexpensive handheld transceivers designed for maritime and business use do, at times, also get pressed into service. According to the FCC, such equipment is *supposed* to be licensed and used in connection with the boating or business activities of the licensees. Doesn't always work out that way. Business frequencies most often usurped in this manner include: 151.625, 154.57, 154.60, 457.525, 457.55, 457.575, 457.60, 467.75, 467.775, 467.80, 467.825, 467.85, 467.875, 467.90, and 467.925 MHz.

Bumper Beepers

A *bumper beeper*, also known as a *noisemaker*, is a low powered transmitting device that is sometimes used in conjunction with surveillance of people and vehicles on-the-

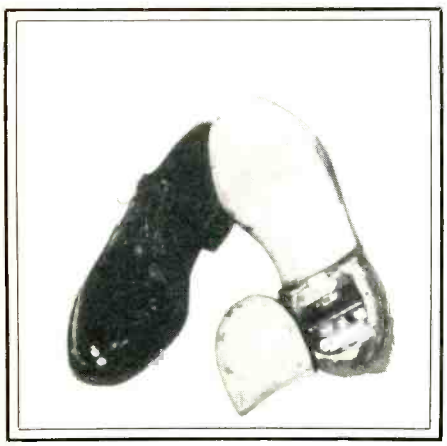


Surveillance comms don't always take place on listed or licensed frequencies.

Signals from a "wire" are picked up and recorded on equipment in an unmarked vehicle within range of the low-power transmitter.

30.85-30.87 MHz	31.97-32.00 MHz
30.89-30.91 MHz	33.00-33.03 MHz
30.93-30.95 MHz	33.05-33.07 MHz
30.97-30.99 MHz	33.41-34.00 MHz
31.01-31.03 MHz	37.00-37.43 MHz
31.05-31.07 MHz	37.89-38.00 MHz
31.09-31.11 MHz	39.00-40.00 MHz
31.13-31.15 MHz	42.00-42.91 MHz
31.17-31.19 MHz	44.61-45.91 MHz
31.21-31.23 MHz	45.93-45.95 MHz
31.25-31.27 MHz	45.97-45.99 MHz
31.29-31.31 MHz	46.01-46.03 MHz
31.33-31.35 MHz	46.05-46.60 MHz
31.37-31.39 MHz	47.00-47.41 MHz
31.41-31.43 MHz	150.995-151.490 MHz
31.45-31.47 MHz	153.740-154.445 MHz
31.49-31.51 MHz	154.635-155.195 MHz
31.53-31.55 MHz	155.415-156.250 MHz
31.57-31.59 MHz	158.715-159.465 MHz
31.61-31.63 MHz	453.0125-453.9875 MHz
31.65-31.67 MHz	458.0125-458.9875 MHz
31.69-31.71 MHz	460.5625-460.5125 MHz
31.73-31.75 MHz	460.5625-460.6375 MHz
31.77-31.79 MHz	462.9375-462.9875 MHz
31.81-31.83 MHz	465.0125-460.5125 MHz
31.85-31.87 MHz	465.5625-465.6375 MHz
31.89-31.91 MHz	467.9375-467.9875 MHz
31.93-31.95 MHz	

Table I. Frequency bands authorized by the FCC for bumper-beeper tailing transmitters. Don't bother looking for them in any scanner directory.

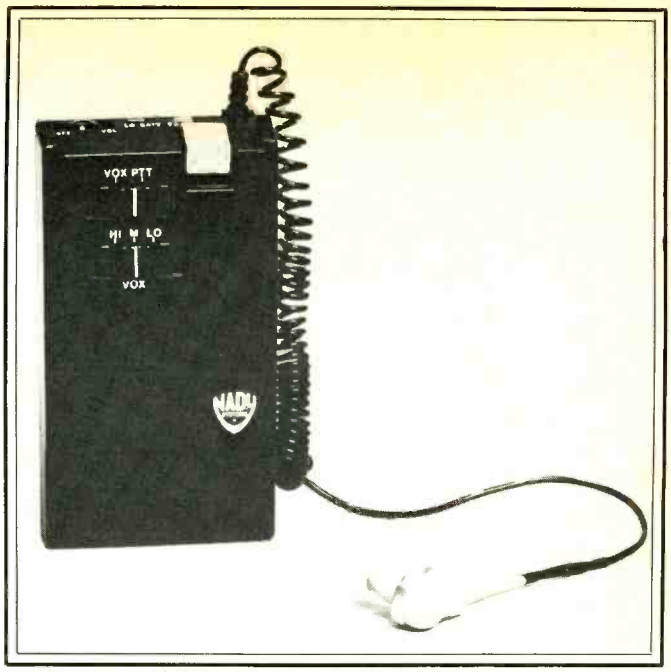


For real, the surveillance transmitter hidden in the heel of the shoe. The antenna is the sole. So corny, nobody would even suspect that's where a "wire" was hidden. Sold only to police agencies, the shoe trasnmitter has a range of about a mile. The heel comes off to replace battery or change frequencies.

move. These small transmitters may be secreted on a suspect, or on his vehicle, or carried by an undercover officer. Using directional receiving systems, the location of such a transmitter can be determined.

These are, of course, non-voice transmitters. FCC regulations specify unmodulated pulses with a mere 30 mW average power rating (maximum of 1 watt at peak). If the

The do-it-yourself hidden body mike, or "wire," need not be anything more formidable than a micro FM wireless microphone placed in someone's pocket.



Nady's new PRC-5 transceiver operates in the 49 MHz band. Its earphone doubles as a microphone and it operates in FM mode with VOX. It's perfect for surveillance, and anybody can operate these units without an FCC license! Cost? Only $70 each. Made by Nady Systems, Inc., 1145 65th St., Oakland, CA 94608.

transmitter is planted on a suspect, or in his vehicle, it must have some built-in means of limiting its period of operation to no longer than a ten day stint.

Within the frequency ranges shown, the signal from a transmitter isn't supposed to occupy more than 2 kHz of spectrum. So, for instance, the segment that runs 30.85 to 30.87 MHz, could (hypothetically, at least) support ten different simultaneous tailing operations. For practical purposes this would, however, be limited to the FCC required 0.005% frequency tolerance allowance, and also receiver selectivity. In any event, you can see there is no shortage of frequencies.

FCC guidelines that allow unlicensed low-powered transmitters on any allocated police mobile frequency between 40 and 952 MHz. These units have a very short transmitting range, and the monitoring/recording is usually done from an electronics car or van parked in the vicinity of the transmitters.

Those other than law enforcement people have also taken to wearing *wires* in connection with gathering evidence for divorces, or for industrial espionage, or blackmail, or a myriad of other reasons. Invariably, these transmitters consist of miniature FM transmitters that operate in the 88 to 108 MHz broadcasting band. They can be hidden in any number of places in the clothing and serve the purpose well at a relatively low cost.

Federal agencies seem to stick within their own bands, most notably 162 to 174 MHz, and 406 to 420 MHz, with discrete frequencies throughout. However, frequency 40.22 MHz, is an old favorite.

Wearing A Wire

A *wire* is, as you may have heard on TV, a hidden body transmitter placed on an undercover officer, or cooperative witness, in order to transmit a conversation with a suspect to nearby oficers waiting to record the same. Law enforcement agencies often operate this surveillance equipment under the

Federal agency body mikes appear most often without the band 169.20 to 173.40 MHz. These are also short-range devices. If you can hear it on your scanner, it's undoubtedly in your neighborhood.

As you can see, just because law enforcement agencies in your area are listed in various directories as operating on certain specific frequencies, that's often not the whole story. Surveillance activities, in particular, could well be on an unlisted frequency, or several unlicensed (but nevertheless legal) frequencies, or even via cellular telephone!

Selected English Language Broadcasts

BY GERRY L. DEXTER

Note: There are hundreds of broadcasts aired in the English Language every day on the shortwave broadcast bands. Many of them are directed to audiences in North America. This is a representative listing and is not intended to be a complete guide. The listing is as accurate as possible, however, stations often make changes in their broadcast hours and/or frequencies, often with little or no advance notice. Some broadcasters air only part of the transmission in English, or English may run into the next hour or more. Some stations have altered schedules on the weekends. Numbers in parenthesis indicate a starting time for the English broadcast that many minutes past the start of the hour. All times are in UTC.

Time	Country/Station	Frequencies
0000	BBC	6175, 7325, 9590, 9915
	Austrian Radio International (30)	9875
	Radio Budapest, Hungary (30)	6110, 9520, 9585, 9835, 11910, 15160
	Radio Kiev, Ukraine	7165, 7400, 9800, 13645, 15180, 15455
	RBI, East Germany (45)	6080, 11890
	Radio Netherlands (30)	6020, 6165, 15315
	WCSN	9850
	BRT, Belgium (30)	9675, 9925
	Radio Sofia, Bulgaria	9700, 11720
	VOPK Kampuchea	9695, 11938
	Radio Norway (Mon)	11850
	Vatican Radio (50)	6150, 9605, 11780
	HCJB, Ecuador (30)	9720, 11775, 11910, 15155
	Radio Pyongyang, North Korea	15115, 15160
	Voice of Israel	7460, 9385, 9435
	Radio Beijing, China	9665, 9770, 11715, 15455
	KUSW	15580
	Radio Moscow	6000, 6045, 6115, 7115, 7150, 7215, 7310, 9720, 9765, 12050, 15425, 17605, 17700, 17720, 21530
	RCI, Canada	5960, 9755
	RHC, Cuba	9655
	Spanish National Radio	9630, 11880
0100	KVOH	13695
	Radio Prague, Czechoslovakia	5930, 6055, 7345, 9540, 9625, 11990
	RAI, Italy	9575, 11800
	Voice of Israel	7460, 9385, 9435
	Radio Yugoslavia	9620, 9660
	Voice of Germany	6040, 6085, 6145, 9565, 9735, 11865
	Voice of Greece (30)	7430, 9420, 11645
	Voice of the UAE	6170, 11965
	RFPI, Costa Rica	13633
	Radio Luxembourg	6090
	Spanish National Radio	9630, 11880
	Radio Baghdad, Iraq	6185
0200	WSHB	9455, 13760
	Radio RSA, South Africa	9580, 9615, 11730
	RAE, Argentina	9690
	SRI, Switzerland	6095, 6135, 9725, 9885, 12035, 17730
	RBI, East Germany	6080, 11890
	Radiobras, Brazil	11745
	Radio Bucharest, Romania	5990, 6155, 9510, 9570, 11830, 11940
	Radio Cairo, Egypt	9475, 9675
	VOFC, Taiwan	5985, 9680, 15345
	Radio Budapest, Hungary (30)	6110, 9520, 9585, 9835, 11910, 15160
	Radio Tirana, Albania (30)	7065, 9500
	Radio Portugal (30)	6060, 9680, 9705

Time	Country/Station	Frequencies
	Radio Sweden	9695, 11705
	RCI, Canada	9535, 9755, 11845, 11940
	TWR, Bonaire (15)	9535, 11930
	Radio Portugal (30)	9680, 9705
	TIFC, Costa Rica	5055
0300	RFI, France (15)	7135, 7175, 9550, 9790, 9800, 11670, 11995
	UAE Radio	9640, 11940, 15435
	Radio Netherlands (30)	6165, 9590
	Radio Five, South Africa	4880
	Vatican Radio (10)	6150
	Radio Yerevan, Armenia (55)	13645, 15180
	UAE Radio (30)	9640, 11940, 15435, 17775
	Radio Prague, Czechoslovania	5930, 6055, 7345, 9540, 9625, 11990
	Radio New Zealand (30)	15150
	Radio Japan	5960
	Voice of Germany	6010, 6130, 9545, 9605, 9700
	Radio Beijing, China	9675, 9690, 9770, 11715, 11860, 15180, 15290, 15455
	Radio Bucharest, Romania	5990, 6155, 9510, 9570, 11830, 11940
	Radio Moscow	6000, 6045, 6116, 7115, 7150, 7215, 7310, 9700, 9765, 11710, 12010, 112050, 15425, 17700
	Radio Finland (30)	9635, 11755
	Radio Tirana, Albania (30)	7065, 9500, 11825
	Voice of Greece (40)	7430, 9395, 9420
	HRVC, Honduras	4820
	TGNA, Guatemala	3300
0400	Radio Beijing, China	9675, 11695, 11980
	TWR, Bonaire	9535, 11930
	Radio Zambia	4910
	WCSN	9870
	Radio Botswana	4820, 7255
	Radio Sofia, Bulgaria	7115, 11735
	Radio Norway (Mon)	9650
	Voice of Turkey	9445
	RAE, Argentina	9690
	Voice of Nicaragua	6015 (or 6100)
	SRI, Switzerland	6135, 9725, 9885, 12035
	RBI, East Germany	9620, 11785
	RHC, Cuba	6035, 6140, 9655
0500	Radio Norway (Mon)	15175
	Voice of Germany	5960, 6120, 6130, 9635, 9700
	Spanish National Radio	9630
	KUSW	6175
	Radio Austria International	6015
	Voice of Nigeria	7255
	Radio Japan	5990, 11870
	Radio Cameroon (05)	4850
0600	Radio Korea	6060, 9570
	HCJB, Ecuador	6230, 9720, 11775
	Radio Moscow	5905, 7175, 7185, 7230, 7260, 7270, 7335, 7345, 9825
	RHC, Cuba	9525, 11760
	WRNO	6185
	ELWA, Liberia	4760
	GBC, Ghana	4915
	WCSN	7365
	RCI, Canada	6050, 6140
0700	WSHB	9455, 11980
	KUSW	6135
	SIBS, Solomon Islands	5020, 9545
	HCJB, Ecuador	6130, 6205, 9585, 9655, 9745
	VOFC, Taiwan	5985
	TWR Monaco (25)	7105
	SRI, Switzerland (30)	6165, 9535
0800	KNLS	6065
	LBS, Liberia	6090
	WHRI	7355
	Radio Tirana, Albania	9500, 11835
	Voice of Indonesia	11790, 15150
	TWR Monaco	7105, 9480
	KUSW	6135
0900	AWR, Portugal	9670
	Radio Afghanistan	4760, 6085, 9635, 15435, 17720
	Radio Ulanbator, Mongolia (10)	12015
	RCI, Canada (30)	5960, 9755
	KTWR, Guam (30)	11805
	Radio New Zealand	9850, 11780
	Radio Australia	6060, 9580, 11720
1000	KSDA, Guam	13720
	Radio New Zealand	1178
	RBI, East Germany	11890
	Voice of Vietnam	9840, 12020
	AIR, India	11860, 11925, 15155, 15335, 17387
	Radio Netherlands (30)	6020, 9505
	SLBC, Sri Lanka	11835, 15120
1100	Voice of Israel	11588, 21625
	Voice of Vietnam	7432, 9730
	Radio Korea	15575
	TWR Bonaire (15)	11815, 15345
	Radio Thailand (30)	9655, 11905
	AIR, India (35)	9610, 9675, 11850, 15325
	HCJB, Ecuador (30)	11740
	Radio Pyongyang, North Korea	6576, 9600, 9977, 11735
	VOIRI, Iran	7230, 9520, 9685, 11790
	Radio Austria International	15450
	Radio Beijing, China	9655
	Radio Japan	6120
	Radio Australia	6060, 9580
	Radio Pakistan	17660
1200	Radio Ulanbator, Mongolia	9615, 12015
	Radio Finland	11945, 15400
	Radio Beijing	9665, 15110, 17715
	WRNO	9715
	Voice of Greece (35)	9905, 11645, 15630
	Radio Bangladesh (30)	15195, 17710

Time	Country/Station	Frequencies
	Radio Tashkent, Uzbek SSR	5945, 9540, 960, 11785, 15460
	Radio Pyongyang, North Korea	9555, 9600, 11735
	WCSN	5980
	KUSW	9850
	KYOI, Saipan	11900
1300	BRT, Belgium (30)	17555
	Radio Norway (Sun)	17780, 21705
	HCJB, Ecuador	11740, 15115, 17890
	Radio Pyongyang, North Korea	9325, 9345, 9600, 11335, 11735
	RCI, Canada	9635, 11855, 17820
	Radio Finland	11945, 15400
	Radio Yugoslavia	15325
	AWR, Costa Rica	15460
	FEBC, Philippines	11850
	Voice of Vietnam	9840, 12020
	AIR, India	11810, 15335
1400	Radio Sweden	15345
	Radio Beijing, China	7405, 11600
	Voice of the Mediterranean, Malta	11925
	Radio Netherlands (30)	5955, 13770, 15150, 17575, 17605
	WCSN	15580
	Radio Jordan (20)	9560
	Radio Korea	9570, 15575
	Radio Norway (Sun)	17780
	National Unity Radio, Sudan	9435
	Radio RSA, South Africa	11925, 17755, 21590, 21670
	Radio Finland	11945, 15400
1500	Radio Veritas Asia, Philippines	15220, 15465
	HCJB, Ecuador	11740, 15115, 17890
	KNLS	7355
	RTM, Morocco (30)	17595
	Radio Japan	5990
	WRNO	11965
	Voice of Greece (40)	11645, 15630, 17565
	Voice of Ethiopia	9560
	Voice of Nigeria	11770
	AIR, India (30)	9545, 9950, 10330
1600	Radio Netherlands (30)	6020, 15570
	WCSN	21640
	Radio Norway (Sun)	21705
	BSKSA	9705, 9720
	Radio Nacional, Angola	11955
	Radio Pakistan	11615, 13675, 15515, 17895
	UAE Radio	11730, 11955, 15300, 21605
	Voice of Nigeria	15120
	RCI, Canada	11955, 17820
1700	Radio Jordan	9560
	Radio Norway (Sun)	15310, 21705
	RAE, Argentina (30)	15345
	Voice of Nigeria	11770
	RCI, Canada	15325, 17820
	Radio Suriname International (40)	17765
	FEBA, Seychelles (30)	11810
1800	Radio Netherlands (30)	6020, 15560, 17605, 21685
	Radio Africa, Eq. Guinea	9582
	Voice of Ethiopia	9660
	Radio Abidjan, Ivory Coast (Sun)	11920
	Radio New Zealand (30)	11780, 15150
	Radio Moscow	7440, 9560, 9580, 9640, 9825, 11840, 11955, 12020, 12050, 13605
	Radio Kuwai	11665
	Radio Bangladesh	11510
	RCI, Canada	15260, 11820
	Voice of Greece (40)	11645, 15630
1900	BSKSA, Saudi Arabia	9705, 9720
	VOIRI (30)	9022
	Radio Algiers, Algeria	9509, 9640, 15215, 17745
	Radio Afghanistan	9640
	RCI, Canada	15260, 17820
	Voice of Ethiopia	9595
	HCJB, Ecuador	15270, 17790
	RHC, Cuba	11800
2000	WSHB	17555, 21640
	WCSN	15390
	Radio Jordan	9560
	Radio Norway (Sun)	15310
	Radio Damascus (05)	12085, 15095
	Voice of Israel	7460, 9435, 9855
	Radio Kuwait	11665
	Voice of Nigeria	11770
	AIR, India	9910, 11620
	KUSW	15580
2100	Radio Damascus, Syria	9950, 15095
	Radio Sofia, Bulgaria (30)	7115, 9700, 11720
	RFPI, Costa Rica	21560
	SRI, Switzerland	9885, 13635, 15570
	Voice of Nigeria	15120
	Radio Baghdad, Iraq	9770
	HCJB, Ecuador	15270, 17790
2200	WCSN	15300
	BRT, Belgium	5915, 9675
	Radio Yugoslavia	9660
	Radio Australia	15320, 15395, 17795
	Voice of the UAE	9595, 11965
	Radio Polonia	5995, 6135, 7125, 7270
	RBI, East Germany	9730
	Radio Sofia, Bulgaria	9700, 11720
	Radio Jamahariya, Libya (30)	7245
	AIR, India (45)	9910, 11715, 11745
	RCI, Canada	9760, 11945
	Voice of Israel	7355, 9435, 9855, 11605
	Radio Mediterranean, Malta	6110
2300	Radio Korea (30)	15575
	Radio Pyongyang, North Korea	11735, 13650
	Voice of Turkey	9445
	Radio New Zealand (45)	15150, 17705
	Radio Vilnius, Lithuania	9640, 11790, 13645, 15180, 15455
	Radio Tirana, Albania (30)	6085, 6200, 7065, 9760, 11840
	Voice of Greece (35)	9395, 11645
	Radio Polonia (05)	5995, 6135, 7125, 7145, 7270
	Voice of Vietnam	9840, 12020

PC

Tuning The Overlooked Band

The Band The Frequency Guides Forgot To Include - Oops!

BY CHUCK ROBERTSON

Ever notice that even the authoritative shortwave and scanner directories almost never have anything to tell you about the tiny slice of frequency spectrum wedged in between the high frequency end of the 10 meter ham band (29.70 MHz) and the bottom edge of the VHF low band (30.00 MHz)? True, it's only 300 MHz wide, but that doesn't mean it should be overlooked like the runt of the litter. Especially not this time of year when it's producing DX!

Small as it is, the band contains several discrete sub-bands. Base and mobile units in Land Mobile systems throughout the world are allocated between 29.70 and 29.80 MHz. In the U.S.A. (only), the forest products industry (logging operations, paper mills, etc.) may use this band on odd-numbered frequencies (20 kHz spacing, NBFM mode). For example, the International Paper Co. bases throughout the southeastern states and in Texas are on 29.73 MHz. Frequencies in this group are: 29.71, 29.73, 29.75, 29.77, and 29.79 MHz.

In Canada, just about any business or local government operation can pop up on the even-numbered frequencies (20 kHz, NBFM mode). For instance, the Quebec Ministry of Public Works operates on 29.76 MHz (French language). Frequencies in this group are: 29.70, 29.72, 29.74, 29.76, and 29.78 MHz.

The United Kingdom allocates frequencies in this band to tactical military communications (25 kHz spacing, AM mode). Some really HOT comms can sometimes be monitored here. Frequencies to be checked are: 29.70, 29.725, 29.75, 29.775, 29.80, 29.825, 29.85, 29.875, 29.90, 29.925, 29.95, and 29.975 MHz.

Mexico has a string of half-duplex radio telephones in this band (15 kHz spacing, NBFM mode). I call them *whistlers* because of the continuous high-pitched guard tone heard during the conversations. At the start of each call, the tone is interrupted to permit proper dialing of the number being called. These are the frequencies to watch: 29.70, 29.715, 29.73, 29.745, 29.76, 29.775, and 29.79 MHz.

The radio-phones seem to be point-to-point links used between hotels and casetas (long distance concessionaires located in their own buildings). The frequency 29.775 MHz is sometimes run parallel with 31.53 MHz. Interesting to note that 29.775 remains on the air several seconds after 31.53 MHz shuts down.

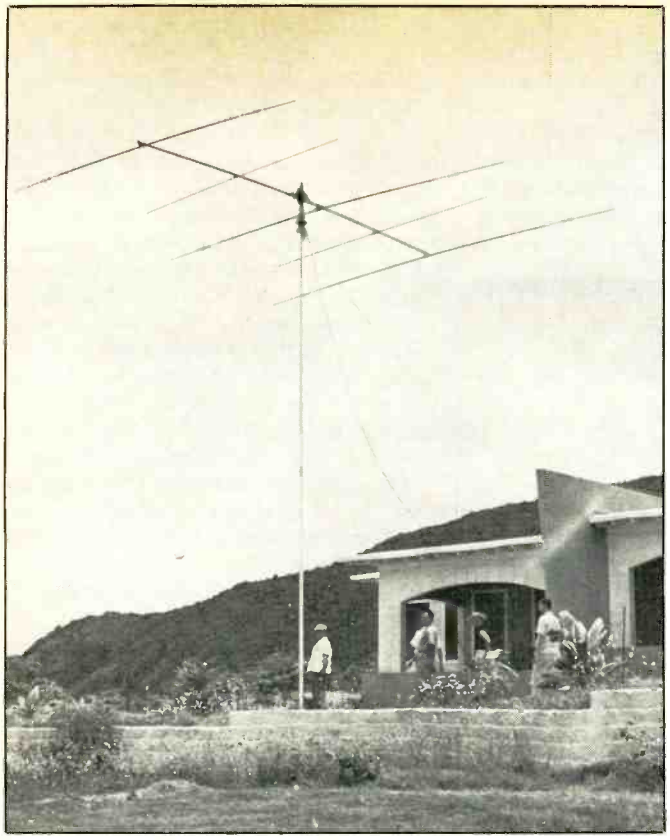
Logging trucks are popular on some of these frequencies.

Sometimes, while monitoring these links, you hear Americans using them. Invariably, they complain about the poor quality of the system. If they speak loudly in an attempt to compensate for poor voice fidelity, the signal becomes badly distorted. The telephone service in Mexico is run by the government.

Other nations have their own special uses for the 29.70 to 29.80 MHz band. A full-duplex mobile phone service operates on 29.74 MHz using Spanish. Its location is unknown. There's a West Indies radio pager (English language) operating on 29.715 MHz. The two-way communications of a business in San Luis, Argentina is heard on 29.76 MHz. A displaced 10-meter ham band turned up on 29.74 MHz calling "CQ 10," and there's also an international "outbander" net on that frequency at times.

A taxi service in New York City bootlegs on 29.79 MHz. Not long ago, New York City's Taxi and Limousine Commission was complaining about the large number of illegal communications systems operated by taxi companies using all sorts of frequencies between 27.40 and 30.00 MHz, often with 350 watts and more. The drivers claimed they require the radios for their own personal safety. These communications are primarily in English or Spanish.

The sub-bands 29.80 to 29.89, and 29.91 to 29.995 are known as International Fixed (point-to-point) Public bands. They're allocated for high powered ionospheric scatter telemetry between land stations, or from land stations to aircraft. These stations run thousands of watts, *tens* of thousands of watts! Most of the power passes through the ionosphere and heads into space. A small amount, though, is reflected off random patches of ionization in the E layer, resulting in skip distances between 450 and 1,500 miles. Even when the MUF (Maximum Usable Frequency) is below 29 MHz, reliable



A number of resorts south of the border turn up on these frequencies.

Frankly, a lot of stations on these frequencies can't be easily identified.

communications on several non-voice channels (or one voice channel) are possible.

These channels are spaced at 10 kHz intervals. They are: 29.81, 29.82, 29.83, 29.84, 29.85, 29.86, 29.87, 29.88, 29.92, 29.93, 29.94, 29.95, 29.96, 29.97, 29.98, 29.99 MHz.

It seems as if there are only four stations in the U.S. authorized here, all for press agencies. RCA Global Communications has bases in New York City and San Francisco on both 29.96 and 29.97 MHz. ITT World Communications has bases at the same locations on 29.84, 29.85, 29.87, 29.88 and 29.94 MHz.

There are apparently some government contractors authorized to operate here, too. In all of my years of sorting through this band, I have yet to hear any of these ionospheric scatter stations. Even if short data bursts were used, I'd expect to hear something once in a while. Perhaps satellite technology has put these systems in mothballs.

Not that these frequencies are totally silent, they are loaded with outbanders, radio phones, military communications (WBFM), business communications, non-voice signalling (notably from Canada). A log of some of the things to be heard is shown in Table 1.

Note that the outbanders (or freebanders, if you prefer) are unauthorized and unlicensed two-way hobby communicators. Usually they operate within closed networks of their own. If they are often mistakenly called "unlicensed CB stations" when, in fact, (in the U.S.A.) *all* CB stations are permitted to operate without individual licenses. Moreover, outbanders invariably use ham equipment, and not CB sets. That being the case, they could be better termed "unlicensed hams" rather than "unlicensed CB'ers." Fact is, that inasmuch as they neither operate on frequencies authorized for ham or CB use, they are actually just

TABLE I

29.80	Soviet military (Cuba), clear and scrambled
	Non-voice signalling, AM
29.805	Whistler-type radio phone (Mexico)
29.82	Non-voice signalling, AM
	Whistler-type radio phone (Mexico)
29.825	Drug courier, full duplex, Spanish/English (Miami, FL)
29.835	Whistler-type radio phone (Mexico)
29.84	Base/mobile business radio (Mexico)
29.845	Full duplex radio phone, Spanish
	Whistler-type radio phone (Mexico)
29.85	Military ops, Spanish lang. (Central America)
29.86	Whistler-type radio phone (Mexico)
29.875	Whistler-type radio phone (Mexico)
29.88	Outbanders, Spanish language, AM
29.885	Full duplex radio phone, Spanish language
29.89	Whistler-type radio phone (Mexico)
	Outbanders, Spanish language, AM
29.91	Outbanders, Spanish language, AM
29.92	Outbanders, Spanish language, AM
	Full duplex radio phone Spanish language
29.93	Full duplex radio phone, Spanish language
	Outbanders, Spanish language, AM
29.94	Outbanders, Spanish language, AM
29.95	Soviet military (Cuba), clear and scrambled
29.96	Outbanders, Spanish language, AM
29.97	Outbanders, Spanish language, AM
29.98	Outbanders, English lang., NBFM (California)
29.995	Two-way business, Guatemala

Here are some loggings between 29.80 and 29.995 MHz.

plain "unlicensed *stations*," and shouldn't rightfully be hooked to any authorized service.

Spanish language outbanders prefer AM mode, and some appear to mix business activities in with their hobby comms. It's the North American outbanders that are of particular interest. NBFM is commonly used, and the language is mainly English. The California outbanding antics on 29.98 MHz are outrageous! *"Loudmouth Lorraine"* and her bucketmouth pal come up with some withering one-liners and no small amount of blue language.

The lower sideband of 29.79 MHz has been producing a well structured network of bootleg stations in Africa, Central America, and even North America. These appear to be hobbyists and are noted around 1700 to 1800 UTC. Listen for the stations with ID's like CCO-18 and CCO-28. A station 20WW1498 seems to be in California.

There's a south Florida drug courier on 29.825 MHz whose activities should not only have you on the edge of your seat, but also give you an inside track on one of the world's most insidious and offensive industries. Sometimes this frequency also brings up the third harmonic of anti-Castro propaganda station La Voz del Cuba Independiente y Democratica.

In the U.S., the tiny sub-band, 29.89 to 29.91, is set aside for military ionospheric scatter telemetry purposes, splinter frequencies like 29.895 and 29.905 MHz are used. I've logged transmissions in this band.

The discrete frequency 29.90 MHz appears to be allocated worldwide for low power military comms, at least in North and Central America. One U.S. mil station actually ID's as "Low Power Operations." Watch this channel!

Just because 29.70 to 30.00 MHz is an overlooked band, don't *you* ignore these frequencies. It's teeming with domestic and foreign radio systems, and wide open for use and abuse by drug runners, bootleg business comms, and outbanders. Overt and covert military comms turn up here, too. Next time the skip comes rolling on CB, the 10 meter band, or VHF low band, remember, search the Overlooked Band.

Was It That Long Ago?

Magic Memories And Historic Harangues About Wireless, Radio, And Television

BY ALICE BRANNIGAN

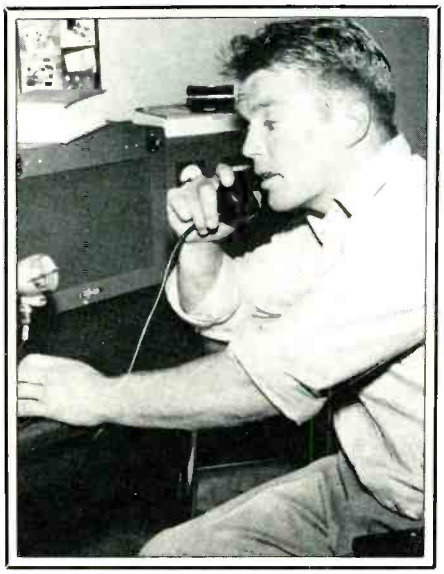
The other night I was watching TV and saw a program in which a major plot point revolved around a cellular telephone and its use. The car phone showed up and was featured in several scenes. Made me dig back to see if I could find some more memorable and interesting times in the past that radio communications equipment and services were publicized on TV. I don't mean just used in the background or used incidentally, but actually given the spotlight and a share of the glory along with the stars.

Certainly one of the earliest boosts given to radio must have been on the NBC-TV series *Panic*, a half hour anthology that was in the primetime lineup as a summertime replacement between March and September of 1957. Each week would feature a different story of a person caught in a panic situation.

The segment aired June 6th starred Richard Jaeckel as a paraplegic ham operator trapped in his house, which caught fire. Several attempts to reach the fire department by landline were thwarted by fire-related equipment problems and then failure. The only hope of summoning help was by means of a desktop filled with Collins equipment. Most of the program consisted of attempts to contact overseas hams and find one that could get a clear copy on him, understand English, believed that he was trapped in a burning house, and was willing to place an overseas call to his local fire department before it was too late. He was saved just in time for the final commercial.

The popular ABC-TV private eye series *77 Sunset Strip*, which appeared between October of 1958 and September of 1964, was the first to utilize CB radio equipment on a regular basis in its stories. During the 1961-62 season, the program's producers made arrangements with Polytronics Labs for one of their four-channel Poly-Comm "N" transceivers to become part of the office scenery. More than just decorative, the CB set was shown in use during many of the shows beginning in the fall of 1961, and using the fictitious callsign 11J5486. This was the public's first real exposure to CB radio.

Naked City was an ABC-TV series that appeared between September of 1958 and September of 1963. In 1962, this program had acquired several Lafayette He-20 CB rigs which were often seen being used in the shows. They weren't shown being used as CB sets, but as two-way police radios. The words "Lafayette Citizens Band Radio" on the front panel were covered over by a strip of tape and the audience never seemed to know the difference, or care.



Richard Jaeckel starred in a 1957 episode of "Panic" in which ham radio was an important plot factor.

Efrem Zimbalist, Jr., one of the stars of "77 Sunset Strip" showed what CB radio was all about back in 1961, thirteen years before the general public finally took to CB.

Undoubtedly, the most talked about two-way radios of the past were the handheld *Batphone* transceivers used on ABC-TV's hit *Batman* series that ran from January of 1966 to March of 1968. Batman (the Caped Crusader) and Robin used these radios in the majority of programs to communicate with one another while ridding Gotham City of assorted evildoers. *Pow! Bop! Bang! Thud!* The Dynamic Duo relied heavily on communications.

Batman was a fantasy program, likewise everything on the program was fantastic. The *Batphones* were non-working handmade mock-ups, actually rather crude upon close examination. The original units used for the show are owned by one of our readers who has given me a look at them. The cases are wood, covered in enamel. The antennas were cut down from car radio antennas. The front of each *Batphone* contains a cutout area covered with translucent plastic held in place by two screws. Through the plastic, on the inside of each unit, you can vaguely see three glass vacuum tubes. Each *Batphone* also has a front panel disc containing drawn-on dots to represent a speaker/mike. There was also a simulated push-to-talk button at the bottom of each unit.

What with the present resurgence of *Batman* popularity, these interesting props are probably valuable.

By the 1970's, CB radios had become regular members of the *Movin' On* TV show (1974-76) storylines, and after that, radio communication equipment had become so commonplace in the media, that it was hardly worth noticing anymore.

Victim Of Many Tricks Of Fate

Here's a station few remember, yet when it was being built, it was described in the newspapers as "one of the most beautiful broadcasting stations in the nation." That was in mid-1924, and the station was 500 watter WFBH which operated on 1010 kHz, then switched to 1100 kHz. It had a strange and brief existence, a curious transition, a bizarre demise.

WFBH was installed in New York City's impressive Hotel Majestic, 72nd Street and Central Park West. This elegant eleven-story French Renaissance-style hotel faced

A Lafayette HE-20 CB rig (with a strip of tape covering its true identity) sits on the hood of a car as a prop looking like a police radio during this 1962 filming of the TV show, "Naked City."

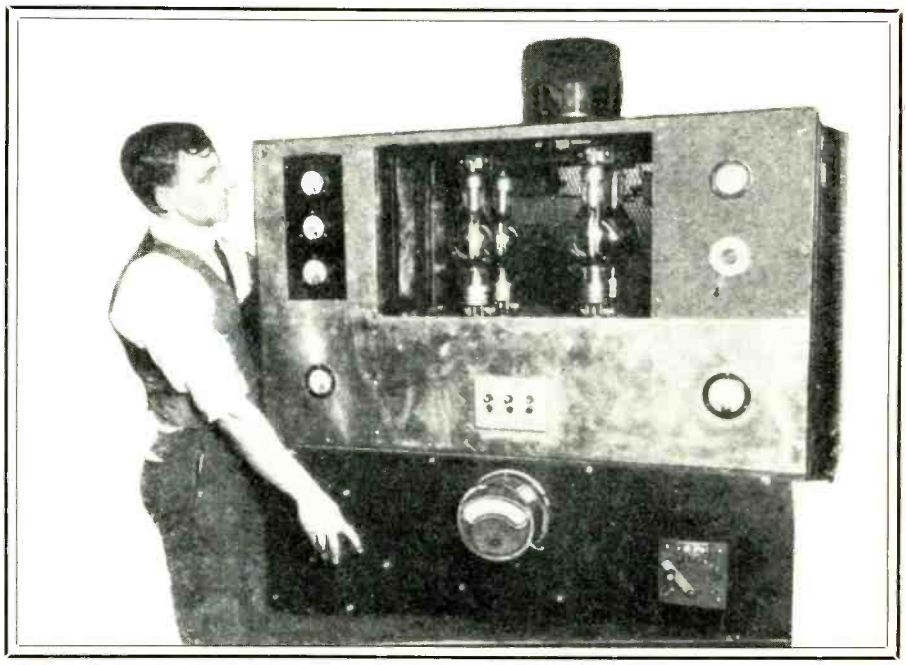
Holy resistors! These are the original, authentic Batphones used in the "Batman" TV program of the late-60's. We're looking at them courtesy of one of our readers.

beautiful Central Park (to the east) and was directly across 72nd Street from the ornate Dakota Apartments, one of the most prestigious addresses in New York City in the 1980's. The Dakota was the setting for the movie *Rosemary's Baby*, for Jack Finney's historical science fiction novel *Time and Again*, and it was where John Lennon was murdered in 1980.

Lavish broadcasting studios were constructed at the Majestic for WFBH, complete with microphones hidden in the walls to prevent musical performers from getting mike fright. By late 1924, the Concourse Radio Corp. had its WFBH operating on a daily schedule and calling itself the *Voice of Central Park*.

WFBH wasn't to be checked in very long at the old Hotel Majestic, however. Seems the Majestic (built around 1890) was to be torn down to make way for a newer building (the Art Deco style Majestic Apartments, built in 1930 and still standing). Doubtful that WFBH would have gone to the trouble and expense of moving to the older building had they known it would be such a short stay. So, by 1927, Concourse Radio Corp. moved their *Voice of Central Park* to the Park Central Hotel on the west side of Seventh Avenue between 55th and 56th Streets. This hotel would later become well known as Jackie Gleasons' TV production headquarters. Years afterwards, it would change its name to the Park Sheraton Hotel.

The move to the Park Central Hotel ended the brief use of the callsign WFBH. The initials of the hotel were incorporated into the station's new callsign, WPCH, and the frequency was changed to 920 kHz. Two steel broadcast towers were promptly erected on the roof, yet it wasn't long before



WFBH, though described as "one of the most beautiful broadcasting stations in the nation," has now become one of the most obscure. Here, the Chief Engineer adjusts WFBH's 500 watt transmitter.

WPCH was using a transmitter located in Hoboken, NJ. Both towers on the hotel roof, then only one, remained there for decades afterwards and became a local landmark. The Park Central Hotel was only three blocks from the southern end of Central Park, so the *Voice of Central Park* slogan was retained. In November of 1928, during a major national frequency shuffle, WPCH was moved to 810 kHz.

The residency at the Park Central didn't last too long, either, for 1929 saw WPCH moving to the Hotel McAlpin, in Greely Square, Broadway and 34th Street. The reason was that WPCH had been sold to Eastern Broadcasters, Inc., of that address. Under another corporate name, Knickerbocker Broadcasting Co., from the same address, the new WPCH owners also ran station WMCA (570 kHz). Both stations must have been operating from close quarters at the McAlpin inasmuch as some lis-

teners said they were puzzled by tuning in WMCA and also hearing the WPCH programs taking place off mike in the background.

Before the November 1928 nationwide frequency realignment, WMCA had been on 810 kHz sharing time with religious station WLWL. When the FRC decided to change around many frequencies, WLWL was moved to 1100 kHz. That's when WPCH was told to move to 810 kHz WMCA was forced to get off 810 kHz and shift to 570 kHz where it would have to split hours with WNYC, New York City's noncommercial municipal station. This was viewed with dismay by WMCA, who saw their cherished 810 kHz channel given to WPCH, which could operate there without sharing it with any local stations. WMCA, however, was moved to a new dial spot. To make things all the worse, WNYC found the prospect of suddenly having to share 570 kHz with another station revolting. WMCA, which didn't mind the small amount of sharing it once had to do with the religious station on 810 kHz, now found its air time cut back.

WMCA and WNYC immediately began bickering, whining, and complaining about their shotgun marriage on 570 kHz. Each continually complained to the FRC that it wanted increased use of the frequency at the expense of the other. That's when WMCA decided to cut the Gordian knot; they purchased WPCH and regained control of 810 kHz, although continuing to still seek more time on 570 kHz.

The FRC looked at the situation in 1932 and came up with a Solomon-like solution intended to end the feuding on 570 kHz. In a stroke of irony, WNYC was told to move to 810 kHz, where it would again be alone. WPCH was kicked off of 810 kHz and told to share 570 kHz with its companion station, WMCA. What this meant was that there was no longer any reason for WPCH to exist. The FRC permitted the combined WMCA/WPCH callsign to be used for a year on 570 kHz, and when that expired in mid-1933, the WPCH identity just drifted off into total oblivion.

The lush WFBH studios acoustically modified with carpeted floors, and velvet draped walls and ceilings. Microphones were concealed in the walls.

WMCA still operates on 570 kHz (5 kW), with WNYC (1 kW) keeping a safe distance on 830 kHz. WPCH is a vague memory; WFBH is even less than that. WMCA and WPCH QSL's with identical designs were supplied by Joe Hueter, Philadelphia, PA.

Floating Radio City

I've had many requests to present information about those behemoths of the seas, the great transoceanic liners of old, and the communications equipment they needed to have aboard. I could do little better than describe the wonderful and renowned, *S.S. Leviathan*, largest ship in the world for sixteen years.

She was built in Germany in 1913, launched as the *S.S. Vaterland*, pride of that country's merchant fleet. This was a 54,282 GRT vessel, 948 feet in length, with a 100 ft. beam. A crew of 1,234 attended a total of 3,800 passengers (752 in First Class).

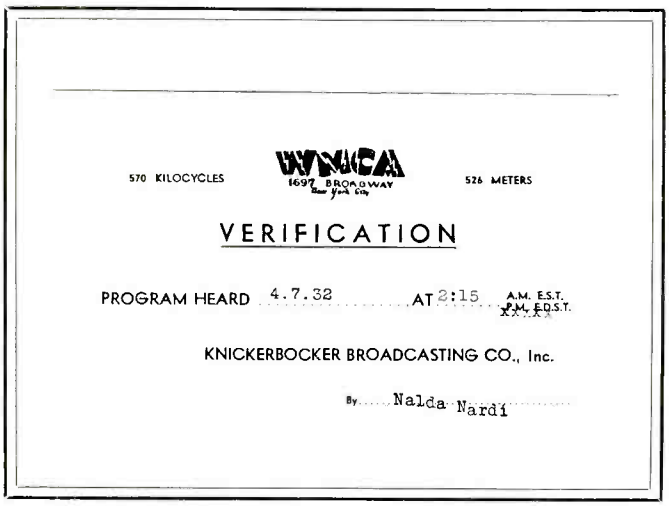
With the U.S. entering WWI, and the ship facing seizure by the U.S. (while it was berthed in New Jersey), the crew damaged the motive equipment. On April 6, 1917, the vessel was seized, repaired and turned into a U.S. Navy transport called the *U.S.S. Leviathan (SP-1326)*. The USN callsign of NEJ was assigned. During the war she made 10 round trips to ferry 119,000 troops to Europe. When the war ended, it took another 9 trips to bring the troops back home. On October 29, 1919, the USN released the vessel for civilian use under the American flag by the United States Lines.

The refurbished ship was dubed the *S.S. Leviathan*, and was then designed to carry 3,391 passengers (later reduced to 3,008, of which 940 were First Class). The radio callsign WSN was assigned for operation on 125, 143, 167, 345, 425, 500, and 1000 kHz. There were also two radio-equipped lifeboats, #67 (WSNA) and #68 (WSNB) which could operate on 500 and 1000 kHz.

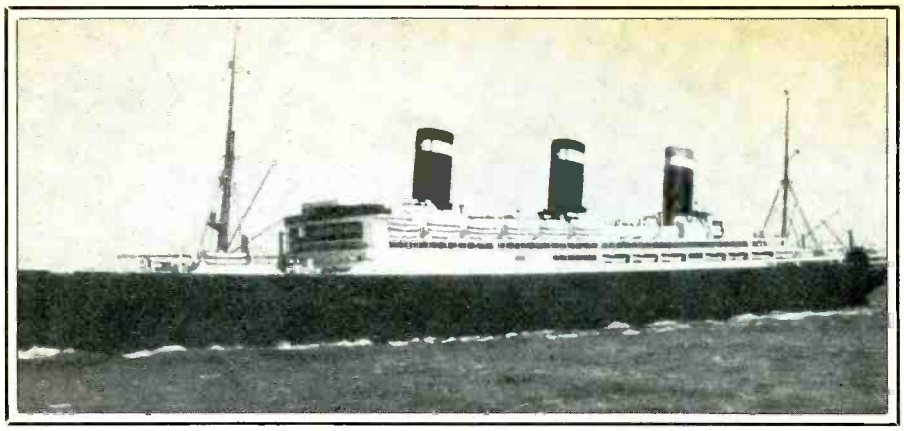
In June of 1923, the *S.S. Leviathan* took a large number of guest passengers on her first trial run, an excursion from Boston to the South Atlantic, then to New York City. One of the most enthusiastic of the passengers was David Sarnoff, honcho of RCA, and himself an old brasspounder. He was so impressed with the ship's radio shack that he ordered all of RCA's shore stations not to send out radiograms to any ships until the enormous backlog of radiograms from the *Leviathan* had been sent from the ship. He then took off his jacket, rolled up his sleeves, and sat down at the telegraph key to start transmitting the traffic himself. This consisted of news reports, personal messages, and operational messages relating to the ship itself. This totalled 15,000 words.

Chief Radio Officer E.N. Pickerill was seated at a second operating position, key in hand, simultaneously handling traffic with General Sarnoff. Traffic was sent through station WCC at Cape Cod, MA. The ship experienced static and was unable to hear

WPCH (ex-WFBH) eventually came under the control of another New York station, WMCA. Here's a WPCH verification from March, 1932. (Courtesy Joe Hueter.)

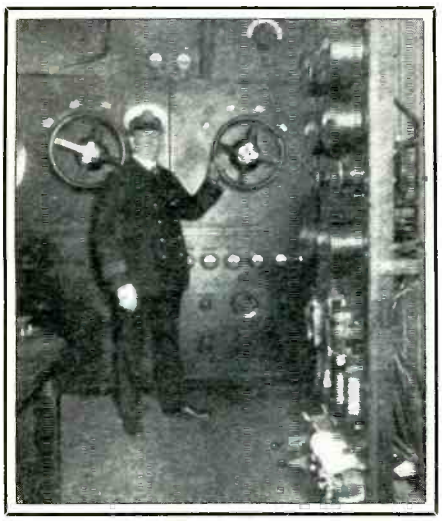


Note that WMCA's 1932 QSL card was identical in design to that of WPCH. (Courtesy Joe Hueter.)

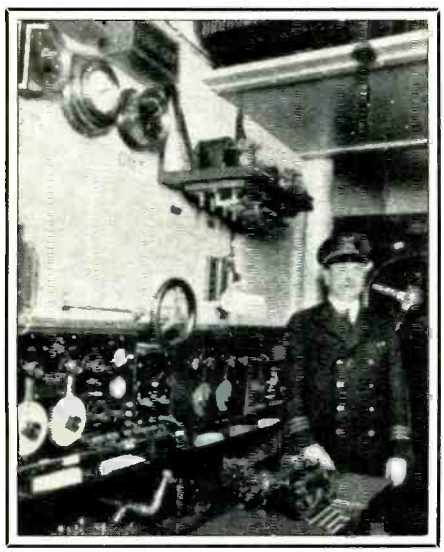


The S.S. Leviathan, for many years the largest ship in the world. This photo shows her in 1931, near the end of her service.

Scene aboard the S.S. Leviathan during what was claimed to have been the first broadcast of entertainment from a ship at sea, 1924.



The S.S. Leviathan's Chief Radio Officer, E.N. Pickerill, demonstrates how the transmitter frequency is varied in this 1923 photo. This transmitter pushed a sizzling 30 to 40 amps into the antenna!



The dual operating positions and receivers in the radio shack of the S.S. Leviathan when it went into transoceanic passenger service in 1924.

WCC's 4 kW transmitter on 188 kHz. It wasn't until WCC switched over to 200 kW on 18.75 kHz that the ship could copy them. Ultimately, the *Leviathan* exchanged 40,000 words with WCC on the trial run. It marked the first time that WCC had ever diverted its high power 18.75 kHz transmitter from its European point-to-point duties.

The 1924 inauguration of regular *Leviathan* service between New York and Southampton was another glittering and gala event. On that occasion, the vessel sent out live nightly broadcasts from its ballroom through its regular transmitting equipment. Interviews were conducted with the ship's Captain and also executives of United States Lines. The ship claimed the high seas transmissions marked a broadcasting "first."

Not long after, with the changing of ship callsign formats from three letters to four, the old WSN callsign was replaced by WSBN. The two lifeboats retained their previously assigned calls. Also, additional operating frequencies were authorized, including some as high as 11 MHz.

Another first was scored in 1929, when the *Leviathan* instituted a full-fledged seagoing stock exchange service. The RCA shore stations at Cape Cod, MA and Rocky Point, NY sent shortwave transmissions to the ship of the latest New York Stock Exchange quotations. The prices were immediately written on a blackboard in the ship's lounge. Passengers who wished to buy or sell stocks could do so through the facilities of a Wall Street brokerage firm that had established a branch office aboard the liner. One can only guess at how many seasickness pills and life preservers were required on the October day that year when the Market "crashed."

Although time, and the Great Depression, were catching up with the *Leviathan*, she still had one more superlative left up her stacks. In 1931, she was the first ship to receive live TV transmissions while on the high seas!

During this event, the *Leviathan* was 350 miles southeast of Boston and was able to pick up a special TV broadcast intended for the ship from station W1XAV in Boston, MA. This station was using 1 kW between 2850 and 2950 kHz for its video. The audio came from station W1XAU running 500 watts on 1604 kHz. The normal service range of W1XAV was about 30 miles, so this one was considered spectacular DX, although high-seas reception varied between good and very poor.

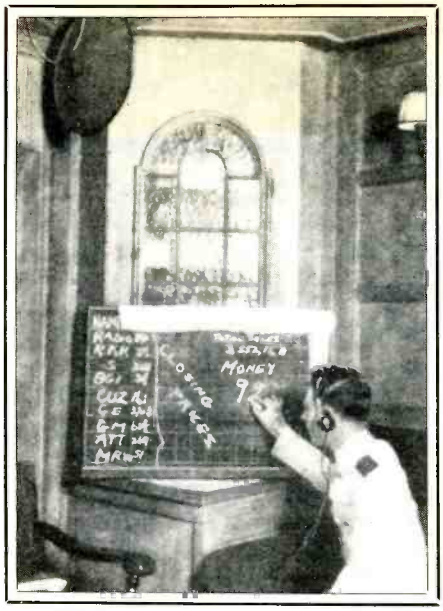
The receiving antenna was strung between two of the ship's stacks, about 150 feet above the water. TV images were also received from W2XR in Long Island City, NY (500 watts on W1XAV's frequency), as well as W3XK in Washington, DC (using 5 kW between 2000 and 2100 kHz). Even though the ship was only fifty miles from New York City, reception was poor from NBC's W2XBS (5 kW on 2100 to 2200 kHz), and a total blank for CBS' W2XAB (5 kW on 2750 to 2850 kHz). But, of course, W1XAV was the station that was running the special program for the ship, anyway.

A TV receiver was set up in the ship's nightclub to the absolute delight of 300 passengers, all of whom had been given a glimpse of something right out of Jules Verne or H.G. Wells. The special broadcast from Boston featured mayor Curley and actor George Bancroft. The picture quality was good enough for a three minute stretch. Those who knew Curley were startled at seeing his image so clearly. Unfortunately, the audio portion of the program (in which he sent greetings from Boston to the ship) couldn't be heard because of intense static.

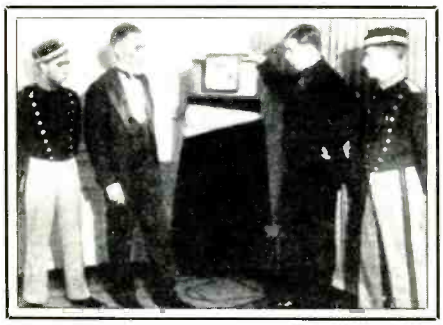
Lack of transoceanic passengers during the hard times, plus increasing upkeep costs required the 19-year old ship to be laid up in 1932. In 1934, the *Leviathan* had four farewell voyages to Suthampton, then in September of that year was taken out of service. In December of 1937, she was sold to a company in Scotland. In January of 1938, with a skeleton crew, the *Leviathan* sailed for Scotland, arriving in mid-February. On June 6th, the vessel was broken up for scrap.

South American Shortwaver

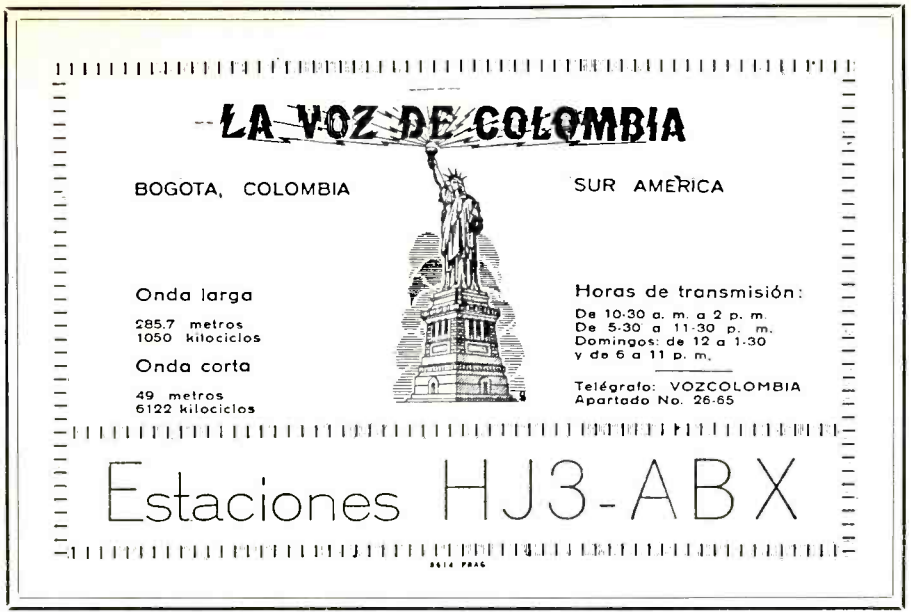
One of the early shortwave broadcasters in Columbia was Bogota's HJ3ABX, known as *La Voz de Colombia*. In 1937,



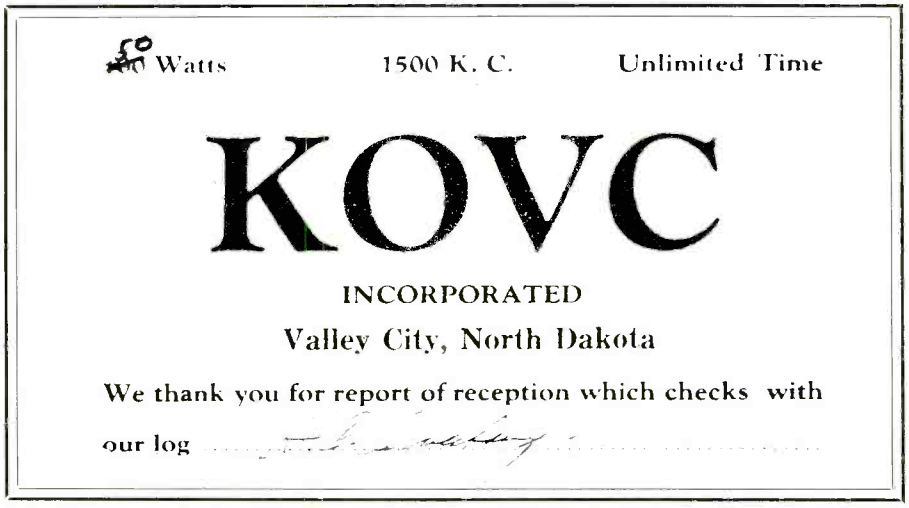
In a 1929 service, instituted just before Wall Street crashed, the S.S. Leviathan provided its passengers with the latest stock prices received throughout the day by radio from coastal stations. Here, an operator wearing a headset jots them down on a blackboard in the salon.



The S.S. Leviathan's 1931 demonstration of TV reception while on the high seas. The pennant beneath the TV set reads "S.S. Leviathan."



This 1937 QSL from Colombian shortwave broadcaster is red, white, and blue, and displays the Statue of Liberty. (Courtesy Nat Burgess.)



KOVC is located in a small North Dakota college town. It's been operating since 1936. This QSL confirms 50-watt operation. (Courtesy Howard Kemp, Laconia, NH).

they were running 1 kW on 6122 kHz, with a mediumwave outlet on 1050 kHz. Listeners who heard the stations interval signal (several notes from the national anthem), or the *Indian Love Call* theme music they played repeatedly were rewarded with a red, white, and blue QSL showing the Statue of Liberty. Great design for a Colombian QSL! We have one to show you, it was sent along with a number of other vintage QSL's by Nat Burgess of Michigan.

Only a year or so after this, Colombia changed the callsigns of all of its broadcasters. The shortwave outlet (then running 750 watts on 6018 kHz) became HJCX, while the mediumwave station turned into HJCZ, 1040 kHz. By the 1950's, HJCZ had shifted to 710 kHz, with HJCZ on 5020 and 6018 kHz. Best of all, the musical theme had been changed to the Concert in A minor by Grieg.

In the early 1960's, the callsign for the shortwave transmitter (then running 500 watts on 5760 kHz) was changed to HJJL, while HJCZ slid down the dial to 690 kHz with 15 kW. By the mid-1960's, though, the shortwave outlet was dropped completely. Presently, HJCZ is still on 690 kHz and runs 30 kW.

We figure that this QSL from HJ3ABX has got to be pretty rare. Pleased to share it with you, thanks to one of our generous *POP'COMM* readers.

Serving The Community

Let's face it, not too many communities of less than 8,000 souls have a broadcasting station. Valley City, ND has had one ever since George B. Balrey put KOVC on 1500 kHz with 100 watts on October 19, 1936!

Not long after KOVC went on, it increased its power to 250 watts (100 watts at night) and became the property of KOVC, Inc. In 1941, KOVC changed frequency to 1490 kHz, covering Valley City with its 164 ft. vertical antenna located at 312 Fifth Avenue. Head man was Robert E. Ingstead.

KOVC still operates on 1490 kHz, now running 1 kW (250 watts at night) with its country and western music format. In 1983, it opened up an FM outlet on 100.9 MHz with separate programming (has an AOR format). It's a blast to see local stations that have served their communities for long periods of time, like KOVC. Ingstead Broadcasting, Inc. is doing something right!

Interestingly, the 1936 QSL card we have from KOVC (courtesy Howard Kemp, Laconia, NH) was originally printed with "100 watts" in the upper left corner. The "100" was scratched out and "50" written in by hand.

Looking forward to being with you again next issue. We always welcome your letters, comments, old timey QSL's (originals or good photocopies), old radio and wireless postcards and photos, and related materials.

BOOKS YOU'LL LIKE!

BY R. L. SLATTERY

Satellite TV

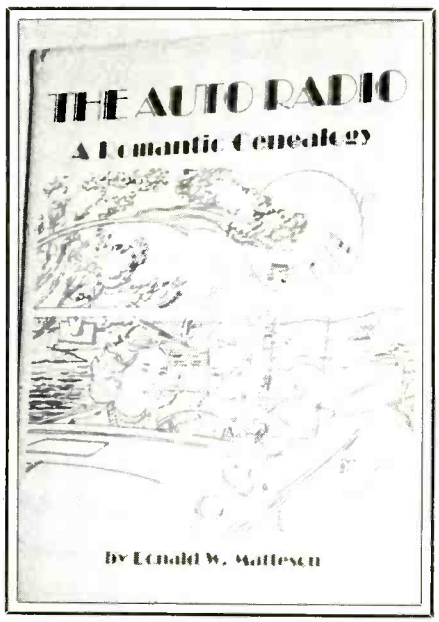
The World Of Satellite TV, by Mark Long and Jeff Keating, is now in its 5th Edition. It's a 224-page handbook with the latest information you need to know on what's happening in the ever-changing world of satellite TV.

Seems like there are always new pieces of receiving hardware being put on the market, new satellites, new broadcasting services, and old broadcasting services hopping from one transponder or satellite to another one. Then, the changes in the status of direct broadcasting satellites and the whole can of peas that the prospect of HDTV and several other major technological innovations have placed on satellite TV's horizons.

Not to worry, Long and Keating (both of whom have written for POP'COMM in past years) have used the new edition of their popular book to take a relaxed and probing global look at everything. They have sorted through tons of computer printouts and spec sheets, spoken to all sorts of industry insiders, and climbed up on the roof to try all of the latest toys. Then, after carefully compiling and analyzing the results of their efforts, they wrote this new edition. It covers the whole international scene, with domestic and foreign satellites included. Plenty of photos, charts, maps, and signal footprints. Looks like all broadcast satellites are covered, showing their positions and telling which programming they're presently carrying.

The book takes considerable care to maintain a light and not-too-techanical approach which should be easily understood to the average consumer-type person who owns a satellite dish, or is thinking about buying one. In its fifteen chapters and eight appendices, Long and Keating manage to cover a lot, from installations, troubleshooting, programming, new developments, and, really, everything you'd probably ever need or want to know, unless you were looking for an engineering text. From Intelsat to Gorizont and Arabsat, they're here!

The World Of Satellite TV, 5th Edition, is $18.85 (plus $1 postage to USA/Canada) from MLE, Inc., P.O. Box 159, Winter Beach, FL 32971.



Car Radios Throughout History

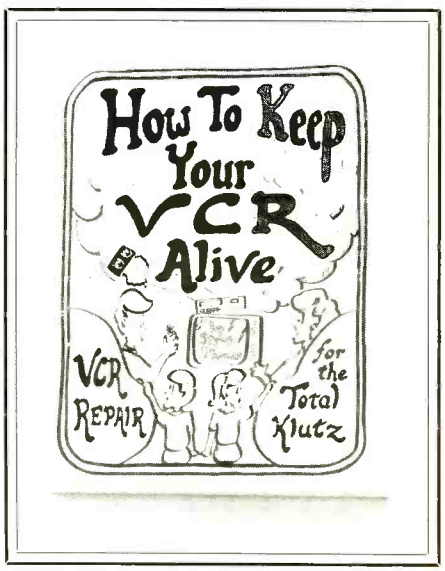
We were delighted to see that someone has taken the time and trouble to compile a wonderful and loving look back at the history and evolution of car radios. *The Auto Radio: A Romantic Genealogy*, by Donald W. Matteson, who wrote this book, obviously as a labor of love after many years of pursuing the enormous amount of information he was able to assemble and present.

This is a large format hardcover book, 296 pages on high quality slick paper. It contains hundreds of historic photos and ads. To top off its appearance, the book has a beautiful silver and black dust jacket. The text traces early development of radio and broadcasting, then explains the early uses in vehicles and how car radios got their start in the Roaring twenties.

Next, it discusses the 1925-1929 era, which the author considers the formative period of auto radio development. This blended into radio's halycon period of the 1930's up to the U.S. entry into WWII. Then, the evolution of car radios from the postwar period to present, including FM, tape decks, new types of programming, etc. Appears as though just about any company that ever had anything whatsoever to do with the design or manufacture of automotive radio receiving systems managed to get itself mentioned in this book. There's a huge index with all of the popular names such as Motorola, Philco, and even Arvin, but far more listings of totally obscure companies like Kinetphone, Case Radio and Pee-Wee.

More than a simple history of the hardware itself, Matteson's book is rich in the cultural history which surrounded and spurred on the evolution of the auto radio. As such, the reader often encounters references to persons and things such as Guy Lombardo, Madman Muntz, The Glen Island Casino, Frank Dailey's Meadowbrook, Stutz Bearcat cars, flappers, Al Capone, the Avalon Ballroom, and countless other bits of American heritage dating back to about 1920.

This is a terrific book in every respect. Would make a good gift for anybody who loves radio and broadcasting, even if you get it as a gift for yourself. *The Auto Radio: A Romantic Genealogy* is available at $34.95 from Thornridge Publishing, Box 11, Jackson, MI 49204.



Keep It Going

Some of the earliest users of VCR's were DX'ers who realized the advantages of recording their DX conquests. Eventually, the VCR became a staple of 60% of American homes, with 30-million in use. Unfortunately, VCR's are temperamental devices that need maintenance and frequent repairs. If you've gone through this, you know that

there is no such thing as a VCR repair for less than $60. Most are around $75, and some run upwards of $100. You probably don't know that VCR shop bills are mostly labor cost. The "Labor" usually consists of only one simple procedure like cleaning the machine or replacing a small rubber drive belt.

Most VCR owners could do these repairs themselves, quickly, if they knew what to look for, how and where to order the part, and how to install the part. *How To Keep Your VCR Alive: VCR Repair For The Total Klutz*, by Steve Thomas, is a newly published manual for the all-thumbs do-it-yourselfer. Using simple step-by-step instructions, aided by more than 700 illustrations, it enables owners with no previous technical training or experience, no more than basic hand tools, and inexpensive parts, to repair most VCR malfunctions.

This is a fat 372-page large-format book written in straightforward non-technical language. It covers all brands of VCR's, whether VHS or Beta. Plenty of information on sources of parts for every brand. The book is written in twenty one chapters, each devoted to a specific common problem ("Does Not Record," "Bad Or Snowy Picture" "Will Not Accept Cassette," etc.) plus seven appendices. Many tricks of the trade are provided, such as how to fool the VCR into running with no cassette inside for diagnostic purposes. So, it's got the entire gamut of problems and cures, even how to distinguish the few rare cases when VCR repairs require the services of a professional technician.

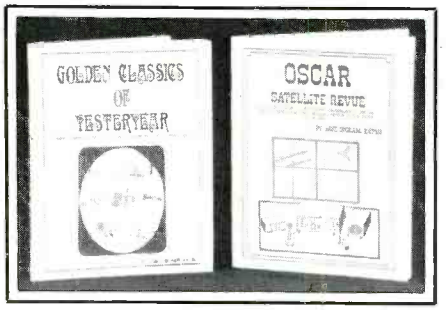
Someone with spare time an a little ambition could probably use *How To Keep Your VCR Alive* as the basic reference source to start a part-time VCR repair business in their home. Using the book myself, I fixed a friend's VCR that had steadfastly refused to play any cassettes. The repair took less than an hour and was relatively painless.

The author has a PH.D. from MIT, and also wrote college textbooks such as *Practical Reasoning In Natural Language*, and *The Formal Mechanics Of Mind*. Says he wrote the book because he the cost of several repairs to his own VCR got him annoyed.

How To Keep Your VCR Alive is $24.95 (plus $2 postage to addresses in USA/Canada/APO/FPO) from CRB Research, Inc., P.O. Box 56, Commack, NY 11725. N.Y. State residents include sales tax.

In Addition

Shortwave Goes To School, by Myles Mustoe, KA7GQB, is a comb-bound guide for schoolteachers who wish to introduce



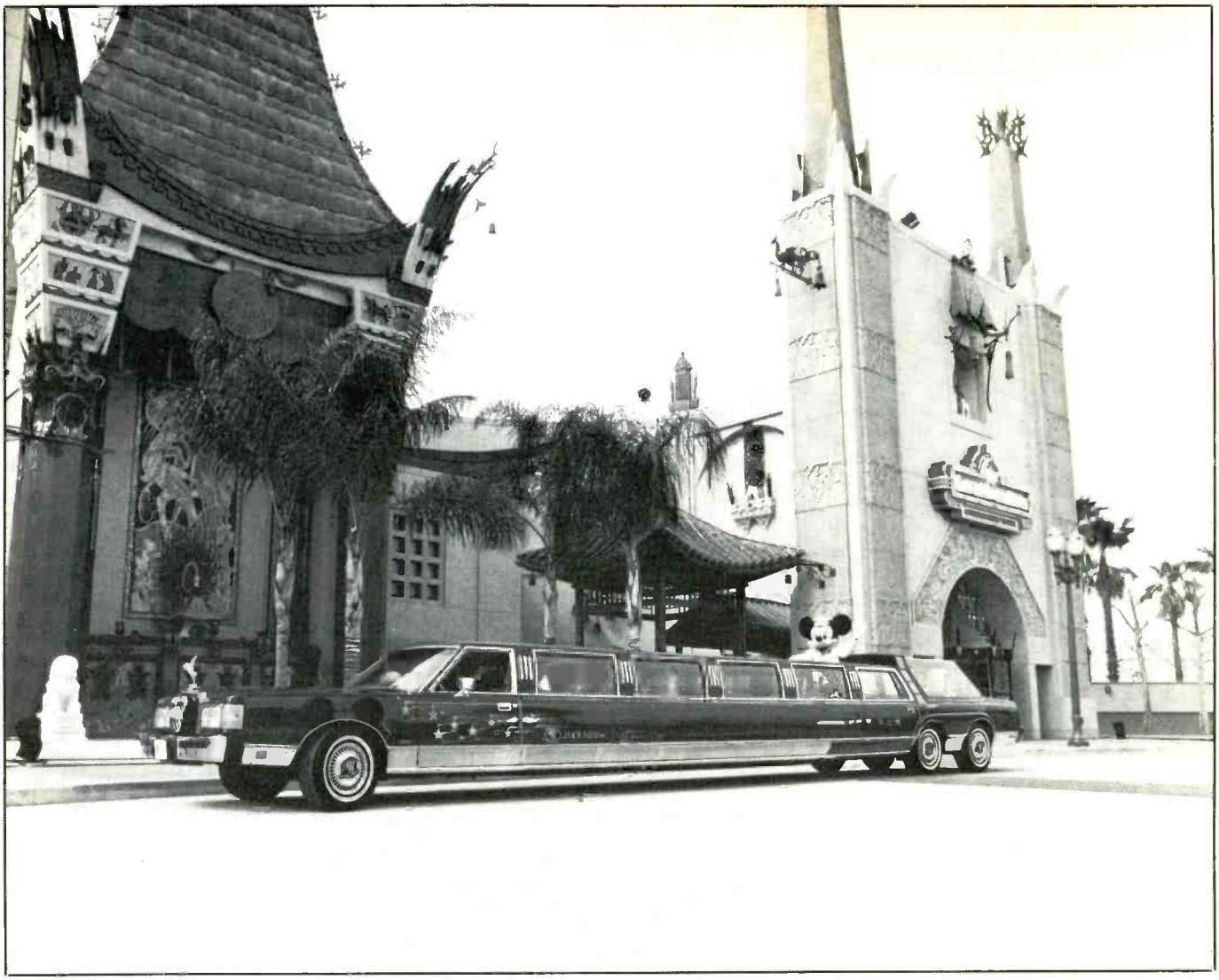
their students to shortwave radio as a method of stimulating their classroom interest in geography, social studies, current events, history, foreign languages, and music appreciation. Our guess is that the guide is primarily directed at students in the 6th through 9th grades. It contains introductory information, lists some information, some equipment sources, some frequencies, sample reports and log forms, and various assignments to encourage participation. The book is $25 plus $2 shipping from Tiare Publications, P.O. Box 493, Lake Geneva, WI 53147.

We received press releases, but not review copies, of two books by David Ingram, K4TWJ. Ingram is a talented and popular author, so we assume that both books are as interesting as they would seem in their announcements.

One book is entitled *Golden Classics Of Yesteryear*, which is a collection of rigs, circuits, projects (receivers, transmitters, etc.) from the era of ham radio that went from the 1920's through the 1950's.

The second book is Ingram's *OSCAR Satellite Review*, an anthology of CQ Magazine articles relating to the use of OSCAR (as well as Japanese and Soviet) ham satellites. Includes antennas, projects, orbital and tracking data, equipment, frequency data, QSL's, etc.

The *Golden Classics* book is $9.95. The *OSCAR* book is $7.95. both are from MFJ dealers, or MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762. PC



Mickey and his 40-foot-long LiMOUSEine headline a 40-city tour promoting the opening of the Disney-MGM Studios Theme Park at Walt Disney World. (Copyright 1989, THE WALT DISNEY COMPANY)

High-Tech MouseMobile

Electronics Fill Mickey's 40-Foot Limo With Sights And Sounds

Imagine all the gee-whiz fantasy-car electronic gizmos of Double-0-7, Batman and the "Knight Rider." Now stre-e-e-e-tch it out to 40 feet and add a couple of glittery gold ears to the grille. The result is Mickey Mouse's LiMOUSEine, complete with enough Sony electronics to pop the eyes of a potato.

As the auto salesman might say, "This baby has it all": A satellite tracking and message system; closed-circuit and rear-view TV's; interior and exterior audio systems; a video system; a cellular phone system; a compact radio studio. And to power all of this, a special electrical system.

The boss doesn't have to wonder where his character star is shining during a tour of more than 40 cities announcing the premiere of the Disney-MGM Studios Theme Park. A Sony RDSS Wayfarer Mobile Communications System transmits information via satellite, pinpointing Mickey's whereabouts on a personal computer back at the office. Because the installation also includes a keyboard, Mickey can send home his "Miss you" and "Don't forget the cheese" messages.

It's a fanciful application of Sony technology that has benefitted the trucking industry. Headquarters is able to review the location and status of an entire fleet using the system. And the on-board components are modest in size—a lunch-pail-size main unit, keyboard and two antennas.

Mickey's chauffeur doesn't have to guess "what's back there" as he tucks his two-and-a-half-car-length vehicle into a parking space. A Sony Automotive Watchcam TV camera mounted at the rear of LiMOUSEine surveys the area, acting as a rear-view mirror. The camera is connected by closed-circuit TV to a video monitor near the driver. A second camera gives the driver a view of the interior.

Meanwhile, Mickey and his guests can enjoy their favorite TV programs on two eight-inch Trinitron color monitors complete with wireless remote. They can either tune in to shows received by antenna or play back from an 8 mm VCR.

If they'd rather be "all ears"—when isn't Mickey?—the choices include audio cassette, a 10-Disc Jockey compact disc player and radio. High output, high fidelity digital reproduction is delivered through a speaker system that includes over 1,600 watts of power and 20 loudspeakers arranged in a tri-amp configuration. The audio system can be remotely controlled from four locations in LiMOUSEine.

An exterior audio system for parades and drive-up fanfares consists of 12 speakers and 1,200 watts of amplifier.

Calling home is made easy by a cellular phone system. Two national-service phone lines may be used from four different locations in the car.

If it all sounds like a swinging machine, the sort of wheels that a radio DJ would like to spin from, that's because it is. A canopied DJ booth at the rear provides a studio for remote broadcasts. It's equipped with a microphone and mixer to allow radio personalities to talk to the exterior of the car.

Keeping the "juice" to all of this Sony gee-whiz electronics equipment is an extra-capacity 12-volt alternator, extra batteries, a battery-charging system and special 115-volt AC power. PC

LiMOUSEine Vehicle Specifications

Overall length: 40 feet
Overall width: 79.5 inches
Wheelbase: 331 inches
Height: 65.0 inches
Minimum ground clearance: 8.0 inches
Weight: 7,980 pounds (electronics: add approximately 1,000 pounds)
Engine type: V8
Engine displacement: 302 cu. inches
Horsepower: 195
Fuel: Super unleaded gasoline
Tires: T235/75R15 Goodyear Wranglers (total: six on three axles)

Superpower KUSW

Broadcasting From The West To The World

BY GERRY L. DEXTER

"From the west to the world!" That slogan is part of the overall station image at Superpower KUSW in Salt Lake City, Utah. And since KUSW had its brief moment in the sun as the "newest" United States shortwave broadcaster back in December 1987, that slogan has been heard by shortwave listeners in dozens of countries around the world. In fact, using a Voice of America formula to measure audience size based on the amount of listener mail received, KUSW's cumulative listenership should surely have passed the two million mark by now.

Although the number of shortwave broadcasters based in the United States continues on an upward climb, the 1980's genre of newcomers to the medium are owned almost exclusively by religious organizations. That, in turn, means that most of the hours on the majority of America's shortwave stations are devoted to programming variations on the same basic theme. Only three U.S. shortwave broadcasters are trying to make shortwave work for them without a program schedule of primarily religious programming. WCSN, although part of the Christian Science organization, holds to the same approach as the organization takes with its newspaper, magazine and television show: news and current affairs (except on weekends). WRNO, which blazed the shortwave trail in 1982, mixes paid religious time with a strictly secular program schedule aimed at being a commercial success.

KUSW is taking a similar approach. The religious time purchased on KUSW pays all or most of the bills and that allows the station to devote the rest of its hours to trying to make shortwave braodcasting work as a secular, commercial enterprise.

KUSW is owned and operated by Carlson Communications International, based in Salt Lake City. The station is one of several in the group, though it's the only one on shortwave. The others are KRSP-AM on 1060 in Salt Lake City which programs an oldies format and sister station KRSP-FM 103.5 which has an AOR format. KRJC FM on 93.5 in Elko, Nevada runs country-western and KMSK-FM, 95.9 in Cottonwood, Arizona programs adult top 40.

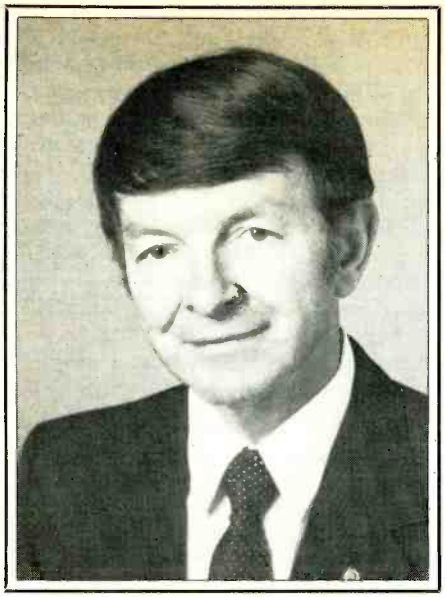
In other words, these people haven't just whacked together a shortwave station, run down to the record store in the mall and bought some LP's, grabbed a couple of "today I are one" announcers off the street and thrown them on the air. When it comes to radio, these are people who know what they are doing and if you listen to them, you'll spot that pretty quickly.

The staff at Superpower KUSW: Front row (l-to-r) Kristine Kennedy, Assistant Controller; Jana L. Carlson; Public Relations Director; Ralph J. Carlson, President; Faith Martin, air personality; Nina Green, News Department. Back row (l-to-r) Ross Hendricks, Vice President and CFO; Rex N. Carlson, Station Engineer; Dan Bammes, Corporate News Director; John Florence, Program Director; Mike McKenzie, Director Corporate Engineering; Harold D. Collipriest, Vice President for Sales; Alan D. Hague, Executive Vice President; Kenneth Meyer, Corporate Engineer; Charlie Wolf and Johnston Cook, air personalities.

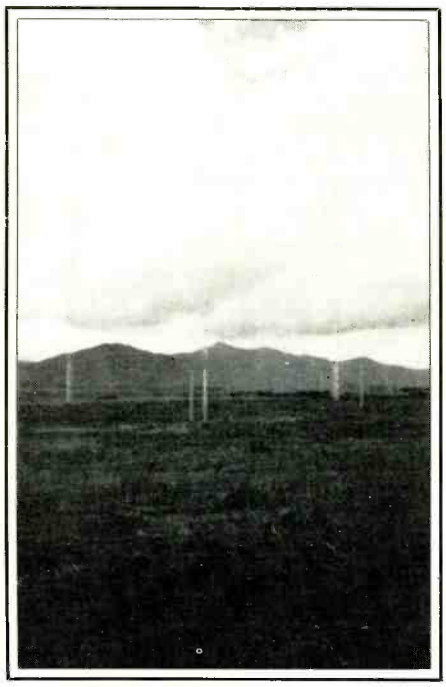
The music on KUSW is a blend of pop and rock called, in broadcaster jargon, "American Contemporary Classics." It's a mix which relies mostly on major artists and hits from the 60's and 70's, with a smattering of more current things. You are liable to hear everything from The Eagles to Taj Mahal to Arlo Guthrie. Disc jockeys include John Florence, who is on weekdays from 1700-2100 and Faith Martin who takes over at 2100. Weekend slots are filled by Charlie Wolf, Johnston Cook, Bary Moll, Dan Bammes and Nina Green.

Newscasts are aired every other hour. World and national news is taken from the wires of United Press International and the newscasts are supplied through the KRSP newsroom. Dan Bammes is KUSW's News Director, assisted by Nina Green.

The schedule contains a number of special programs and features. "Sports Link" is aired three times per day and provides the



Ralph J. Carlson, a 20 year broadcast veteran, is President of Carlson Communications and KUSW.



KUSW's antenna system in the Salt Lake Valley.

The studio and transmitter building of KUSW.

latest scores and stories in all sporting events of any importance. Listener letters are aired at various times throughout the day. "Weatherbank" provides temperatures and weather conditions at cities all over the world and is aired very frequently during the hours of non-block programming.

The Greenpeace organization began airing a program on KUSW the first of the year. It is heard seven days a week—Sundays at 2015, Mondays/Thursdays at 1930, Tuesdays/Fridays at 2030, Wednesdays/Saturdays at 1830. Concerts by the Utah Symphony Orchestra are carried on KUSW at 1850 on Sundays. The Spoken Word, broadcast from Temple Square in Salt Lake City, airs at 0600 and 1600 on Sundays. The bi-annual conference of the Church of Jesus Christ of Latter Day Saints (the Mormons) is carried live and is next scheduled for October 7-8, 1989.

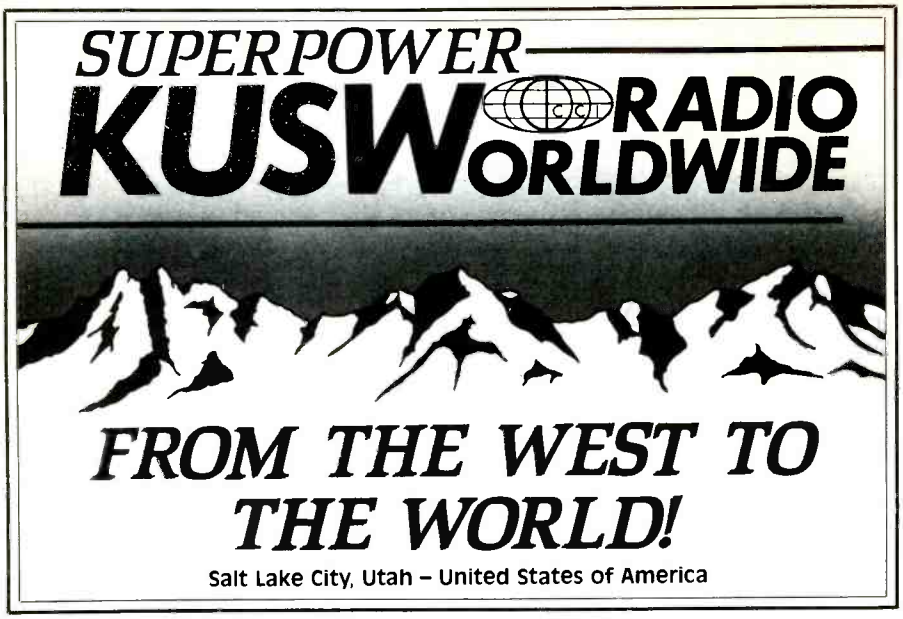
Weekends are taken up with a growing number of paid religious programs supplied through a program representative—Pan American Broadcasting in Cupertino, California (which does the same thing for WRNO). Additionally, some time blocks in the early morning and late evening hours during the week are also slated to block religion. The programs range from the "Faith Seminar of the Air" to the "Sunrise Mission Church" to "Radio Rosary."

Although KUSW's sales department hasn't yet hit the equivalent of a home run by landing the likes of a Coca Cola or Levi's account, there's still an upbeat mood around the sales desks. KUSW knows you don't convince major advertisers on the advantages of something so relatively esoteric as shortwave "overnight." There are a growing number of smaller accounts showing up on the logs though and the KUSW management is happy with the direction things are going, reports Harold D. Colli-priest, Vice President of Sales for KUSW.

Another KUSW revenue source is their new listener's catalog, released earlier this year. It offers a variety of goods, including shortwave radios, books and accessories as well as cycling clothing, backpacks, maps, solar power packs, emergency supply kits, blankets and so on.

KUSW operates with a 100 kilowatt Harris transmitter. The TCI log periodic antenna, supported by two—145 foot towers, is beamed at 70 degrees (toward Ontario) and

Popular KUSW personality Faith Martin.



KUSW's official QSL card sent in response to all correct reception reports.

has a width of 45 degrees on either side. About 10% of the total radiated signal comes off the back and sides of the antenna. The transmitter/antenna combo produces an effective radiated power of 2.5 million watts, so when they say "superpower" they are talking through their antenna and not their hat! Chief Engineer Rex Carlson is in charge of keeping all the technical stuff cooking properly.

The studio and transmitter site is located in the southwest part of the city at 654 West South in the Salt Lake Valley and are separate from the KRSP facilities.

Unlike some of the other major broadcasters, KUSW—bless 'em—is a firm adherent to the tradition of replying to listener reports with a QSL card. All the station asks is the courtesy of including return postage with your report, plus some information about the equipment you use and your opinion of their programs. That, of course, is in addition to the standard reception report components: date, time, frequency, signal/interference report and details on the programs heard. Reports go to P.O. Box 7040, Salt Lake City, Utah 84107.

Currently, KUSW can be found at the following times and frequencies:

0100-0500 on 11695 kHz
0500-0700 on 6175 kHz
0700-1100 on 6135 kHz
1100-1600 on 9850 kHz
1600-2200 on 15650 kHz
2200-0100 on 15580 kHz

Out of band frequencies 9850, 11695, 15580 and 15650 are used on a non-interference basis.

After four years between conception and the first sign on and now more than a year and a half of operations under its belt, KUSW has already established itself as a station with good music tied to a bright and friendly personality. It's proving to be a welcome and appreciated addition to the airwaves as it pioneers as one of our nation's first commercial shortwave broadcasters. PC

You Can Use "Utes"

Here's How To Put 25 "Rare" Countries Into Your Logbook—And QSL Collection

BY PATRICK O'CONNOR

Most SWL's recognize the fact that there are countries out there that are difficult (or impossible) catches on shortwave broadcast frequencies. However, many of these "rare" countries can be logged with surprising ease—through the ute (utility) bands.

A few words to the wise for the beginning ute DX'er. First of all, most ute stations don't operate on a set schedule; so logging them may take more persistence than just tuning to a given frequency and hearing them.

Another fact: many of these stations only transmit in Morse code (CW).

Now, before you start jumping up and down and screaming about not knowing Morse code, just calm down. When not engaged in actual traffic, these stations transmit a 'marker' signal, a short identification signal sent repeatedly, often with the data another radio operator would need to make contact. A typical marker might read "CQ CQ CQ DE XYZ XYZ XYZ QRU? QSX 8 12 AND 16 MHz K." This basically translates out to, "Calling any station, this is station XYZ. Do you have any traffic for me? Call me in the 8, 12 or 16 MHz bands."

These markers are generally short and sent slowly enough so that you can write down the dots and dashes, and then look up what you've copied on a Morse code chart.

These stations will also verify correct reports. To get your QSL, be sure to report the time and date in UTC; enclose a prepared-form card (very few ute stations have their own QSL cards), and enclose reply postage in the form of either International Reply Coupons (IRC's) or mint stamps of that country. Also, remember that you can report the identities of the stations in contact, but reporting on the actual traffic is illegal.

Now, here are the stations:

1). ALGERIA: At the top of North Africa, Algeria has several active maritime stations. Boufarik Radio (7TF) has been logged on 8437, 16932 and 22543 kHz, CW. (Radiomaritime Boufarik; Le Chef de Centre; Boufarik, ALGERIA).

2). ANGOLA: Despite an ongoing civil war, Luanda Radio (D3E) has been reported operating on 6369, 12780 or 17189.6 kHz, CW. (Luanda Marine Radio; Estacio Costeria de Luanda; C.P. 625; Luanda; People's Republic Of ANGOLA).

3). AZORES ISLANDS: Sitting in the Atlantic Ocean, almost 1000 miles due west of Lisbon, the Azores are the location of a major air traffic control center, Santa Maria Aeradio. Listen for their USB air-to-ground transmissions on 3016, 5598 or 8825 kHz. (Santa Maria Aeradio; Dept. Telecommunications; Aeroporto de Santa Maria; P-9580 Vila do Porto, AZORES ISLANDS).

4). CHILE: Several different coastal stations are heard from here; listen for Valparaiso Radio (CBV) on 4228, 6337 or 12714 kHz CW. (Radioestacion Maritime y Mercante; Correo Naval; Valpariso; CHILE).

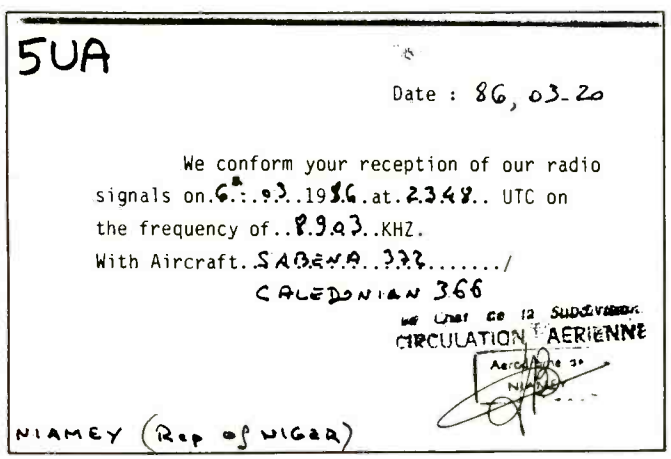
5). CONGO: Brazzaville VOLMET (Aviation weather) transmits 5-minute English reports on weather at various African airports at the top of the hour and 25 minutes after the hour on 5499, 6538, 8852 and 10057 kHz, USB voice. (Brazzaville Aeradio/VOLMET; Aeroport de Brazzaville; B.P. 218; Brazzaville; CONGO).

6). COTE D'IVOIRE: Abidjan Aearadio (TUH) can often be heard working various flights in both English and French on 6535, 8861 or 13357 kHz USB. (Abidjan aeradio; Dept. Radioelectrique—ASECNA; B.P. 1365; Abidjan; COTE D'IVORIE).

7). CYPRUS: Located in eastern Mediterranean, this disputed island offers a good challenge to DX'ers, with coastal station 5BA operating a continuous voice marker in both Greek and English on 2700 kHz. The same marker has been reported on 8737.5 kHz, USB. (Cyprus Marine Radio; Cyprus Telecommunications Authority; P.O. Box 4929; Nicosia 142; CYPRUS).

8). GIBRALTAR: "The Rock," a natural fortress at the entrance to the Mediterranean controlled by Great Britain, can be logged through Royal Naval Wireless station GYU. Listen for the slow CW signal on 6371.2, 8625.2 or 10346 kHz. (Royal Navy Communications Centre; her Majesty's Dockyard; Royal Navy Gibraltar; GIBRALTAR).

9). HAWAII: Due to its distance from the Mainland, our 50th state is usually considered a separate country by most DX'ers.


5UA

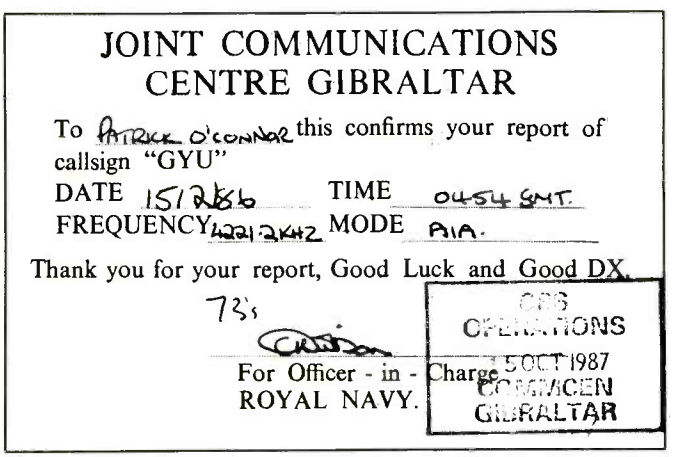
Date : 86, 03-20

We conform your reception of our radio signals on. 6 .. 03 .. 1986 .at. 2348 .. UTC on the frequency of .. 8903 .. KHZ.
With Aircraft. SABENA 333 ...../
CALEDONIAN 366

CIRCULATION AERIENNE

NIAMEY (Rep of NIGER)

QSL received from Niamey Aeradio, Niger is a full-data station-prepared card.


JOINT COMMUNICATIONS CENTRE GIBRALTAR

To PATRICK O'CONNOR this confirms your report of callsign "GYU"
DATE 15/2/86 TIME 0454 GMT
FREQUENCY 4221·2KHZ MODE A1A.

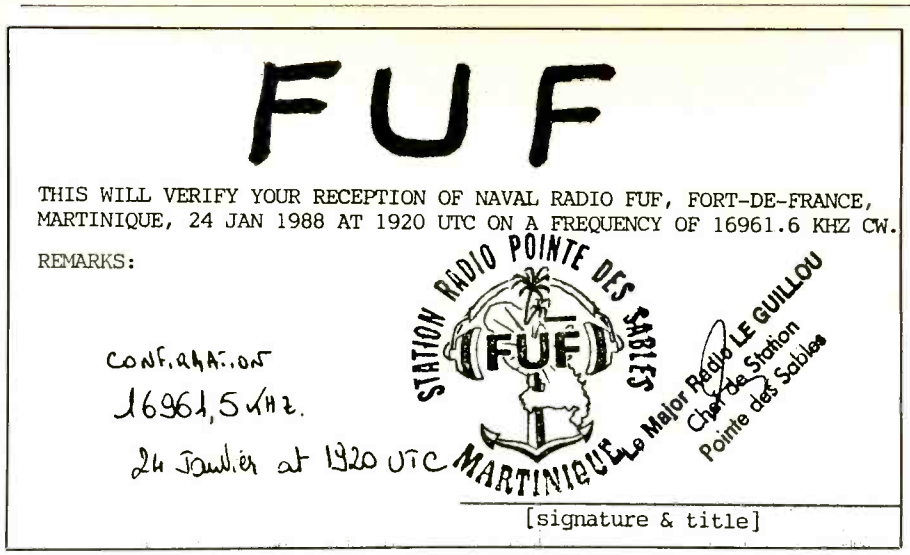
Thank you for your report, Good Luck and Good DX.

73's

For Officer - in - Charge ROYAL NAVY.

OPS OPERATIONS 5 OCT 1987 COMMCEN GIBRALTAR

Gibraltar was issuing this nice full-data QSL as of 1987.



After not verifying for several years, FUF in Martinique recently started sending back PFC's with this nice stamp.

Listen for the time signals from station WWVH on 2500, 5000, 10000 or 15000 kHz; with announcements by a female announcer. The full ID signal can be heard at 29 and 59 minutes past the hour. (National Bureau of Standards; Radio Station WWVH; P.O. Box 417; Kekaha, HI 96752).

10). ICELAND: "The Land of Fire and Ice," Iceland sits in the North Atlantic between Greenland and England. Reykjavik Aeradio is occasionally heard on 5616, 8879 and 8891 kHz, USB. (Reykjavik Aeradio; Air Navigation Department; Box 350; Reykjavik 121; ICELAND).

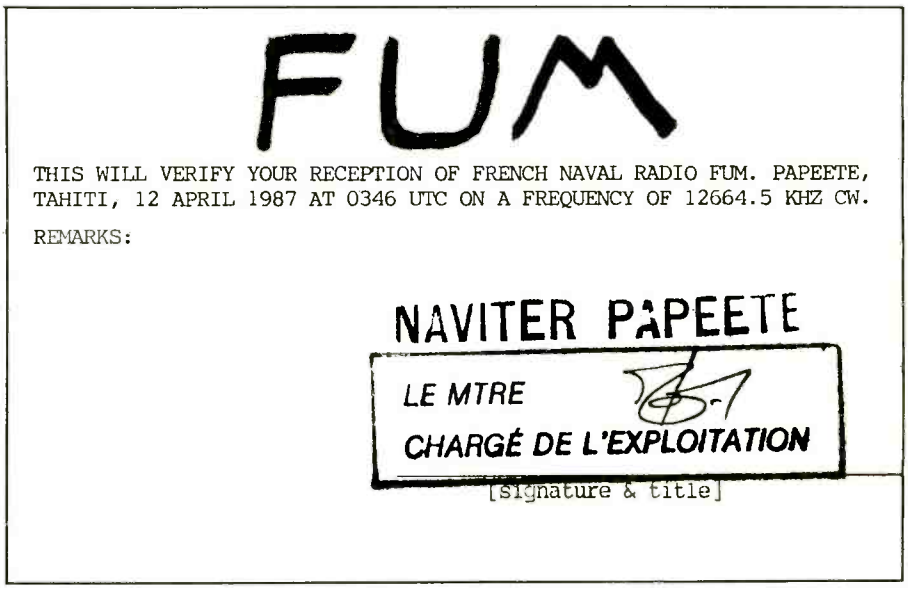
11). IRELAND: The Emerald Isle offers an easy log, Shannon VOLMET. Listen for the European weather reports on 5640, 8957 or 13264 kHz, USB voice. (Shannon VOLMET; Wireless Supervisor; Ballygiree; County Claire; IRELAND).

12). MARTINIQUE: A French possession in the Caribbean, Martinique is the home of the widely-heard short marker signal from French Naval Radio FUF on 8554, 13031 or 16991.5 kHz, CW. (French Naval Radio Station; Pointe des Sables; Chef de la Station; Fort de France; MARTINIQUE).

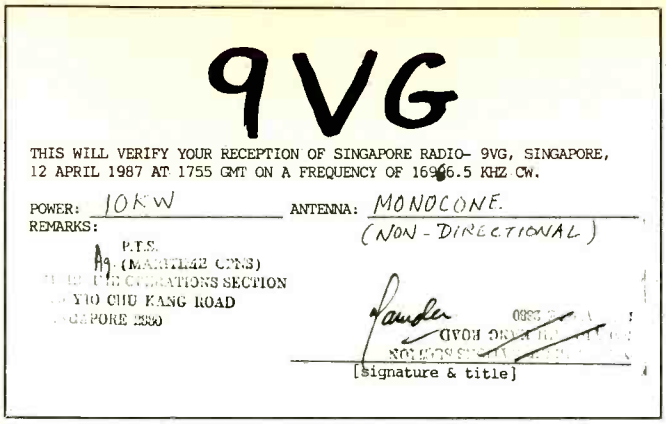
13). MEXICO: Manzanillo Radio (XFM) has a slow CW marker sometimes heard on 6354, 8568.5 or 12829.5 kHz. (Estacion Costera Manzanillo; Ap.Postal 293; Manzanillo; MEXICO).

14). NEW CALEDONIA: Another French possession, in the Pacific. it is the location of french Naval Radio FUJ. Listen for the CW marker on 9290, 12858 or 16957.8 kHz. (Marine Nationale et Nouvelle Caledonie; Office des Telecommunications; B.P. 38; Noumea; NEW CALEDONIA).

15). NIGER: Located near the heart of Africa, Niamey Aeradio (5UA) can be heard with both French and English transmissions



Another PFC from Tahiti. Being a military station, there's no notation of equipment used.



9VG

THIS WILL VERIFY YOUR RECEPTION OF SINGAPORE RADIO- 9VG, SINGAPORE, 12 APRIL 1987 AT 1755 GMT ON A FREQUENCY OF 16986.5 KHZ CW.

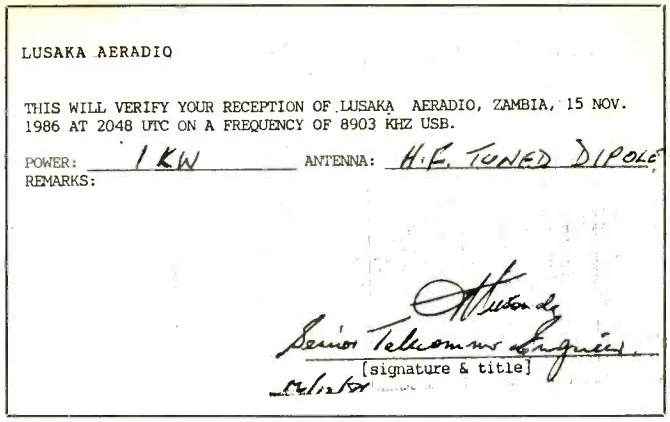
POWER: 10KW ANTENNA: MONOCONE. (NON-DIRECTIONAL)

REMARKS:

P.T.S. (MARITIME CPNS) OPERATIONS SECTION 410 CHU KANG ROAD SINGAPORE 2359

[signature & title]

Singapore Radio—9VG sent back this PFC—correcting the frequency typo and adding data on the equipment used.



LUSAKA AERADIO

THIS WILL VERIFY YOUR RECEPTION OF LUSAKA AERADIO, ZAMBIA, 15 NOV. 1986 AT 2048 UTC ON A FREQUENCY OF 8903 KHZ USB.

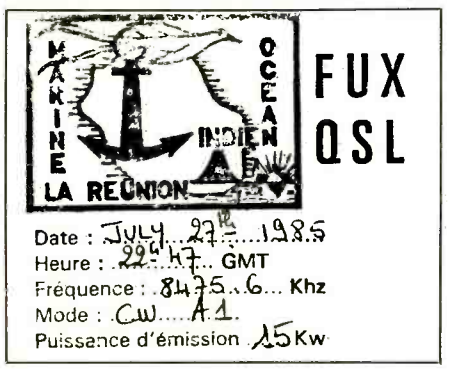
POWER: 1 KW ANTENNA: H.F. TUNED DIPOLE

REMARKS:

Senior Telecommunications Engineer

[signature & title]

A typical PFC from an aeradio station in Lusaka, Zambia.



Besides returning the PFC, FUX on Reunion sent this QSL stamped on plain paper, with the data filled in.

on 5493, 8903 or 13294 kHz, USB. (Niamey Aeradio; Representation de ASECNA; B.P. 1096; Niamey, NIGER).

16). PANAMA: The southern most Central American country can be logged thanks to USAF station AHF, Albrook Radio. Listen in on 8993, 11176 and 15015 kHz, USB. (USAF GCCS Albrook; Albrook AFS; APO Miami, FL 34002).

17). PUERTO RICO: An American Commonwealth in the Caribbean, Puerto Rico can be logged via San Juan Aeradio, operating on 6577, 8846 or 11396 kHz, USB. San Juan Aeradio—ARINC; International Airport; San Juan, PR 00913).

18). QATAR: A small oil-rich nation located on the Persian Gulf, Qatar can be caught thanks to Doha Radio (A7D), on 8454, 12966 or 13024 kHz, CW. (Doha Marine Radio; Director of Communications; P.O. Box 2633; Doha, QATAR).

19). REUNION: An isolated French colony in the Indian Ocean, Reunion has another French Naval Radio Station, FUX. Listen for it on 8475.6, 8550 or 12691 kHz, CW. (Marine Nationale, Chef du Radioelectiques; CENTRANS Reunion; F-97419 La Possession; REUNION (Via FRANCE)).

20). SENEGAL: Located on the northwestern African "bulge," Senegal is the location of yet another French Navy Radio Station, 6WW. Listen on 8992.5, 13410 or 16951.5 kHz, CW. (Station de Interarmees et Maritimes; Chef des Transmissions; B.P. 3024; Dakar-Rufisque et Yeudeul, SENEGAL).

21). SINGAPORE: A small, rich southeast Asian city-state, Singapore may be added to the log by hearing Singapore Radio—9VG. Listen for the CW marker on 13071.5, 17197.5 or 22479 kHz. (Singapore Marine Radio; Telecommunications Authority of Singapore; International Plaza, 31st Floor; Singapore; SINGAPORE).

22). SOCIETY ISLANDS: The object of many "get away from it all" fantasies, Tahiti is the location of French Naval Radio Station FUM. Try it for the CW marker 8625, 12664.5 or 22544 kHz. (Marine Nationale en Polynesie Francaises; Chef du Radioelectrique; Papeete; Ile de Tahiti; SOCIETY ISLANDS).

23). VENEZUELA: Smack in the middle of the 49 meter SWBC band, at 6100 kHz, is time station YVTO. Try for it shortly before sunset, before the European broadcasters start pounding in. (Observatorio Naval Cagigal; Apt. 675; Marine 69—DHM; Caracas 103; VENEZUELA).

24). TRINIDAD: Located right off Venezuela, Trinidad has an aeradio station. Although not a common logging, Piarco Aeradio can sometimes be heard on 6577, 8846 or 11396 kHz, USB. (Piarco Aeradio Ltd.; P.O. Box 1255; Port-of-Spain; TRINIDAD).

ZAMBIA: Located in south-central Africa, Lusaka Aeradio can be heard working various flights on 5493, 8903 or 13294 kHz, USB. (Lusaka Aeradio; P.O. Box 50137; Lusaka; ZAMBIA). PC

RTTY

BY ROBERT MARGOLIS

THE EXCITING WORLD OF RADIOTELETYPE MONITORING

In what might be regarded as high-altitude RTTY monitoring, I recently found a number of RTTY stations operating between 29,700 kHz and 30,000 kHz. This portion of the HF-radio spectrum is set aside for fixed and mobile stations.

I had never seen reports from anyone of RTTY activity up there, and decided to investigate during a fit of boredom coming from not finding anything new or noteworthy happening for a while on the usual daytime bands.

There was a lot of voice activity heard up there too, mainly on LSB. Most was in Spanish and appeared to be coming from Central America. English, German and Portuguese were also heard.

The following list shows the RTTY activity that I was able to find within a 10-day period:

A station was transmitting at 85/75R with encryption on 29705 at 1428 one day and at 1838 three days later.

There was a station on 29732.5 at 1530 whose mode of RTTY transmission could not be determined. The station was idling at about 100 baud.

On 29734.5, another unidentified station was found idling at 1323. The mode was ARQ-E/48.

Encryption was found on 29760 at 1456, 170/75R.

Messages in Italian were seen on 29773 at 1534, ARQ-E/96. They appeared to be from the Italian Embassy at Brasilia, Brazil.

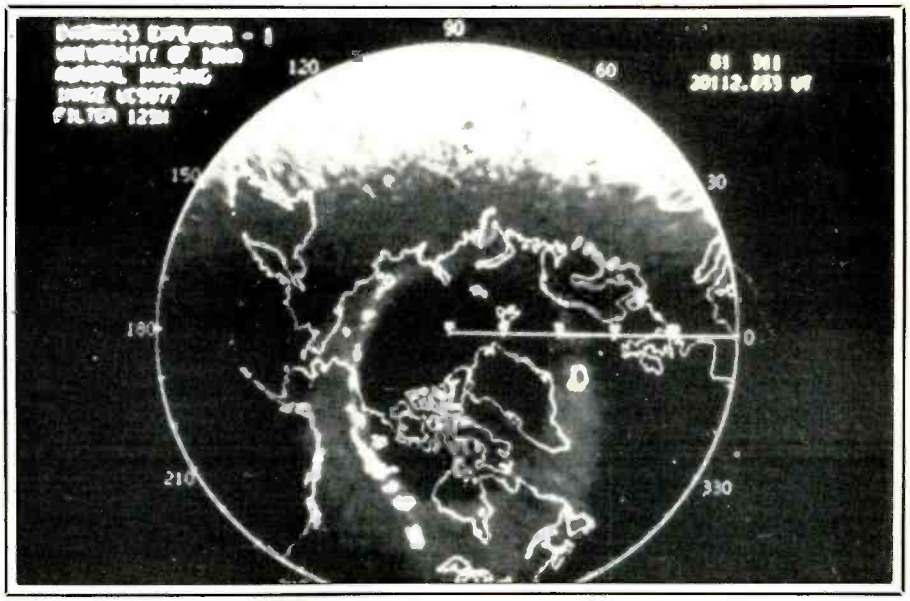
TASS news in English from Havana, Cuba, was found on 29802 at 1441, 425/50N. The frequency is a harmonic of 14901, where the transmission was actually occurring.

An unidentified station, transmitting at 170/40.5R, was on 29806.9 at 1421 with encryption.

At 1451 a 75-baud transmission was found on 29825, but it was too weak to be copied.

A station with the callsign "MUN," was found sending RY's and foxes to "MUN1" on 29898 at 1404, 425/50R. I have encountered this callsign many times on the lower bands but to date have not been able to identify its owner. It is a British callsign, possibly from the British Army, but that's just a hunch. In the United Kingdom this frequency is part of the range allocated for government use.

The signal was strong and was found not to be a harmonic of 9966, 14949 or 19932. MUN established contact at 1406 and sent various Z codes until 1424. Then came a "drill" message in five-figured groups that ran until 1430. A QSL request was made and MUN went off the air at 1435.



Encryption from an unidentified station was at 250/40.5N on 29932 at 1416.

After spending a lot of time in the attic I decided to make a trip to the basement. There I found encryption at about 0300 on 21.3, 85/50N; 48.4, 85/50N; 73.5, 85/75R; and 77.1, 85/50N, the lowest frequencies spotted with traffic on the VLF-radio band.

Another area for RTTY action you might like to check out is the frequencies in and around those set aside in the U.S. for Citizens Band radio. This would be between 26965 and 27405 kHz. I found lurking up there an unidentified station with encryption on 27328, between CB channels 32 and 33, at 1545, 250/100N. On 27461.5, there was the West German Embassy at Buenos Aires, Argentina, relaying encryption and telexes in German from MFA, Bonn, to the embassy at Santiago, Chile. A key word in the telexes showed them to be retransmitted for relay purposes. That word was "quittungschreiben," a mouthful meaning "receipt from afar." Transmission was ARQ-E/96 at 1435.

Loggings contributor J.M. of Kentucky has a knack of coming up with the most unusual of RTTY intercepts that we see each month. His streak continues this month.

He says he intercepted a test tape loop of RY's sent by an unidentified U.S. military station at 1835, running at 85/45R on 12303. But in place of a station ID there came this admonishment—"You stink!" And that's no soap!

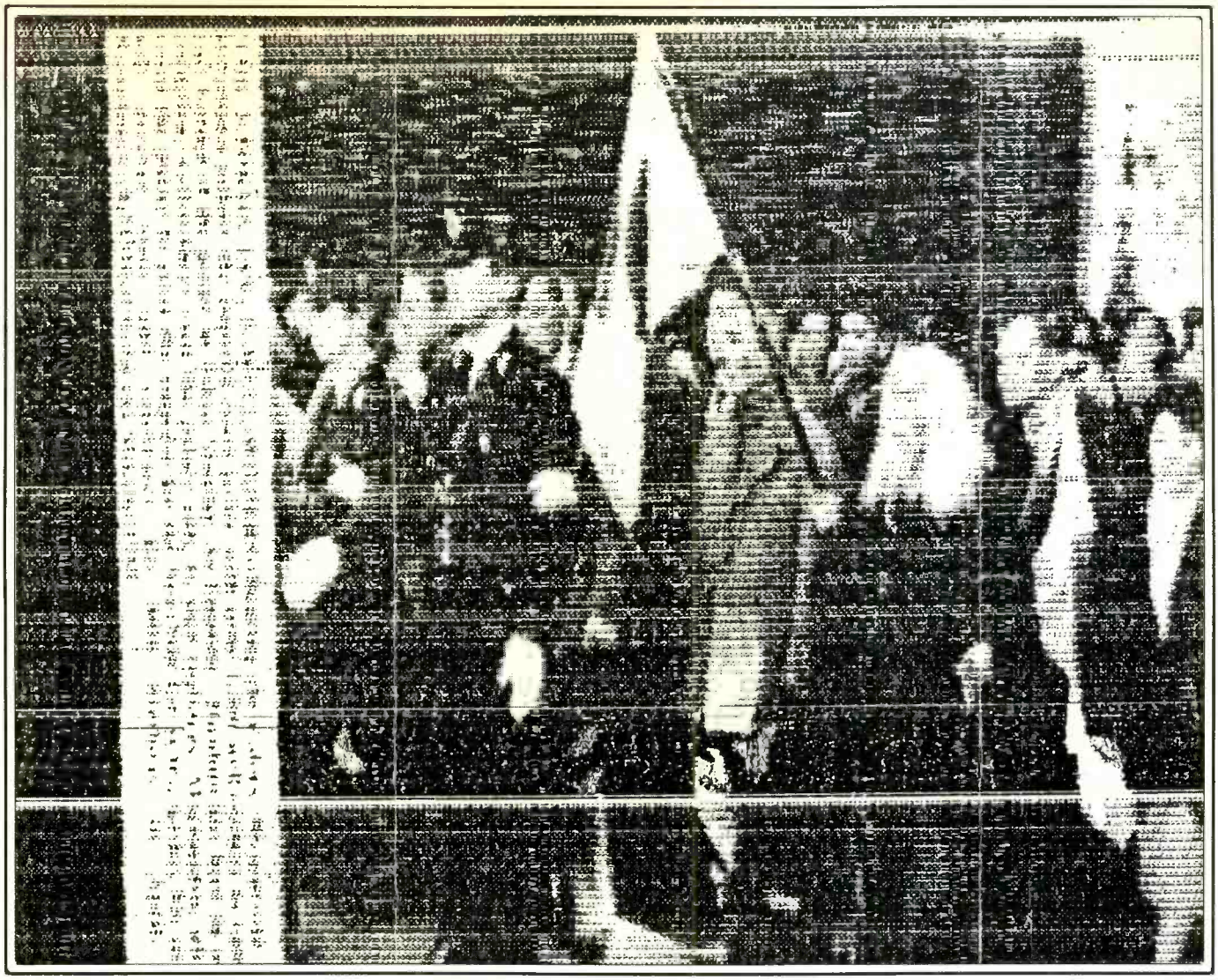
He tuned to 10893 and found KDM50, FAA, Hampton, Georgia, sending a yummy chili recipe at 1923, 850/110R ASCII. This same station was sending the same recipe in FEC on 12160 at 2259!

The Texas-style chili recipe was aptly titled, "Real Good Chili Recipe," and looked to be quite mouth watering, judging from J.M.'s printout. I'm thinking of giving up one night of RTTY monitoring to make a big pot of the stuff. Thanks for spilling the beans about the recipe, J.M.!

Many of us have monitored on HF radio such things as search and rescue operations at the scene of a sinking ship, or the pandemonium that follows a plane crash, and have read about them the next day in the newspapers. S. Robson of Hackensack, New Jersey, went one step further. Robson monitored LSA600, AP, Buenos Aires, Argentina, on 20736 kHz at 1900 UTC, and got a printout of a photo showing a throng of people visiting the imperial palace in Tokyo, Japan, shortly before the death of Emperor Hirohito. The same photo appeared next day in all local newspapers!

We're still getting lots of mail requesting advice on the use of microcomputers for receiving RTTY off the radio. Once again we must stress that we cannot answer such questions because this column deals solely with the actual monitoring of RTTY stations and not with how to use computer hardware and software. We suggest, instead, some places you can contact for assistance in using your equipment.

Seek a users' group catering to the brand of computer you own. Ask your computer dealer for phone numbers and addresses for groups in your area.



S. Robson of Hackensack, New Jersey, got this radiofacsimile printout from Buenos Aires and was surprised to see it again the next day in local newspapers.

You also might try logging onto a computer bulletin board and pose your questions in one of the message areas. You could get free help from someone who knows a lot about the computer you're using.

Lastly, check the ads in magazines. Write to those who offer these products and ask for their catalogs. Several radio-related floppies are on the market.

RTTY Intercepts
(All Times Are UTC)
(Settings– Shift/Baud/Polarity)

3228.8: KAWN, Carswell AFB, TX w/coded wx at 0021, 850/75N (Tom Kneitel, NY).

3622: RPITH, Portuguese Navy, Ponta Delgada, Azores w/5L msgs at 0547, 75R (Ed.).

3670: JMG, Tokyo Meteo, Japan w/coded wx at 1219, 850/50R (Dallas Williams, CO). In reply to the question, there isn't a JMG1, the assignments go from JMG to JMG2, then JMG3-- Ed.

4607: 78LYQ of the Spanish Navy w/RYRY at 0432, 850/75R (Williams, CO).

4813: LZA8, Sofia Meteo, Bulgaria w/wx at 0201, 425/50N (Harold Manthey, NY).

4923.6: GXQ, British Army, London, England w/RYI, testing & foxes at 0148, 170/50R (Kneitel).

5197.4: Foxes, count & test w/o ID at 0158 on several channels FDM 85/75N&R (Kneitel, NY).

5317.5: 5AF, Tripoli Aero, Libya w/RYRY at 0426, 325/50R (Williams, CO).

5458: Un-ID w/RYRY at 2015, 50 baud (Ian Wraith, England).

5887.5: IMB2, Rome Meteo, Italy w/RYRY at 2351, 850/50N (Kneitel, NY).

6823.8: GHH, Jamestown Meteo, St. Helena w/coded wx at 0208, 425/50N. QSY 9044 at 0211 & continued w/hc (Williams, CO).

6848: PHWR, Hickam AFB, HI w/wx data for Japan at 1227, 850/75R (Williams, CO); SOG284, PAP Warsaw, Poland at 0003 w/nx in EE, 425/50R (Kneitel, NY).

6902.5: KAWN, Carswell AFB, TX w/coded wx at 0037, 850/75N (Ed.).

6920: RGC70, Kiev Meteo, USSR w/coded wx at 0052, 1000/50R (Ed.).

6941.5: TRK, ASECNA Libreville, Gabon w/RYRY at 0304, 425/50N (Williams, CO).

6975: 6VU38, ASECNA Dakar, Senegal w/RYRY at 0118, 425/50N (Ed.).

6978.7: CCS, Santiago Navrad, Chile w/5L grps at 0543, 850/50R (Williams, CO).

7402: JMG3, Tokyo Meteo, Japan w/coded wx at 1045, 850/50R (Fred Hetherington, FL).

7460.5: 5YE32, Nairobi Aero, Kenya w/aero wx at 0422, 425/50R (Ed.).

7512: TZH, ASECNA Bamako, Mali w/svc msg to 6VU at 0517, TOM-96B (Ed.).

7695: 3MA26, CNA Taipei, Taiwan w/RYRY at 1449, then nx in EE 1500, 850/50R (Ed.).

7700: RWQ, Irkutsk Meteo, USSR w/coded wx at 0329, 1000/50R (Williams, CO).

7833.5: 5ST, ASECNA Antananarivo, Madagascar w/RYRY at 0228, 170/50R (Manthey, NY).

7887.3: Un-ID sta w/SS mil tfc at 0310, 170/50R (Kneitel, NY).

7904.4: CLP1, MFA Havana, Cuba w/tfc to Ethiopia at 0501, 1000/50N (Williams, CO).

8022.3: FTIZH1, AFP Paris, France w/nx in AA at 0518, 325/50N (Williams, CO).

8075: RCF, MFA Moscow, USSR w/RYRY & 5F grps at 2000, 75 baud (Wraith, England).

8105: Un-ID w/continuous RYRY at 0440, 425/50R (Williams, CO). Probably CLN217 in Havana-- Ed.

8135: XVM2, Hanoi, Vietnam w/RYRY & QRA, 1030-1100 (Hetherington, FL).

8151.7: HMF86, KCNA Pyongyang, N. Korea w/nx in FF, 575/50N at 1150 (Hetherington, FL).

8157.8: MKD, RAF Akrotiri, Cyprus w/RYRY & foxes at 0514, FDM 325/50R (Williams, CO).

8183.3: Un-ID in ARQ w/"OK colega el Rama no copie an a par que no tenga cinta." Was at 0152 w/no further msgs (Ed.).

8514: WLO, Mobile R., AL w/tfc list & wx in FEC at 1742 (Ed.).

8630: Un-ID w/info on Mike Tyson at 0206, 170/75R. Might have been WCC Chatham R. (Kneitel, NY).

9078: Y7A47, MFA Berlin, GDR w/RYRY at 1712, 325/50N (Williams, CO).

9124: 3WM38, VNA Hanoi, Vietnam w/nx in Vietnamese at 1000, 500/50R; at 1100 was into RYRY's + ID (Hetherington, FL).

9136-9137.8: MKD, RAF Akrotiri, Cyprus w/RYI's & foxes on 5 chans at 0355, 170/75N&R (Ed.).

9190: RDZ75, Moscow Meteo, USSR w/coded wx at 0346, 1000/50R (Ed.).

9192.7: Maybe BPJ33, Beijing Meteo, PRC w/coded wx at 1245, 900/50N (Williams, CO).

9224.5: RPFR, Portuguese AF, Lajes AFB, Azores w/ nacelas" (unclassified) msgs in PP to RPTTA, PAF Ponta Delgada. Was ARQ at 2216, 2346 & 0100 (Ed.).

9225.8: TJK, ASECNA Douala, Cameroon w/RYRY at 0103, 425/50R (Ed.).

9252: ELRB, Monrovia Aero (Roberts Field), Liberia w/aero wx at 0404, 350/50R (Ed.).

9285: TNL, ASECNA, Brazzaville, Congo w/coded wx at 0138, 1000/50N (Ed.).

9290: RTQ78, Sverdlovsk Meteo, USSR w/coded wx at 0138, 1000/50N (Ed.).

9293: A2M w/RYRY to A2K, both un-ID, at 0418, 425/50R. Asked "Are U reading me" at 0422, then more RYRY & off 0425 (Williams, CO).

10087: CLP1, MFA Havana, Cuba w/circulars at 0510, then crypto, 425/50N (J.M., KY).

10270: RKA25, TASS Moscow, USSR w/nx in EE at 1328, 425/50R (Ed.).

10415: SNN299, MFA Warsaw, Poland w/nx in Polish at 0606, 170/75N (J.M., KY).

10423: Un-ID w/5F grps w/11177 intro at 0737 to 0743 off, 500/50R. Do we really know whozit? (Williams, CO). Still guessing that the sta w/that header is GDR embassy in Havana-- Ed.

10540: CSY40, Santa Maria Aero, Azores w/RYRY at 0359, 850/50N (Williams, CO).

10570: RWH79, Alma Ata Meteo, USSR w/coded wx at 0253, 425/50N (Ed.).

10670: Un-ID w/foxes at 0725, crypto at 0952, 850/50R. Who is it? (Williams, CO). I've logged an 850/50R sta here & it was GYU sending RYI's & foxes-- Ed.

10758: Un-ID w/5F tfc at 0445, 275/50R (Williams, CO).

10790: RKA71, TASS Moscow, USSR w/RYRY at 1601, 425/50R (Williams, CO).

10833.8-10835.8: RCCACP (a/k/a VER), Canadian Forces, Ottawa, ON w/RYRY & faxes on 9 FDM chans at 1903. All were 170/75N (Ed.).

10954.5: Un-ID w/endless RY's at 0627, 500/50N (Williams, CO). Same as 8105 kHz, must be CLN298-- Ed.

10965: Possibly JYN4, Amman Meteo, Jordan w/coded wx at 0620, 850/50N (Williams, CO). Circuit to Sofia, Bulgaria-- Ed.

11105: Un-ID USSR meteo sta w/coded wx at 0022, 500/50R (Williams, CO). It's USZ, Soviet Arctic Meteo, Diksan-- Ed.

11237: ZKX, Whenuapai, New Zealand w/RYRY at 0445, 850/75R (Joe Palovic, FL via Hetherington)

11299.8: P46 to P72 (Lots un-ID) w/5L grps at 1729, 500/50N (Williams, CO).

11337: A Vietnamese embassy somewhere in Western Hemisphere w/lang 5F msg to HN (Hanoi-- Ed.) at 1240, 520/50N (Hetherington, FL).

11450: RDD77, Moscow Meteo, USSR w/coded wx at 0207, 1000/50R (Kneitel, NY).

11453: IMB3, Rome Meteo, Italy w/coded wx at 2158, 850/50N (Ed.).

11502: LZH4, BTA Sofia, Bulgaria w/nx in EE at 1429, 335/50N (Hetherington, FL); same at 0800, 500/50N (Ed.).

11507.5: STK, Khartoum Aero, Sudan w/Natams in EE at 1345, 425/50R (Hetherington, FL).

11510: ARA, Karachi Meteo, Pakistan w/RY's at 0334, 750/50R (Williams, CO).

11537: HDN, Quito Navrad, Ecuador w/RYRY at 1340, 850/75N (Hetherington, FL).

11586.4: MKD, RAF Akrotiri, Cyprus w/RYI's & foxes at 0315, 850/75R (Ed.).

11596.6: 7XA98, Algiers Meteo, Algeria w/coded wx at 0307, 250/50N. Fred Hetherington advises that this sta sometimes has spurs between 11593 & 11601 kHz (Ed.).

11600: CLN327, PTT Havana, Cuba w/telegrams to USA at 0305, 425/50R (Ed.); same sta w/contin foxes & count, w/a ID, at 0214 (Kneitel, NY).

11635.5: KRH51, US embassy London, England w/foxes & count at 0217, 850/75N (Kneitel, NY).

11638: DDK8, Hamburg Meteo, FRG w/plaintext wx in GG & EE at 0600, 425/50R (Ed.).

12063.2: RFLIG, French Navrad, Cayenne Guyana w/"non protege" tfc at 0100, ARQ-E/72 (Ed).

12080: 9KT292, KUNA Safat, Kuwait w/nx in AA at 1405, 425/50N (Ed.).

12118: Possibly Christchurch Metea, New Zealand w/coded wx at 1136, 850/75N. Had CKA as circuit ID (Williams, CO). My refs show ZLK42 in Weedans, NZ on 12120 kHz as another ID-- Ed.

12174: ETD3, Addis Ababa Aero, Ethiopia w/RYRY & "How do you read?" at 0038, 150/50R (Ed.).

12192: Probably CLP1, MFA Havana w/"Del jaguar al aguja (needle)" + RYRY at 0345, then tfc in SS & crypto, 425/45R (Ed.).

12212.5: YZD7, TANJUG Belgrady, Yugoslavia w/nx in EE at 1500, 425/50R (Ed.).

12238: Possib MFA Berlin, GDR w/5F grps at 1418, 50 baud (Wraith, England).

12295: Y7L36, GDR embassy, Havana w/5L tfc at 2222, 425/75N (Ed.).

12714: UXN, Arkhangelsk R., USSR w/RR tfc, ARQ at 2216 (Ed.).

12729: UFL, Vladivostak R., USSR w/tfc in RR to UERU, Soviet pass liner **Alexander Pushkin.** Was 170/50R at 2316 (Ed.).

12731.7: Un-ID in ARQ at 2342 w/AAAA de TTTTTT de GGGGG INT ZBZ patle. At 2354 w/de GGG to pout vaus AS, then text in AA to 0008. Any ideas on this one?? (Ed.).

Abbreviations Used in The RTTY Column

AA	**Arabic**
ARQ	**SITOR mode**
BC	**Broadcast**
EE	**English**
FEC	**Forward Error Connection mode**
FF	**French**
foxes	**"Quick brown fox . . ." test tape**
GG	**German**
ID	**Identification/ied**
MFA	**Ministry of Foreign Affairs**
nx	**news**
PP	**Portuguese**
RYRY	**"RYRY . . ." test tape**
SS	**Spanish**
tfc	**traffic**
w/	**with**
wx	**weather**

13030: URD, Leningrad R., USSR w/telegrams in RR at 1905, 170/50N (Ed.).

13080: Un-ID Soviet coastal sta w/tfc in RR at 1427, 170/50N. Both ROT in Moscow & UKA in Vladivastok listed here (Ed.).

13375: RCF, MFA Moscow, USSR w/RY's & CQ at 0837, 500/75N (Williams, CO).

13580: HMF36, KCNA Pyongyang, N. Korea w/nx in EE at 0525, 250/50R (Ed.).

13803: RCR78, Khabarovsk, Meteo, USSR w/coded wx at 1255, 1000/50R (Ed.).

13865: RUZU, Maladevnaya Base, Antarctica w/wx, nx, & telegrams in RR 1610-1733, 425/50R (Ed).

13872.5: HGX51, un-ID Hungarian diplo w/AFP & Reuters nx in Hungarian to HGX21 at 1500 & 1600, 425/100R. Test tapes before nxcasts say HGX21 DE HGX51 + RYRY (Ed.).

13886: TAD, MFA Ankara, Turkey w/5L grps to Ottawa at 1507, 850/75R. On another day, a Turkish diplo post (maybe Wash DC) w/5L tfc to 32 embassies at 1917, 850/75R. Think this was Wash DC because xmsn at 1947 had The Wash Times newspaper translated into Turk. Was sent to 23 embassies & diplo posts (Ed.).

13914.7: Un-ID diplo sta w/SS tfc, ARQ at 1644. Off at 1649 in EE: BIBI & gave time in local Eastern US hrs (Ed.).

13928.6: FRG embassy, Athens, Greece w/msg in GG to Bonn at 1500, ARQ-E/170/96 (Hetherington).

13940: CLP1, MFA Havana w/crypto after ZZZZZ to Embacuba Managua at 2108, 425/75N. Few days later found CLP65 in Managua w/crypto to CLP1 asking about Prensaminrex item 4 days old, 500/75N at 1624 (Ed.).

13941.5: Un-ID net using tactical ID's on 2 consecutive days in FEC at 1755-2008. One ref lists MFA Tunis, Tunisia here, but don't know if that's what this was. ID's were 2MZ, PXH, TLR, U5E, 4CH, WVH, R5I. Some FF tfc, but nothing in text gave a clue re QTH (Ed.).

14546.5: Italian embassy, Tel Aviv, Israel w/tfc in AA to MFA Rome, copies to Ammon, Cairo, Damascus, Tunis. ARQ at 1452 (Ed.).

14570: Y7A58, MFA Berlin, GDR w/RYRY at 1630, 50 baud (Wraith, England).

14600: CAK, Santiago Areo, Chile w/coded wx at 0140, 850/50N (Richard Gleitz, PA).

14690: RCF, MFA Mascow, USSR w/RYRY & CQ at 1438, & QRU SK at 1443, 425/75N (Ed.).

14700: REB24, TASS Mascow, USSR w/nx in EE at 0822, 425/50R (Williams, CO).

14719: OST, Oostende R., Belgium w/FEC tfc list at 1718 (Ed.).

14760: BAT93, XINHUA, Beijing, PRC w/nx in EE at 0248, 425/50R (Manthey, NY).

14764: A9M70, GNA Manama, Bahrain w/nx in AA at 1724, 425/75R (Ed.).

14785: ATP65, New Delhi, India w/RYRY at 0834; nx in EE 0852. Was 450/50N (Williams, CO).

14837.3: VDD65, Delhi Meteo, India w/coded wx at 1410, 275/50R (Williams, CO).

14880: JMG4, Tokyo Meteo, Japan w/coded wx at 1538, 425/50R (Ed.).

14931.5: APS Algiers, Algeria w/nx in EE, 1000/50N at 1300 (Hetherington, FL).

15566: RYO75, Novosibirsk Meteo, USSR w/coded wx at 0739, 500/50N (Williams, CO).

15597: KRH51, U.S. embassy, London, England w/faxes at 0656 (Richard Muth, MD). Settins not specified, but assume 850/75N or R-- Ed.

15651.8: SNN299, MFA Warsaw, Poland w/tfc at 0531, 250/75N (Williams, CO).

15667: FDY, French AF, Orleans, France w/RYRY at 1638, 425/50R (Ed.).

15670: HGM36, MTI Budapest, Hungary w/nx in SS at 1628, 425/50N (Ed.).

15872.5: RFGW, MFA Paris, France w/tfc in FF to Ambafrance in many nations. Was 425/75R at 1242 (Kneitel, NY).

15934: PWZ33, Rio de Janeiro Navrad, Brazil w/garbled RY's/SG's at 2238, 850/75N (Williams).

16110.5: CLP1, MFA Havana, Cuba w/Prensmintex nx in SS at 1330, then circulars at 1335. Was 500/50N (Kneitel, NY).

16113: Un-ID sta sending ARQ/425 phasing sig at 1925 (Kneitel, NY).

16124: N. Korean embassy, Managua, Nicaragua w/tfc in Korean to Pyongyang at 1230, 550/50N (Hetherington, FL).

16127: N. Korean embassy somewhere (prob Havana or Managua) w/5L tfc at 1410, then Korean text, 1000/45N (Hetherington, FL).

16224: 3MA35, CNA Taipei, Taiwan w/RYRY at 1330, 850/50R (Ed.).

16241.8: PWZ, Rio de Janeiro Navrad, Brazil clg RPFN & sending unclass tfc re "Exercicio X" at 0125, 850/50N (Kneitel, NY).

16260: REM57, TASS Moscow, USSR w/nx in FF at 1253, 425/50R (Kneitel, NY).

16365.4: 5L grps in ARQ at 1950 sent from IOSTAN PARIS to KHAJPAZCAIRO 1 (Kneitel, NY).

16660.5: S6CH, **M/V Almeria Star** in ARQ at 2115 w/telegrams via 9VG82 (Kneitel, NY).

16687: ZEOG, **M/V Bluestream** sending meteo obs to WLO in ARQ at 1316 (Kneitel, NY).

16922: RBSL, Indian Navrad, Bombay, India w/RY & SG at 1325, 850/50R (Kneitel, NY).

17117.5: PBC317, Dutch Navrad, Goeree Island, Holland w/RYRY at 2017, 850/75R (Kneitel, NY).

17122.5: PWZ33, Rio de Janeiro Navrad, Brazil w/RYRY & Metar rpts at 2345, 1100/50R (Williams)

17401.5: ZLK44, Christchurch Meteo, New Zealand w/coded wx at 0400, 850/75N (Palovic, FL via Hetherington, FL).

17430: 9VF209, JIJI Singapore w/nx in EE at 1338, 425/50N (Ed.).

17443: BZG48, XINHUA Beijing, PRC w/RYRY at 1335, 425/50R (Ed.).

17453: Y7K38, MFA Berlin, GDR w/RYRY at 1555, 50 baud (Wraith, England).

17502.5: RFL1, French Navrad, Fort de France, Martinique w/"non protege" tfc at 2225, ARQ-E/72 (Ed.).

17510: RFD53, TASS Moscow, USSR w/nx in FF at 1319, 425/50R. Sig zapped by FAX from OXT on same freq (Ed.).

17545: Y2007, MFA Berlin, GDR w/RYRY at 1856, 425/50R (Ed.).

17570: RBX42, TASS Moscow, USSR w/nx in FF at 1311, 425/50R (Ed.).

17588.8: Un-ID sta w/5F tfc related to NOAA wx satellites. Mentioned 137.50 & 136.77 MHz. Was 170/100N at 2030 (Kneitel, NY).

17600: RUJ71, TASS Moscow, USSR w/nx in PP at 1316, 425/50R Ed.).

17623: 9KT344, KUNA Safat, Kuwait w/nx in EE at 0810, 325/50R (Williams, CO).

17627: 9KT344 w/KUNA nx in AA at 0811, 325/50R (Williams, CO).

18052: HDT1, Quito Navrad, Ecuador w/tfc at 1554, 85%/75N Ed.).

18164.5: STK, Khartoum Aero, Sudan w/aero wx at 0124, 425/50R (Ed.).

18221: CNMX811, MAP Rabat, Morocco w/text wx at 1542, 425/50R (J.M., KY).

18242: ZPO4, Pretoria Meteo, RSA w/wx data re Zimbabwe at 2007, 425/75N (Manthey, NY).

18279.2: HBD48, Swiss embassy, Riyadh, Saudi Arabia w/tfc in AA at 1609, ARQ. Another day picked up HBD66 in Ottawa, ON w/ID at 1550 s/off (Ed.).

18289.4: MFA Bonn, FRG to "Kairo" at 1325 ARQ-E/170/96 (Hetherington, FL). Listed as DFS29, MFA Bonames, FRG Ed.

18307: 9KT349, KUNA Safat, Kuwait w/nx in EE at 0821, 325/50R (Williams, CO).

18321.5: Indonesian embassy, Tehran, Iran w/nx for MFA Jakarta at 1245, 425/50N (Hetherington)

18461.7: PCW1, MFA The Hague, Holland, idling in ARQ at 0024 (Ed.).

18491.6: CNMX011, MAP Rabat, Morocco w/nx in EE at 1345, 425/50R (Kneitel, NY).

18696: DFS70L3, DPA Hamburg, FRG w/nx in EE at 1500, 425/50N (Ed.).

19025: AEM1USA sending MARSgrams at 1350, 170/75R (Kneitel, NY).

19117.5: MFA Jakarta, Indonesia w/ARQ tfc at 1432 (Manthey, NY).

19324: KAWN, Carswell AFB, TX w/wx data at 1623, 850/75N (J.M., KY); at 1351 a lengthy plain-text wx summary for entire U.S. was signed "Dan McCarthy, National Public Service Unit," was 850/75N (Kneitel, NY).

19326.8: Y7A75, MFA Berlin, GDR at 1352 w/repeating msg "Hinweis Mex. Guten Morgen OM. Habe Nichs Fr Dich. Noechste Sendung Montag 1545 AWS Schones Wochenoe," then into crypto at 1400. Was 300/50N. (Kneitel, NY).

19431: Un-ID w/5F grps at 1518, 425/75N (J.M.)

19582: YBU, un-ID sta, w/5L grps at 1532, 425/75N (Manthey, NY). Thought to be the GDR embassy in Havana-- Ed.

20060: CLP1, MFA Havana w/circulars at 0011, 500/50N (Ed.); same at 1407 (Kneitel, NY).

20128.2: 7L1, Czech embassy, Havana, Cuba w/5F tfc to Prague at 1441, 425/75N (Ed.).

20260: Un-ID sta w/nx in EE re U.S. policy in Central America. Was 425/50R at 2345 (J.M., KY).

20312: FTU31B, AFP Paris, France w/nx in EE at 1427, 350/50R. Also running in FF at same time on 20313 kHz (Ed.).

20405: CLP1, MFA Havana w/Prensamintex nx at 1940, 425/50N (Ed.).

20412: CLP8, Cuban embassy, Conakry, Guinea w/circulars & RYRY at 1750, 425/50N (J.M., KY).

20471.5: CXR, Montevideo Navrad, Uruguay w/RY's & SG's, 850/75R at 2006 (Gleitz, PA).

20560: JANA, Tripoli, Libya w/nx in EE, 425/50R at 1644 (Gleitz, PA).

20619: Possibly 7L1, Czech embassy, Havana w/relay of 5F msgs from MFA Prague to embassies in New York, Mexico, Ottawa, & Wash DC. Was 425/75N at 1919 (Ed.).

22321: UJY, Kaliningrad R., USSR w/RYRY & asking for replies on 22252.5 kHz. Was 170/50N at 1437 (Kneitel, NY).

22563.5: LGG2, Rogoland R., Norway standing by in ARQ w/CW ID. Uses the generic callsign LGB (Hetherington, FL). Time?-- Ed.

22579.5: Y5M, Ruegen R., GDR w/enormous tfc list of GDR ships at 1428 in FEC, then switched to ARQ at 1436 to work Y5BO (Kneitel, NY).

22882: Un-ID w/contin RY's at 1713, 350/75N (Ed.).

22728: JMG6, Tokyo Meteo, Japan w/coded wx at 0016, 850/50R (Gleitz, PA).

22900: GPA7, Portishead R., England w/ARQ phasing sig & CW ID at 1711 (Ed.).

22944.3: Un-ID (possibly SPW) w/nx in Polish at 1340, 250/50N (Kneitel, NY).

22955: ISX22, ANSA Rome, Italy w/RYRY & QRA at end of nx bc. Was 425/50N at 1703 (Ed.).

23075: Un-ID (possib Cuban diplo) w/list of URG & ORD tfc that was prev sent. Was 425/75N at 2046 (Ed.).

23120: Un-ID w/"QSL 40 FON 1" at 1528, 425/50N. S/off foll by "OK TKS 73 GB SK" (Ed.).

23283: CLP1, MFA Havana, Cuba w/RYRY, crypto & tfc to Embacuba Zimbabwe, 500/50N at 1600. Before settling down here, CLP1 was found w/RYRY at 1557 on 23286.5, QSY 23282.5 at 1558 w/more RY's, then to 23283 kHz (Ed.).

23370: HZN50, Jeddah Meteo, Saudi Arabia w/wx rpts from FZAA/Kinshosa. Was 750/100N at 1626. Same at 1916, 850/100N (J.M., KY).

23391.5: LOL, Buenos Aires Navrad, Argentina w/RYRY & tfc to OBC at 1945, 425/75N (Manthey).

23561.7: PCW1, MFA The Hague, Holland in ARQ w/tfc in Dutch at 1717, then nx in Dutch at 1722 to 1735 aff (Ed.).

23697.6: DFX69H6, MFA Bonn, FRG w/nx in GG at 1510, FEC-A 425/96. Sig was a super S-9+15 (Ed.).

24000: Y7A89, MFA Berlin, GDR w/RYRY at 1700, 425/50R (Williams, CO).

24048.7: CLP1, MFA Havana w/cables in 5F grps for Embacuba Congo via Angola, 170/75R at 1522. Went to 170/50R at 1525 & repeated all tfc prev sent at 75 baud (Ed.).

24300: Y7A90, MFA Berlin, GDR w/RYRY at 1635, 425/50R (J.M., KY).

24429: CLP65, Cuban embassy, Managua, Nicaragua w/5F grps at 1544, 170/50N (J.M., KY).

24790: ISX24, ANSA Rome, Italy w/nx in EE at 1540, FF at 1640, 625/50N (Hetherington, FL).

25012: FDY, French AF, Orleans, France w/RYRY, le brick & counting at 1629, 425/50R (J.M., KY).

25077.8: GCCC, tanker **London Spirit** sending telexes in ARQ at 1528 (Kneitel, NY).

25080: UNGV, un-ID Soviet ship w/RYRY at 1340, 170/50N (J.M., KY). It's the cargo ship **Gvardeisk**-- Ed.

25223: HBD80, a Swiss embassy somewhere w/ARQ tfc in EE & GG at 1340, also Swiss embassy in Guatemala City w/5L msg at 1350 (Hetherington, FL). Callsign for Guatemala City is HBD68-- Ed.

25377: UDH, Riga R., Latvian SSR w/telegrams in RR at 1510, 350/50N (Ed.).

25389.9: GKY2, Portishead R., England w/tfc lists in FEC at 1501 & 1901. Also sent telex in ARQ to VPHL at 1504 (Ed.).

25418.5: Possible MFA Bonn, FRG w/msg in GG at 1650, then "QT FG MG UND BIBI." Was ARQ-E 170/96 (Hetherington, FL). Was DGZ42, MFA Elmshorn, FRG-- Ed.

25531.3-25532.7: MKD, RAF Akrotiri, Cyprus w/RYI's & faxes on 4 chans, 170/50N&R (Ed.).

26206.3: DFZG, MFA Belgrade, Yugoslavia w/RY's & QTC tape at 1459, into crypto at 1504, 425/75N (Kneitel, NY).

26496: Echo 4 Mike w/crypto to Bravo 4 Tango at 1513, 85/45R. Could be U.S. mil (J.M., KY).

27540: 2PRG02 in ARQ at 1508. Was running a marker that alternated between "karlkarlkarl," "mikemikemike," & "arumarumarum" (Kneitel, NY).

FAX Intercepts
All loggings by column editor.

6874: LRB79, Buenos Aires, Argentina w/nx photos at 0013, 60/288.

6918: ECA7, Madrid Meteo, Spain w/wx charts at 0046, 120/576.

9092: Un-ID sta w/wx charts at 1421 & 1521, 120/576.-

9060: RCU73, Novosibirsk Meteo, USSR w/wx charts at 1423, 60/576.

9158: WLO, Mobile R., AL w/wx charts at 1458, 120/576.

11030: AXM34, Canberra Meteo, Australia w/wx charts at 0740, 120/576.

18220: Tokyo Meteo, Japan w/wx charts at 0126, 120/576.

BETTER SIGNALS

ANTENNAS AND SIGNAL IMPROVING ACCESSORIES

BY ED NOLL W3FQJ

The In-House Loop Antenna

The full-wave quad loop with or without reflector has always been a popular outdoor antenna. Usually it is mounted vertically. Such a single loop has a bi-directional pattern and, with a companion reflector a unidirectional one. A loop also performs well when mounted horizontally, Fig. 1, but with a more omnidirectional pattern. Loops work indoors, too, but have a more inconsistent pattern because of the metallic surroundings and the fact that it usually must be laid down in an irregular manner instead of a square. Despite these departures from normal assembly, the loop does very well indoors.

To erect your loop, string thin insulated hook-up wire around the entire periphery of the apartment or as large an area as possible. As mentioned before, never use bare wire. It generates noise when rubbed against surfaces and, is especially bad when near electrical appliances. The thin hook-up wire can be taped to baseboards and door frames and run beneath carpets. Operating appliances, such as fans and even television sets and computers, are sources of electrical noise. Keep as clear of them as you can. However, you must often take the bad along with the good to put up a hidden and fair size loop into operation in a small apartment. Long hallways are often an asset and are often free of electrical noise sources.

In our installation we managed a 108 foot loop. Exact resonance is an indefinite quantity because of the proximity of reactive metallic surroundings and their influence on output impedance. There are measurement equipment limitations too. A variety of dips show up when using an antenna bridge. Coils can be placed at the center "X" or near center of the loop and do result in a drop in the frequency positions of the dips. The dips and the relative broadness probably indicate the reason that the antenna performs well on a wide-band basis.

In checking the antenna we found it did better over a wider span of frequencies than any other strictly indoor single-wire antenna we have tried at this location. We plan to do some additional work on the idea over the months to come with just how much improvement can be made, as well as try to make some sense from the multiple dipping tha shows up on the antenna bridge. The most pronounced improvement was on the medium wave broadcast band. AM signals unheard when using single-wire indoor antennas came through loud and clear. Output dropped down severely when the loop was opened at its center. The 108 foot loop did not do as well as the Radio West ferrite loop discussed several months ago, but that should be expected because the West loop includes a low-noise and tunable preamplifier.

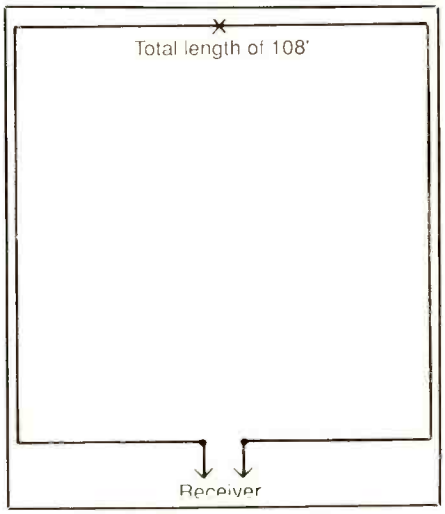


Fig. 1- Basic horizontal loop.

A hook-up of the wire loop and the West loop to a 2-position coaxial switch is shown in Fig. 2. Such an arrangment is useful in comparing results and even is an aid in identifying two signals on the same frequency. The plan for comparing loop and single-wire antennas is quite similar, Fig. 3, and will be of use in checking out loop dips and the influence of loading coils on the dips for both antenna styles. One of our test arrangements is shown in Fig. 4. Use the test or tests that best suit your equipment, needs and location.

In the table of Fig. 5A, the influence of open and shorted operation at the far end of our single loop is given. The loop shorted was better over the entire MW broadcast band which is not a part of the table. On the shortwave bands, the closed operation dominated with a number of bands. Open operation was favored on four bands. There was some variation related to loop position and angle of signal arrival. Bands 19 an 21 had no specific difference in signal level. You may not obtain identical results for your installation.

Results With Flexo Switch

In the arrangement of Fig. 6 a Flexo switch was attached at the receiver end and tested on each band. The Flexo switch was first set to the best position for that band. Next the center of the loop was changed from open to closed to determine the best signal level on the SWB bands. Results are shown in the B section of table.

The addition of the Flexo capability at the receiver gave greater flexibility for operating the antenna as a loop, a short or long single-wire antenna as well as parallelled single and long wire. This capability is helpful at those times when you are trying to copy a weak or noisy signal. The combined results of Flexo and open/close capability are shown in the table. On the MW band the open position was most favorable for receiv-

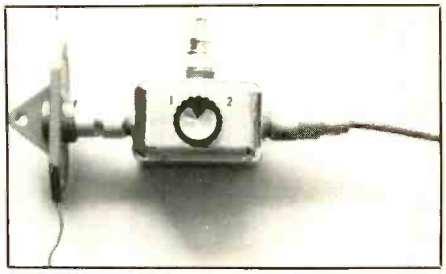


Fig. 2- Using coax switch to compare loop with Radio West directional loop. Loop wires connect to ends of dipole-to-coax connector.

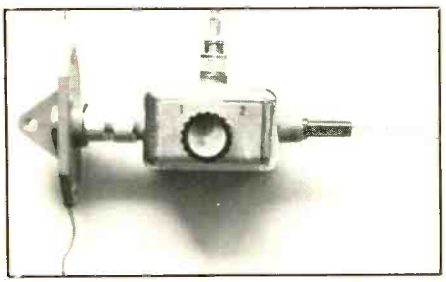


Fig. 3- Comparing single wire with horizontal loop.

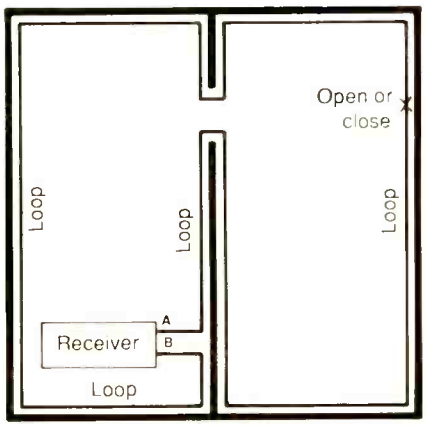


Fig. 4- Loop along baseboards of two rooms.

LEGEND.
C = Better loop closed
O = Better loop open
S = Same

13	O	41	C	13	C	41	C
16	C	49	C	16	C	49	C
19	S	60	C	19	C	60	C
21	S	75	O	21	S	75	O
25	O	90	O	25	O	90	O
31	C	120	C	31	S	120	O
(A)				(B)			

Fig. 5- Shows loop connection for best signal level on SWB bands (A). Example (B) is the same with insertion of Flexo switch.

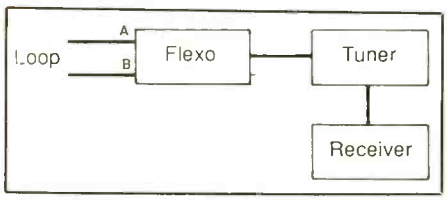


Fig. 6- Flexo switch and tuner used with RCVR.

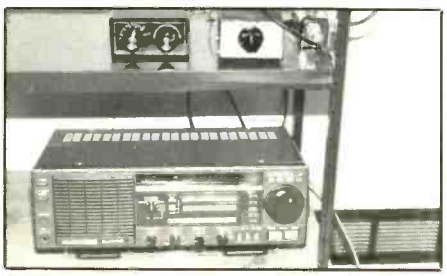


Fig. 7- Operating set-up showing flexing switch positioned between tuner and coaxial cable.

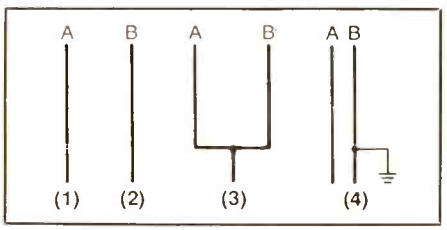


Fig. 8- Four Flexo wiring combinations.

ing signals in the 1300-1600 kHz range, while closed operation did better from 1300 kHz to the low frequency end of the band. The tuner was quite effective in peaking signals even on the SWB bands.

Additional information on the Flexo switch and its wiring, as well as results when using the device with loops and other antenna styles, along with coils are to follow. Flexo switch, an all-band tuner, 3-position coaxial switch are pictured in Fig. 7. It is quite a versatile arrangement for testing and listening. More details will come later. The four possible combinations that antenna wires can be connected to receiver by the Flexo are shown in Fig. 8. Switching combinations are a big help for indoor antennas.

BROADCAST DX'ING

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

BY ROGER STERCKX, KVT1JH

The Latest Buzz

The FCC voted to revoke the license of a small AM'er in New York State, claiming its owner had lied, run a contest where the prize was awarded to the station, and had racially discriminated against a job applicant. The FCC action came at the end of February, with the agency giving the owners of WBUZ, Fredonia, NY (1570 kHz, 250 watts) 90 days to "go off the air or appeal."

Among the charges against the station owner was that, in 1980, he was guilty of discrimination when he called an employment agency and complained about the job candidate they had sent to the station for an interview. He had reportedly said to the employment agency, "Don't you have any white girls to send me?"

The FCC's vote not to renew the WBUZ license was a 3 to 0 count during a closed session of the agency. An FCC representative said it was the first time since 1981 that the agency had revoked a station's license on "character" grounds, and that only about 100 stations had lost licenses at renewal time since the founding of the agency in 1934.

The owner of WBUZ, interviewed after the FCC vote, denied any guilt whatsoever and vowed to appeal. He said that the FCC was picking on him for "being small, being poor."

Radio Guide

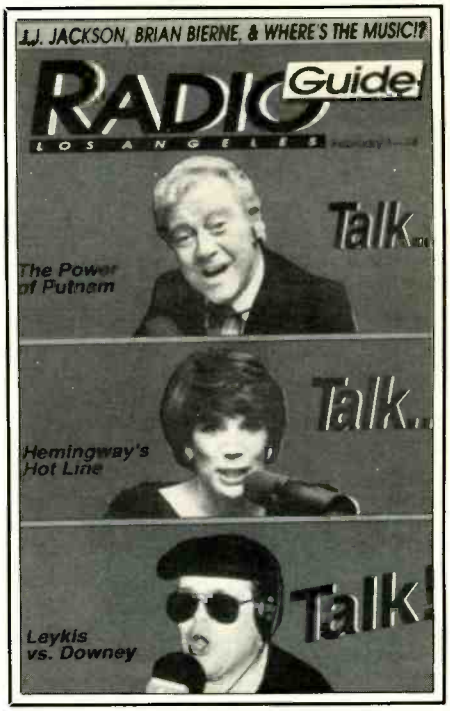
A nifty semi-monthly publication for Los Angeles area radio broadcasting buffs has arrived under the name of *Radio Guide*. It's got sked details and newsy notes about Los Angeles' 93 AM and FM broadcasters. Started last November by self-described "radio addict" Phil Marino, the publication provides about 50,000 copies of each issue for distribution at record and video stores, and at restaurants. The issue we saw was 40 pages in size and loaded with program and other information relating to broadcasters in the Los Angeles area, including interviews with air personalities.

For those who can't locate *Radio Guide* around Los Angeles, or who live elsewhere and would like to receive copies, a one year (26 issue) subscription sent by First Class mail is $26 from: *Radio Waves Publications, Inc.*, P.O. Box 1139, Venice, CA 90204. Be sure to tell them you read about *Radio Guide* in *Popular Communications*.

Honing The Edge

James Kline, of Santa Monica, CA passes along information about why local KMPC-FM (101.9 MHz) changed its callsign to KEDG-FM. The station, which calls it self

WGLI, Babylon, NY on 1290 kHz. Another station reportedly wants to buy it just to shut it down! What's broadcasting coming to?



Radio Guide offers Los Angeles program information and other news of local interest about broadcasters in town.

"The Edge," didn't want its listeners to confuse it with its differently programmed AM sister station, KMPC-AM. The FM outlet runs an album oriented rock format, while the AM station programs big band and easy listening music, plus California Angels baseball.

Usually, broadcasters strive to increase their power to achieve better coverage. That story was played in reverse when WGLI (1290 kHz), an oldies programmer in Babylon, NY asked the FCC to allow lowering the station's power from 5 kW to 265 watts in order to improve coverage. With its present 5 kW power, WGLI is required to run a directional antenna pattern that, according to the station's owners, wasted much of its signal out over the Atlantic Ocean. Reducing the power to 265 watts would permit the use of an omnidirectional radiation pattern that would improve the station's signal over land areas where the desired prime audience is located.

In the meantime, the station (which has been on the air since 1958) has had low ratings of late and another station wants to buy out WGLI for $375,000, which is $25,000 less than its present owners paid for WGLI six years ago. The other station, New York City's Spanish language WADO (1280 kHz) apparently doesn't want to operate WGLI, just close it down so that WADO's signal can be more easily received in some marginal coverage areas without WGLI on adjacent 1290 kHz. A sad commentary, we'd say. Thanks to Art Kleiner, Levittown, NY for letting us know about this.

Randy Stewart, Springfield, MO writes to let us know that he's the musical director for university-licensee NPR station KSMU (91.1 MHz, 40 kW ERP). The station QSL's all *correct* detailed reception reports with a letter. Address reports to Randy, or to the Chief Engineer, Doug Waugh, at KSMU-FM, Southwest Missouri State University, 901 S. National, Springfield, MO 65804.

Randy has returned to the DX'ing hobby after a long absence, with a preference for the AM and SW broadcast bands. He has kindly given us some info on his BCB tuning conquests in recent months. For instance, an unidentified Latin American just below 650 kHz that gave WSM fits all last winter. Station seemed to be on 646 kHz (wasn't YSS/655 kHz, or the Cuban/640 kHz). No definite ID on this one, just a partial, "Transmite Radio ---?---."

Jamaica's "JBC Radio One," Montego Bay was good level on 700 kHz when WLW was nulled out with a directional antenna. Station seems to have changed its name or ownership, and nothing yet heard from on QSL request.

Randy also lists the following heard:

580 kHz: XEMUJ, Piedras Negras, Coah., Mexico, strong for 5 kW at 2013 Eastern. ID as "La Rancherita del Aire."

640 kHz: WCRV, Colliersville, TN at 1754 Eastern.

655 kHz: YSS, "Radio El Salvador," loud het against WSM/650 at 2140 Eastern, but occasional armchair copy audio and clear ID.

660 kHz: KTNN, Window Rock, AZ mix-

ing with New York's WFAN. KTNN had English and Navajo call in show at 2030 Eastern; WFAN at 2030 with clear ID of "Sports Radio 66" runs all-sports format.

730 kHz: KWOA, Worthington, MN with ID at 1751 Eastern; "Radio Sandino," Managua, Nicaragua sometimes riding over WSB around 2200 Eastern in Spanish with U.S. and Latin pops. Many singing ID's.

800 kHz: WSHO, New Orleans, LA came up briefly over PJB/Bonaire with clear ID at 2200 Eastern.

900 kHz: CHML, Hamilton, ON with sports, local promos, holding down the frequency at 1927 Eastern.

970 kHz: XEJ, Cd. Juarez, Chih., Mexico riding over WAVB with ID at 2054 Eastern as "Aqui la Jota, Radio Mexicana, X-E-J."

1160 kHz: "Caribbean Lighthouse," St. John's Antigua is the presumed strong het against 1160/1170 kHz domestics around 2055 Eastern. Some audio surfaces with English-language religious programming.

1190 kHz: KJLA, Kansas City, MO dominating here many eves despite 250 watt nighttime power.

1360 kHz: WSAI, Cincinnati, OH strong with ID at 2225 Eastern.

1610 kHz: "Caribbean Beacon," Anguilla often heard in English with religious programs and Carib-accented announcers. Some splatter from KATZ (St. Louis) on 1600 kHz.

An excellent report, Randy. We'd like to see more of these from our readers covering the AM, FM, and TV broadcast bands.

New Stations

New license granted for Falmouth, VA on 1170 kHz with 2 kW; Marion, SC on 100.5 MHz; Ava, MO on 105.9 Mhz; Faith, SD on 97.1 MHz; El Dorado, AR on 93.3 MHz; Selma, AL on 105.3 MHz; Cartago, CA on 102.9 MHz; Manteo, NC new TV station Channel 4; Liberal, KS on Channel 5.

The Times They Are A'Changin'

KGLA, Gretna, LA on 1540 kHz to increase power to 1 kW and modify its antenna system; WLZA, Eupora, MS moving to 96.1 MHz; WQIM, Prattville, AL moving to 95.3 MHz; WNBY-FM, Newberry, MI hopping over to 93.7 Mhz.

High Hopes

WLVG, 740 KHz in Cambridge, MA wants to move to Needham (transmitter at Ashland) and increase power to 2.5 kW; KELP, 1590 kHz in El Paso, TX wants to add night hours with 900 watts; WJBQ, 1590 kHz, Gorham, ME would like to run its power up to 10 kW days and 1 kW nights, also move its transmitter to Buxton, ME; WTCL, 1580 kHz, Chattahooche, FL seeks FCC blessings to add night service with 500 watts, run daytime power up to 10 kW; KZOC, 92.7 Mhz, Osage, KS asked for permission to move to 92.9 Mhz.

Various prospective FCC licensees hoping to obtain authorization as FM broadcasters as follows: Ada, OH on 94.9 MHz; Austin, TX on 91.7 MHz; Brownsburg, IN on 101.9 MHz; Masontown, PA on 106.9 MHz; Reserve, LA on 94.9 MHz; Fort Bragg, CA on 96.7 MHz; Millen, GA on 94.9 Mhz; Poplar Bluff, MO on 103.5 MHz; Weslaco, TX on 88.1 MHz; Vero Beach, FL on 99.7 MHz; Tice, FL on 93.7 MHz.

What's In A Name

WRPT, Peterborough, NH became WMDK; KHTT, San Jose, CA now known as KSJX; WRIE, Erie, PA became WEYZ; KMYT, Merced, CA turned into KABX-FM; WHDG, Havre de Grace, MD now using the call WXCY; WSKX, Suffolk, VA changed calls to WAFX; WTHB, Augusta, GA now ID's as WNTA; KWEZ, Monroe, LA has new callsign of KJLO; WTGE, Baton Rouge, LA became WNDC.

We invite your AM/FM/TV broadcast band loggings, comments, news clippings, copies of QSL's, bumper stickers, station logos, coverage maps, station (interior/exterior) photos. Our address: Broadcast DX'ing, Popular Communications Magazine, 76 North Broadway, Hicksville, NY 11801.

LISTENING POST

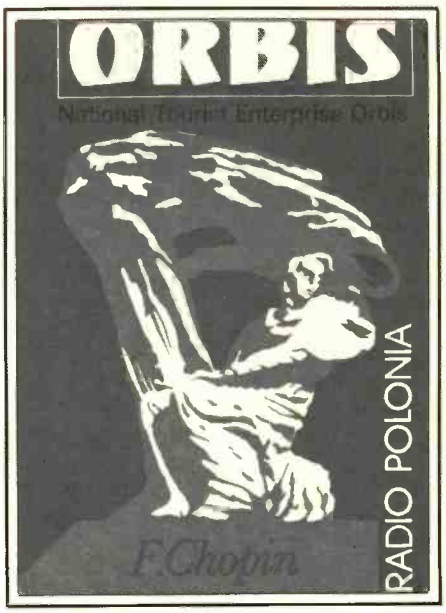
BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

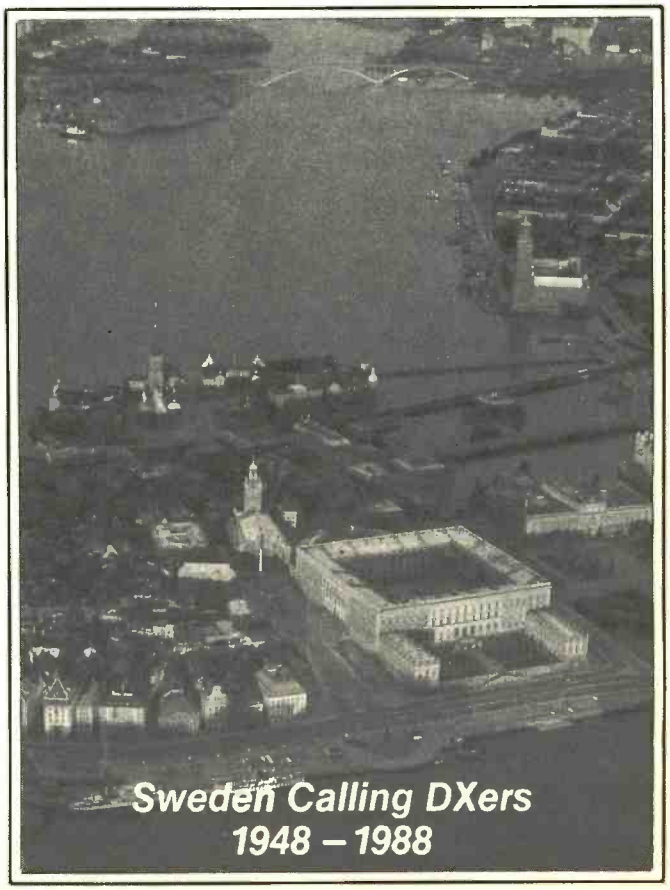
Sound the trumpets! There's a new country broadcasting on the shortwave bands! Australian DX'ers are reporting signals on 5030 from the Tonga Broadcasting Commission at Nuku'alofa, Kingdom of Tonga in the South Pacific. The station was first noted in early March. However, DX'ers had been aware of occasional activity from Tonga on this frequency. These earlier transmissions, however, were single sideband feeders so they didn't count as shortwave broadcast. The new version is apparently in full AM and intended as a broadcast service.

First word of this activity had just hit as this is being written so as yet there aren't any known loggings of this one in North America. The station, which has the call letters A3Z, operates on shortwave from 0800-1000 on 5030 with Radio Australia news at 0800 and then country-western and island music with announcements in Tongan until closing. The power on the earlier SSB transmissions was listed as 200 watts but Australian monitors think this may be a stronger transmitter. The station's address is P.O. Box 36, Nuku'alofa, Kingdom of Tonga.

Do you have Denmark in your logbook yet? If not, you may want to take some action post haste. The Radio Denmark story is one of a three decades long downhill slide. Back in the 1950's you could tune in to *English* language programs from Radio Denmark and hear the station strong and clear most of the time. Now the English is long gone and various factors prevent the station from making necessary improvements in its technical facilities. Radio Denmark is not going to leave shortwave, at least not from a programming standpoint. Sometime this spring or summer Radio Denmark's programs were to have begun being relayed over the facilities of Radio Norway (and, later, perhaps Radio Sweden as well). Once that arrangement is in place the Radio Denmark transmitter site at Herstedvester is scheduled to be closed down and when that happens there will be no more shortwave broadcasts coming directly from Denmark. North American DX'ers looking for Denmark will find best bets to be 2300 to East North America on 11845 and to Western North America on 9595 at 0100. Check



This is one of Radio Polonia's recent QSL designs, received by Sander J. Rabinowitz in Michigan.



Two Radio Sweden QSL's commemorating the station's 50th anniversary last year.

Here's the monitoring post of James E. Hunter of Logansport, Indiana. It features a Radio Shack DX100, DX200 and DX302, Hallicrafters S-38D, S-40B, Army R336 GRC-26, Bearcat 300, Cobra Dynascan and several other receivers and accessories.

15165 through the local daytime hours as this is used to several areas of the world at various times. All broadcasts are in Danish except for opening announcements in English.

High Adventure Ministries in California which operates KVOH there and the Voice of Hope in Lebanon, and which has plans to put a religious station on the air—somewhere—to beam into China, has changed its site plans again. At one time the group figured on broadcasting from a ship, then maybe the island of Palau, then it was to be Singapore, then the Philippines. Now they say it's to be Guam. Meantime, they are also planning on moving the Voice of Hope from the dangerous Southern Lebanon area into a safer spot—which almost has to be Israel.

Once again the government of Venezuela is talking about putting a high power international service on the air. They've been talking about that for several years now. It'll be called the Voice of Venezuela and would operate with a million watts of power. But it's a good bet that, if this does go on the air, it'll show up on the AM broadcast band. Meantime, the government's Radio Nacional de Venezuela continues and is still noted in an occasionally active mode on such frequencies as 5020, 9540, 11695 and 11850—all slightly variable—at various times of the day and night, and all in Spanish.

Radio Austria International should be booming in loud and clear now, since it's the newest station to hitch on to the Sackville, Canada relay bandwagon. English is scheduled via Sackville daily at 0300-0330 and 0400-0430, French at 0330-0400 and 0430-0500. On the weekends English will air at 0300-0400 and French from 0400-0500. Frequencies weren't available at this writing but check common Radio Canada International frequencies and you should turn it up.

The new name, in English, for Spanish radio is Spanish National Radio's External Service. Suppose we'll have to abbreviate that. SNRES?

Radio Netherlands has made a major change in the times for its broadcasts to North America. The service to Eastern North America now airs at 0030-0125 on 6020, 6165 and 15315—(the latter two via Bonaire) and the broadcast for the west coast is at 0330-0425 on 6165 and 9590, both via Bonaire.

THE MAIL: Mike Yohnicki in Ontario wonders just when the Falkland Islands Broadcasting Service carries programs of its own, as opposed to BBC relays. Actually, most of FIBS's day is produced by British Forces Broadcasting, which has personnel in the Falklands. According to our information, FBIS produces its own programs between 1000 and 1215 and 1730 to 2130. Your best opportunity to hear this would be around 1000.

Tim Johnson of Galesburg, Illinois wonders about a mystery station he hears on 9965 at 0300. This one catches many of the unsuspecting, Tim. It's a clandestine, Radio Caiman, broadcasting to Cuba. Check the clandestine column for more details. Incidently, Tim began SWL'ing just recently and in two months racked up 70 countries logged. He's using a Panasonic RF2900 receiver.

Radio Damascus has QSL'd for Ross W. Comeau of Andover, MA. He notes that a few issues back a reader wondered whether this station was still replying to letters. Seems a few get answered and as many, or more, do not and the only thing to do is to keep on reporting until yours is one of the letters that get attention. That can happen on the first try or not till the 50th!

Ross also notes how much conditions have improved and that's something we wanted to note, too. It you are not listening these days you are missing out on some fantastic reception. The higher frequencies—15 and 17 MHz, for instance—are frequently open around the clock and bring in signals from all over. That held true even during the winter months this past season. Just a couple of years ago, by contrast, these bands pretty much went dead after dark. So get in on the action and enjoy it while it lasts!

Miles Hess (whose address we've misplaced) wonders about the difference between SINPO vs. SINFO and SIO. The difference isn't very large, Miles. SINFO simply changes the P for Propagation into and F for Fading. SIO just drops any reference to Noise (static) or Fading and leaves only a reading on strength, interference and overall quality. Big deal, eh?

Mike Yohnicki returns to register a complaint about the kind of replies to reports being sent out by WCSN (just a no-data acknowledgement card). The reply also notes that the same thing may be put into use for KYOI (and, by extension we may assume it'll be the case for WSHB, too). We agree, but there's not much we can do about it, Mike. When it comes to QSL's, we must take what we get and try to be grateful. It could be worse, like no response at all!

Larry Zamora in Grand Forks, ND provides us with a schedule for Radio For Peace International in Costa Rica. It's 2100-0000 on 21560 weekdays, 0100-0400 weekdays on 13660 and, in Spanish, 1400-1700 weekdays on 7375. The station was also to carry out some irregular weekend tests on 13660 and 21560. Thanks, Larry. By the way, the 13 MHz frequency tends to wander a bit.

Mark Sempek in Omaha, Nebraska has been DX'ing for about a dozen years now. Currently he uses a Yaesu FRG7700 with a longwire antenna outside his apartment window. Welcome, Mark.

Noise is a big problem for Lowell Rogers in Ponca City, OK but he's managed to improve things a bit by installing a trap dipole antenna. Hope you and Kirk Allen have been able to get together by now!

Kevin Story in Midland, Texas needs an address for Caracol-Bogota on 4755. OK. It's Apartado Aereo 9291, Bogota, Colombia. Kevin also wonders why Mongolia never seems to be reported to the column and assumes it must be a very difficult catch. Semi-difficult, Kevin. Your best shot is probably 12015 at 1200-1230 for English then. Note that they're in the listings this month!

Before we move on to the loggings let's remind you about loggings! Yours are welcome each month. Just list them by country with some scissor space between them and your last name and state abbreviation after each. We can also use any spare QSL's you don't need returned as illustration material, along with shack photos of you and your equipment. Station schedules, news clippings about shortwave, station literature and so on are always welcome and very useful. Every contribution is appreciated, even though we can't very often acknowledge them personally.

SWBC Loggings
All Times UTC
English Except As Noted

Afghanistan: R. Afghanistan (via Ashkabad, USSR), 4740 at 0140 w/ix pgm then **Dance Lessons** at 0210 (Kunkel, CA).

Alaska: KNLS, 7365 in CC at 1158 w/callsign given slowly, Chariots of Fire theme & gonzo 1200 (Cushing, KY); 11700 w/50's mx & ID 2005 (Zamora).

Albania: R. Tirana, 9500 at 0630 (Rogers, OK; 9760 at 0330 (Rabinowitz, MI).

Algeria: R. Algiers, 15215 at 1900 w/nx & rock (Giannarelis, Greece).

Angola: R. Nacional, 11955 at 1600 w/multilingual s/on (Gilbert, CA).

Armenian SSR: R. Yerevan, 13645//15455 at 0354-0400 w/nx (Bilyeu, TX); 0354 also on 15180 (London, MN).

Ascension Isl.: BBC relay, 11820 at 2000 (Tuchscherer, WI).

Australia: R. Australia, 9580 at 1430 (Johnson, IL); 15320 in FF at 0700 (Yohnicki, ON); 15380 at 2300 w/nx i Thai (Rogers, OK); 17795 at 0300 (Bilyeu, TX).

VLW9, ABC/Perth, 9610 at 1130 w/ID **This is ABC, regional radio** (Cushing, KY).

Austria: R. Austria Int'l., 9875 at 0030 w/nx & comment (Johnson, IL); 12010 at 1730 w/nx & talk (Giannarelis, Greece).

Belgium: BRT, 5915 at 1830 w/**Brussels Calling** (Giannarelis, Greece); 9925 at 0030 s/on (Gilbert, CA); 17560 at 1330 (Reynolds, MO); 21815 at 1330 (Johnson, IL).

RTBF, 17675 at 1215 in un-ID lang (Northrup).

Benin: ORTB, 4870 in FF at 0629 (Gilbert, CA).

Brazil: R. Globo, 11805 in PP at 2357 (Gilbert)

R. Cultura do Para, 5045 at 0719 w/mx & PP talk (Gilbert, CA).

Radiodifusora Amazonas, 4805 at 0200 w/mx & PP ID (Johnson, IL).

R. Nac. Amazonia, 11780 at 0958 w/PP ID (Johnson, IL).

Radiobras, 11745 at 0200 w/ID & sports features, pop local mx, off 0250 (Zamora, ND).

Bulgaria: R. Safia, 7115 at 0426 (Gilbert, CA); 9700 at 2149 w/folk mx, ID (Zamora, ND).

Burkina Faso: RTV Burkina, 4815 at 0615 w/ID & mx in FF & vernaculars (Johnson, IL).

Canada: CKZN, St. John's, NF on 6160 relaying CBN at 1205 (Decerbo, CT).

CFRX, 6070 at 0030 relaying CFRB Toronto (Johnson, IL).

CFVP Calgary, 6030 at 0809 w/Top 40, ID as **Calgary's All Hit Radio - AM 106** (London, MN).

RCI, 11705 at 2230 s/off (Gilbert, CA).

Chad: Radiodiffusion Nat. Tchadienne, 4905 at 0551 in FF (Gilbert, CA).

Chile: R. Nacional, 15140 at 2230 ID & commentary in SS (Johnson, IL); 0350 in SS w/beauty contest (Mawrer, TX).

China, Peoples Rep. of: PBS Xizang (a/k/a Lhasa, Tibet), 4035 in Tibetan at 1400 (Emerson)

R. Beijing, 11715 at 0310 w/nx, ID (Northrup, CT) via Mali-- Ed; 9770 at 0200 in CC (Decerbo, CT); 9690 at 0308 (Rabinowitz, MI) also via Mali-- Ed.

Colombia: Caracol Bogota, 4755 at 0305 w/ID & sports in SS (Johnson, IL).

La V. del Ria Arauca, 4895 at 0415 w/talk, mx, ID in SS (Rogers, OK).

Caracol Neiva, 4945 at 0734 w/SS mx & talk (Gilbert, CA).

La V. del Cinaruca, 4865 at 0445 w/mx & talks in SS (Gilbert, CA).

R. Nacional, 17885 in SS w/**Musicale** at 2235 (Northrup, CT).

Costa Rica: R. Impaco, 5030 at 0000 in SS (Bilyeu, TX); 5030//6150 in SS at 0217 (Gilbert, CA).

R. for Peace Int'l., 7375 at 0305 (London, MN).

TIFC/Fara del Caribe, 5055 w/ID & talk pgm at 0300 (Rogers, OK).

Cote d'Ivoire (Ivory Coast): RTV Ivoirienne, 6015 at 0700 in FF, was OK till VOA popped up on 6020 at 0725 (Yohnicki, ON).

Cuba: R. Havana Cuba, 6140 at 0430 (Johnson, IL); 9525 on 0750 (Gilbert, CA); 9655 at 0134 (Reynalds, MO); 11800 at 1900 (Bilyeu, TX).

R. Rebelde, 5025 w/baseball game in SS at 0200 (Rogers, OK).

Cyprus: BBC relay, 17740 at 1530 w/**Newsreel** (Gilbert, CA).

Czechoslovakio: R. Prague, 5930 at 0058 w/IS, ID (Reynolds, MO); 0300-0400 (Bilyeu, TX).

Denmark: R. Denmark, 15165 at 1728 w/IS & ID in both EE & Danish (Johnson, IL).

Dominican Rep.: R. Clarin, 11700 at 2233 w/mx & talk in SS (Gilbert, CA); tentative logging w/apparent baseball game in SS at 2035 (Comeau).

E. Germany: RBI, 9620 at 0300 w/nx (Decerbo, CT); 9730 at 2200 (Sempek, NE); here in SS at 0324, into African svc in EE at 0330 (Rabinowitz, MI); 11785 at 0410 (Johnson, IL); 21465 at 1002 w/nx (Giannarelis, Greece); 21540 at 1225 in JJ (Northrup, CT).

Ecuador: R. Antena Libre, Esmeraldes, 3240 at 0245 in SS w/ID 0258, mx & off 0320 (Mierzwinski)

HCJB, 3220 at 0305 in SS (Mierzwinski, PA); 9720//11775 at 0030, & 15270 at 2245 (Johnson, IL); 15155 at 0400 (Sempek, NE).

Egypt: R. Cairo, 9900 at 0315 in AA (Rogers)

England: BBC, 3955 at 0529 (Reynolds, MO); 11775 at 1115, & 15390 at 1915 (Decerbo, CT); 18080 at 1500 w/African svc (Bilyeu, TX).

Equatorial Guinea: R. Nacional, Bata, 5004, tenative lagging at 2127 in SS, presumed nx (Comeau, MA).

Ethiopia: V. of Ethiopia, 7110 at 0400 s/on w/anthem & announcer (Kunkel, CA).

Falkland Isls.: FIBS, 3958 at 0700 w/0730 s/off. BBC World Svc nx & pgms thru Iotsa ham QRM (Yohnicki, ON).

France: RFI, 15365 at 1245 (Johnson, IL); 17620 at 1600 w/African Svc (Decerbo, CT).

French Guiana: RFI relay, 11670 at 0245 w/simultaneous EE/FF, into FF only at 0300 (Rabinowitz, MI).

Finland: R. Finland, 11755 at 0730 w/nx (Rogers, OK)l 15400 at 1440 w/weekend events in Finland (Roupe, WV).

Gabon: Africa #1, 4830 at 0510 w/mx, anncts in FF (Johnson, IL); 11940 in FF w/mx & commercials at 0700 (Yohnicki, ON).

R. Japon (via Africa #1), 21700 at 1500 (Giannarelis, Greece).

Ghana: GBC-2, 3366 at 2250 w/world nx, sports scores, African mx & off w/onthem 2305 (Roupe, WV); GBC-1, 4915 at 0600 w/drums, ID, nx read by YL (Johnson, IL); 0530 w/ID **This is the Ghana Broadcasting Corparation, Radio 1** (Cushing, KY).

Greece: V. of Greece, 7430//9395//9420 at 0345 w/nx & ID (Johnson, IL).

Guam: KTWR, 11650 at 1515 w/DX pgm (Rogers, OK).

KSDA, 11980 at 1600 w/nx, mailbag, DX pgms (Giannarelis, Greece).

Guatemala: TGNA/R. Cultural, 3300 at 0332 w/ID **TGNA in Guatemala City** (Cushing, KY); 1055 w/various rx pgms (Zamora, ND).

R. Tezulutlan, 4835 w/SS ID 0300 (Johnson, IL); 0035 in an Indian language (Rogers, OK).

La V. de Nahuala, 3360 in SS at 0045, ID, mx (Rogers, OK).

R. Kek'chi, 4845 at 0100 in SS w/rx mx, talk, ID (Rogers, OK).

R. Buenas Nuevas, 4800 in SS at 0020 (Rogers).

Hong Kong: BBC relay, 17815 at 0436 w/interviews (Tuchscherer, WI).

Honduros: HRVC/La V. Evangelica, 4820 at 1150 in SS w/mx & ID in SS (Mierzwinski, PA); 0431 in SS (Gilbert, CA).

R. Luz y Vida, 3250 at 0342 w/rx pgm & ID (London, MN); 0140 in SS (Emerson, CO).

Hungary: R. Budapest, 9835 at 1130 w/DX pgm (Giannarelis, Greece); 0150 (Gilbert, CA).

Iceland: ISBS, 9275//17558 strong in Icelandic at 2300 (London, MN); 17558 to s/off 2335 (Rogers)

India: AIR, 9915 at 2207 w/nx, commentary (Sempek, NE); 11620 at 2200 (Emerson, CO); 11810 at 1330 (Johnson, IL).

Indonesia: RRI, Ujung Padang, 4753 at 1330-1500 in Indonesian (Rogers, OK).

Iran: VOIRI, 9022 at 1930 w/nx, comment, mailbag (Giannarelis, Greece); 0400 w/ID, IS, Farsi (Johnson, IL); 15084 at 0456 in (presumed) Farsi (Gilbert, CA).

Iraq: R. Baghdad, 9515 at 0345 (London, MN); 9770 at 2030 in GG w/ID, middle east mx (Roupe)

Israel: V. of Israel, 7465//9435 at 0200 (Rabinowitz, MI); 9010 at 0430 (presumed) Hebrew, also 9385//9485 at 0000, & 9435//11585 at 0500 w/EE nx into FF 0515 (Johnson, IL).

Italy: RAI, 9575 at 0100 w/nx read by YL (Gilbert, CA).

Japan: R. Japan, 5960 (via Canada) at 0126 & 0300 (Reynolds, MO); 9645 (via Gabon) at 0318 (Rabinowitz, MI); 17810 at 2300 (Decerbo, CT) from Yamata, Japan-- Ed..

Jordon: R. Jordan, 11955 at 0805-0845 w/YL annct, paps (Johnson, IL); 0605 in AA (Gilbert, CA); 15435 at 2310 w/rx pgm (Tuchscherer, WI).

Kampuchea: V. of People of Kampuchea, 11938 at 0000 w/IS & talk; again at 0030-0045 in Thai (Rogers, OK).

Kuwait: R. Kuwait, 11655 at 1830 w/ID, time, nx, pops (Roupe, WV); 11665 at 1925 w/U.S. & French pops (Decerbo, CT); 15345//15495 at 0457 in AA (Gilbert, CA); 15505 at 1845 in AA (Mierzwinski, PA).

Lesotho: R. Lesotho, 4800 at 0345 w/mx, talk in vernaculars (Gilbert, CA); 0345-0415 (Rogers, OK).

BBC relay, 3255 at 0415 w/nx (Rogers, OK).

Liberia: VOA relay, 3990 at 0350 w/mx, nx (Rogers, OK).

ELWA, 4760 at 2210 w/nx (Comeau, MA); 11955 at 0730 w/mx & ID (Gilbert, CA).

Libya: R. Jamahiriyah, 15415//15450 at 0300 in AA w/ID (Rogers, OK); 15415 at 0300 (Johnson, IL).

Lithuanian SSR: R. Vilnius, 7400 at 2300-2330. Also //9765//13645//15180//15455 but poor on these (Mowrer, TX).

Luxembourg: R. Luxembourg, 6090 at 0000 w/ID & start of 3 hr pops pgm (Johnson, IL); 0718-0730 in GG (Gilbert, CA).

Madagascar: RTM, 5010 w/IS at 0154, anthem, ID in FF 0200, mx till 0230 fade (Kunkel, CA).

Mali: R. Beijing relay, 11715 at 0340 w/3rd World pgm. Off 0357 (Zamora, ND).

Malaysia: R. Malaysia, Kuching, Sarawak, 4950 at 1515 (Emerson, CO). QSL's? No special problem-- Ed.

Abbreviations Used in Listening Post

AA	Arabic
BC	Broadcast/ing
CC	Chinese
EE	English
FF	French
GG	German
ID	Identification
IS	Interval Signal
JJ	Japanese
mx	Music
NA	North America/n
nx	News
OM	Male
pgm	Program
PP	Portuguese
RR	Russian
rx	Religion/ious
SA	South America/n
SS	Spanish
UTC	Coordinated Universal Time (ex-GMT)
v	Frequency varies
w/	With
WX	Weather
YL	Female
//	Parallel frequencies

Malta: V. of the Mediterranean, 11925 at 1423 w/**Nice & Easy 45** (Giannarelis, Greece).

DW relay, 11865 at 0059 w/relay site ID (Johnsan, IL).

Mexico: XEQQ/La Q Mexicana, 9680 in SS at 1000. Mx & ID as **Super Q** (Gilbert, CA).

Monaco: TWR, 7105 at 0729-0800 w/tx pgms (Johnson, IL); 9435 at 1420 in un-ID lang (Emersan, CO); 12025 at 1515 in Kazakh (Giannarelis, Greece).

Mongolia: R. Ulan Bator, 15305 at 1445-1506 w/IS, ID & nx (Tuchscherer, WI).

Morocco: RTVM, 15105 in AA at 0000 (Rogers, OK); 15105//15335 in AA at 2354 w/mx, ID (Roupe)

VOA relay, 11925 at 1600 in Greek (Giannarelis)

Netherlands: R. Netherlands, 11930, 11930 at 0635 (Johnson, IL); 15560 (via Madagascar relay) at 2044 w/nx (Decerbo, CT).

Netherlands Antilles: R. Netherlands relay, 6165 at 0230 (Reynolds, MO); 17605//21685 at 1830 (Bilyeu, TX).

TWR w/a.m. pgm on 11810//15345 at 1120 (Decerbo, CT); 1249 ID, **Focus on the Family** (Zamora, ND).

New Zealand: R. New Zealand, 9850 at 1035 w/big band mx, nx (Comeau, MA); 9850//11780 at 0900 w/ID, nx, mx, rx pgm (Johnson, IL); 15150 at 1755 w/bird IS, time check at s/on (Ternahan, WA); 17705 at 0305 (Rogers, OK); at 0618 (Gilbert, CA).

Nicaragua: V. of Nicaragua, 6100 at 0440 (Mowrer, TX).

Nigeria: V. of Nigeria, 7255 at 0502-0530 in W. African svc w/pops (Tuchscherer, WI); 0540 annc't **That ends the world news that's coming to you from the Voice of Nigeria** (Cushing, KY).

N. Korea: R. Pyongyang, 6576 at 2000 w/nx, mx, talks (Giannarelis, Greece); 11735 at 2300 w/commentary & patriotic mx (Rabinowitz, MI); 15115 at 0000 (Emerson, CO).

N. Marianas: KYOI, 9670 at 1510-1530 s/off in Burmese but clear mention of **Radio Saipan;** 11900 at 1450-1530 nx & pops (Johnson, IL).

Norway: R. Norway, 11845 at 2344 in NN but w/EE ID (Gilbert, CA); 15310 at 1700-1730 w/**Science Notebook** (Bilyeu, TX); 21705 at 1600 to Africa (Johnson, IL).

Oman: R. Oman, 11800 at 2035 in AA. Tentative logging (Johnson, IL).

Pakistan: R. Pakistan, 15606 at 1345 w/mx & nx, possib in Urdu (Johnson, IL).

Regional sites hrd: Islamabad, 5090 at 0050, & 4980 at 0050 relaying R. Azad Kashmir, Quetta, 4880 at 0055; & tentative Rawalpindi, 3995 at 0130 (Kunkel, CA). Presume no EE on these-- Ed.

Peru: R. Tayabamba, 3290 at 0300 w/mx, ID in SS (Rogers, OK).

R. Atlantida, Iquitos, 4790 at 0926 in SS w/mx & many **Atlantida** ID's (Comeau, MA).

R. Ancash, 4990 at 0450 in SS (Gilbert, CA).

R. Andina, Huancayo, 4996 at 01215 in SS (Emerson, CO).

Philippines: V. Veritas Asia, 9540//9640 in several Asian lang 1335-1500 w/EE ID's (Mowrer, TX); 15465 at 1508, into un-ID lang 1530 (Comeau).

FEBC R. Interna't'l., 11850 at 0800 s/on (Gilbert)

Portugal: R. Portugal, 9635 at 0300 s/pn in PP (Gilbert, CA); also 9600//9705 at 2201 (Roupe, WV); 9705 at 0244 w/**Music of Portugal** (Comeau, MA).

Poland: R. Polonia, 7270 at 2331 (Comeau, MA).

Romania: R. Bucharest, 9510//9570 at 0400 (Decerbo, CT); 11940 at 1500 (Giannarelis, Greece); 21550 at 1335 to Europe. Off 1356 (Zamora, ND).

Rwanda: DW relay, 11965 at 1500 (Johnson, IL).

Saudi Arabia: BSKSA, 15060 at 0520, presumed in Turkish (Gilbert, CA).

Seychelles: FEBA, 11810 at 1737 w/tx pgm, ID **This is FEBA Radio** at 1803 (Comeau, MA); 15325 at 1354 in Urdu, ID in EE 1359 (Roupe, WV).

Singapore: SBC Radio 1, 11940 at 1603 w/nx (Gilbert, CA).

Solomon Isls.: SIBC, 5020 in EE & Pidgin at 0630 & 1100 (Rogers, OK); 9545 at 0711 in Pidgin (Gilbert, CA).

S. Africa, Rep. of: R. RSA, 9580//9615//11760 at 0158 w/IS (Reynolds, MO); 15365 at 1800-2100 to Ireland & U.K. (Yohnicki, ON); 21535//25790 at 1500 (Johnson, IL).

Radio 5, 4880 at 0330 (Mierzwinski, PA).

R. Orange, 3215 at 0331-0401 commentary, standards, commercials, time check (Mierzwinski).

S. Korea: R. Korea, 9750 w/commentary & **Feature Letters** at 1428 (Mowrer, TX); 9870 at 1700 s/on (Gilbert, CA); 15575 at 0245 w/nx (Rogers)

Spain: Spanish Foreign R., 9360 at 0306 (Rabinowitz, MI); 9630 at 0535 (Reynolds, MO); 12035 at 1510 in SS, & 15395 at 1718 in AA (Giannarelis, Greece); 11790 at 1912 (Roupe, WV); 17895 at 2025 in SS (Decerbo, CT).

Sri Lanka: VOA relay, 15250 w/nx 2000 (Rogers).

Sweden: R. Sweden, 7265 at 1800 w/nx, SCDX (Giannarelis, Greece); 9695 at 0150 in Swedish (Mowrer, TX); 11705 in SS at 2230 after RCI leaves (Gilbert, CA); 21615 at 1428, multi-lang ID (Johnson, IL).

Switzerland: SRI on 9885 at 0310 in FF (Gilbert, CA); 15570 at 1100, & 21630 at 1530 (Giannarelis).

Syria: R. Damascus, 9950 in AA on 2036 (Zamora, ND); 12085 at 1915 in FF (Gilbert, CA); 200 s/on in EE (Jahnsan, IL).

Tahiti: R. Tahiti, 11825 at 0634 w/island mx (Gilbert, CA) Presume in Tahitian or FF-- Ed; 15171 in Tahitian at 0400-0500 (Rogers, OK).

Taiwan: VOFC, 5985 (via WYFR) at 0752 w/CC lessons (Gilbert, CA); 9955 (direct) at 2200 (Giannarelis, Greece); 11805 via WYFR at 2250 w/CC lesson (Bilyeu, TX).

Thailand: R. Thailand, 9655 at 1359-1430 in JJ, ID's in Thai, anthem & into JJ (Rogers, OK).

Togo: RTT Lome, 5047 at 0549 in FF (Gilbert)

Tunisia: RTT Tunis, 7475 at 2310 in AA to 2328 close (Roupe, WV); 11550 at 0725 in AA (Mierzwinski, PA).

Turkey: V. of Turkey, 9455 at 0405 w/mx, press review (Sempek, NE).

Ukranian SSR: R. Kiev, 7400 at 0030 w/NA (Mowrer, TX); 0300-0330 (Bilyeu, TX).

Unidentifieds: 4795 at 0232 in presumed RR (Comeau, MA).

7400, presumed USSR in un-ID svc at 0140, into Radiostansiya Rodina at 0200 (Rabinowitz, MI).

21460 w/drums IS at 1555 & s/on in FF 1600 (London, MN). My guess is RTB Belgium-- Ed.

U.A.E.: UAE Radio, Dubai, 11940 at 0336 w/nx (Gilbert, CA); 17865 at 1600 ending EE & into AA (Decerbo, CT).

V. of the UAE, Abu Dhabi, 11965 at 2200 (London, MN); 11970 at 2200 (Sempek, NE); 13605 at 1822 in AA (Roupe, WV).

U.S.A.: KJES, Vado, NM, 15140 at 1700 testing (Emerson, CO).

WCSN, 9850 at 0017 (Giannarelis, Greece); 11680 at 2030 (Decerbo, CT).

WHRI, 7520 at 0316 w/tx mx (Sempek, NE).

V. of the OAS, 11830 at 0012 in SS, classical guitar, ID & off 0030 (Roupe, WV).

VOA, 15205 at 0005 w/nx (Gilbert, CA).

AFRTS, 13455 SSB feeder w/nx at 1900 (Comeau, MA).

U.S.S.R.: R. Moscow, 11840 (proib via Havana-Ed.) at 1333 (Reynolds, MO); 15475 at 1510 (Decerbo, CT).

Radiostansiya Rodina, 7400 in RR at 0200; //9105 SSB feeder (Rabinowitz, MI).

Dushanbe, Tadzhik SSR, 4635 at 0147 in RR (Kunkel, CA); 21635 w/R. Moscow from 0153 (Tuchscherer, WI).

Ashkabad R., 4740 at 0130; 4940 at 0130; 6085 at 0150 (Kunkel, CA).

Alma Ata, Kazakh, 9610 w/R. Moscow at 0117 in SS (Tuchscherer, WI).

Frunze, Kirghiz, 9650 in SS at 0123 w/R. Moscow (Tuchscherer, WI).

Uzbek SSR: R. Tashkent, 9540 at 1208 w/nx, commentary (Comeau, MA); 11785 at 1200, ID & nx (Johnson, IL).

Vatican: Vatican R., 6250 at 0300 s/on in SS (Lonson, MN); 9605 at 0050 w/current affairs pgm; 11715 at 0650 w/tx svcs in Latin (Johnson, IL); 11960 at 1505 (Giannarelis, Greece).

Venezuela: R. Maturin, 5040 at 0200 in SS (Rogers, OK).

Ecos del Torbes, 4980 at 0440 in SS (Rogers, OK)

La V. de Carabobo, 4780 in SS at 0300 (Rogers)

R. Valera, 4840 in SS at 0330 (Rogers, OK).

R. Mundial Bolivar, 4770 in SS 0200 (Rogers, OK)

R. Rumbos, 4970//9660 at 0515 w/ID in SS, mx (Rogers, OK).

YVTO time sigs, 6100 at 0950 (Johnson, IL).

R. Tachira, 4830 at 0300 w/ID in SS, mx (Johnson, IL).

R. Capital, 4850 at 0450 w/mx & talk in SS, anthem & off (Gilbert, CA).

Vietnam: V. of Vietnam, 9840 at 1346, but better on 15010 at 1350 (Comeau, MA); 10010 at 1615 (Rogers, OK).

W. Germany: DW, 6085 w/ID 0150 (Johnson, IL); 9605 at 0305 (Sempek, NE); 9735 at 0140 (Reynolds, MO); 17810 at 1500 (Bilyeu, TX).

RFE, 15115 at 1500 s/on in Romanian; 17725 in either Czech or Bulgarian at 1500 (Decerbo, CT); 21510//21530 at 1230 in an E. European lang (Northrup, CT).

Yemen Arab Rep.: R. Sana'a, 9779 in AA 0300-0400 (Rogers, OK).

Yugoslavia: R. Yugoslavia, 9630 at 0123; 11735 in RR at 1530 (Gilbert, CA); 9660 at 2225 (Northrup, CT).

Zambia: R. Zambia, 4910 at 0405 w/nx (Gilbert).

Many thanks to the following who made it possible: Keith Cushing, Louisville, KY; Rob Mowrer, San Angelo, TX; Sander J. Rabinowitz, Farmington Hills, MI; Roland Kunkel, Morgan Hill, CA; Cliff J. Reynolds, Hazelwood, MO; Mike Decerbo, Trumbull, CT; Mark Northrup, Danbury, CT; Frank Mierzwinski, Mt. Penn, PA; Warren L. Gilbert, Sherman Oaks, CA; Gary Emerson, Golden, CO; Tim Johnson, Galesburg, IL; Lowell Rogers, Ponca City, OK; Mike Yohnicki, London, ONT; Aris Giannarelis, Athens, Greece; Mike Sempek, Omaha, NE; Benjamin Bilyeu, Lamesa, TX; Phil Ternahan, Oak Harbor, WA; Larry Zamora, Grand Forks, ND; John Tuchscherer, Neenah, WI; Ross W. Comeau, Andover, MA; Chris London, Princeton, NM and Lloyd Roupe, Knob Fork, WV.

Until next month, good listening! PC

EMERGENCY
COMMUNICATIONS FOR SURVIVAL

BY GORDON WEST, WB6NOA

Mobile H.F. Installation Tips

It's easy to set up a mobile high frequency worldwide system for amateur radio, CAP, Coast Guard, or MARS operation. It's also easy to bungle the job, too, by trying to take shortcuts in getting your gear on the air. For your emergency command post, or simply your pleasure ham radio station set-up, to perform well, follow these suggestions to the letter!

DC power source. 100-watt output ham sets cannot be powered from the fuse block of your mobile home, or car. You must go through the firewall to the battery. Attempting to use the fuse block will cause transmitter distortion, and could also result in a wiring overload fire.

You can usually spot a grommet covering up a tiny hole through the fire wall. Run a pair of #6 wires, red and black, through the fire wall, along the side of the engine compartment, to your battery.

Fuse both leads at the battery. In-line fuses are available at auto parts stores. Fusing at the battery posts will insure a safe supply of voltage to your transceiver.

Join the existing power cable from your H.F. transceiver to your new wires, and your 12-volt power requirements are set.

If you are only planning on running a high frequency 25-watt, 10-meter transceiver, such as the new Radio Shack or Uniden "President" sets, the fuse block will probably be fine. These set draw *under* 10 amps, and you can usually pick up a handy voltage source, including the fuse, below the dash.

Grounding. Use flat braid or copper foil to ground the chassis of your H.F. 3-30 MHz set to your vehicle chassis. Look around under the rug, and try to find a self-tapping screw holding something together. You can usually tie in a ground strap to this connection. Grounding of your equipment chassis cleans up some noise interference, and it also keeps your set from "biting you" with R.F. from the nearby antenna.

High frequency (3-30 MHz) antennas. Single-band whips work nicely for H.F. operation. Here are some of my favorites:

Swan—if you can find them at a swap meet!

Hustler—center-load coil (Texas)

Mobile Mark—white fiberglass helical top-load (Illinois)

Valor—fiberglass helical & stainless steel

Spider—multi-band mobile (California) whip tip (Ohio)

Autotenna—multi-band mobile (New Mexico)

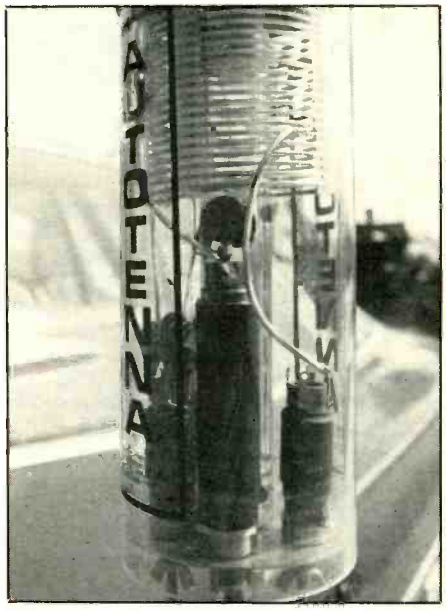
Which one of these antennas performs the best for long range high frequency SSB communications? They all do! However, different vehicle mounting may favor one antenna brand over another. I have seen 1 brand type antenna work great on bumper mounts, but not so hot on trunk-lip mounts. Replace the trunk-lip antenna with another type antenna, and it works better up there—but not so hot on the bumper!

Valor antennas work fine on mobile home mirror mounts, but the slightly shorter Mobile Mark antennas hold up better if you encounter a tree branch. And for multi-band operation without ever having to go out and change a whip, the Spider antennas (Canoga Park, California) are an excellent choice.

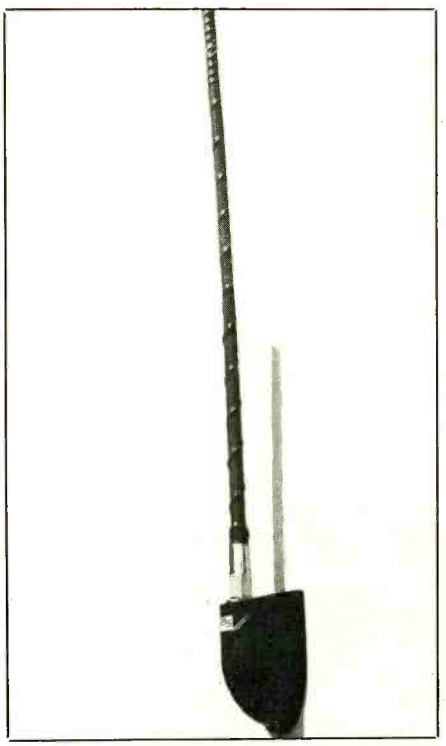
Antenna mounting positions mean all the difference in the world in good signals being heard loud and clear. Putting an antenna down too low on a motorhome usually leads to high SWR, almost no radiation, and a H.F. transceiver that gets hot as a firecracker.

Magnetic mounts usually don't work at highway speeds—H.F. antennas are simply too long to be held on with a mag mount. However, trunk-lip mounts and mirror mounts used by CBers work quite effectively.

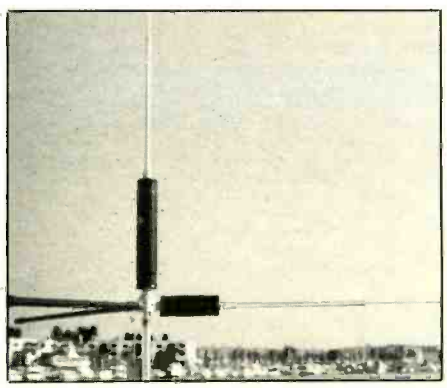
Testing the Autotenna.



We got excellent results from the test on the Autotenna.



Side-mounted 10m/11m mobile whip.



4-Band mobile antenna.

Always seal-up exposed connections against water damage.

All H.F. mobile antennas use a 3/8th 24-thread, common with CB mounts. CBers have no shortage of adaptable mounts for H.F. operation. Next time you're in a CB store, look for the "Fire Stick" brand of mounts, and get set for some truly innovative designs.

Final tuning. Today's H.F. transceivers are all solid state, so you must tune the antenna to the set. This is done with the set's built-in antenna tuner *out* of circuit. First optimize the antenna, and then polish it up with the built-in tuner, if your set has one. Remember, the built-in antenna tuners inside H.F. transceivers are really more like trimmers, as opposed to long wire automatic couplers. They won't tune up anything and everything—the H.F. whip must be very close to resonance for the antenna tuner to do its job effectively.

If the antennas don't load up, don't blame the whip. Rather, take a look at your whip placement. If the bottom one-third of the whip is right next to the metal of your vehicle, loading gets eratic.

For the best possible combination of whips for your H.F. mobile installation, experiment. Find someone that has a stock of many different brands of whips, and see which one works the best on your vehicle. You will usually find that the taller the whip, the better the performance. Just like CB antennas, you *can* get a perfectly flat SWR from those squatty little 1-foot loaded CB whips as you can from a 102-inch full length CB whip. Which one will perform better? Obviously, the unloaded quarterwave whip.

So, go for the longest whip, and you're bound to put out a better signal than anything shorter.

You can work the world with a good H.F. mobile set-up. Just be sure to install it right.

TELEPHONES ENROUTE

BY TOM KNEITEL, K2AES

WHAT'S HAPPENING WITH CELLULAR, MARINE & MOBILE PHONES

"Hey, Unka Tommy," it says in a FAX message I received last week from J.N. Rogers, of Vermillion, LA, "all anybody ever reads about cellular phone service is what's good about it. Why don't you break the ice and tell your readers some of the most oft-encountered user squawks; it seems to be a topic that everybody has tactfully avoided. Obviously there must be common complaints. Be the first to tell what they are."

There *are* complaints that at least some cellular users complain about, although they don't appear to be universal. Cellular coverage doesn't exist in all cities yet, so that's an obvious complaint of those who would like to have CMT's, and also by those who already own them and happen to be driving through non-service areas. Another complaint is the nuisance of making "roamer" arrangements in many areas; "roamer" arrangements meaning establishing your temporary ability to use your CMT while you're visiting or transiting distant areas where your own local cellular service has no reciprocal agreements.

Then, there are occasional user grumbles about static, dead spots, and fade-outs (often called *breakup*). Large cities, especially, are prone to having certain areas where the CMT goes dead in the middle of a call, and when it comes back on it's hung up on your call. Local users get to know these trouble spots, sometimes even comparing or exchanging news of them when encountering fellow CMT users when they stop for gas.

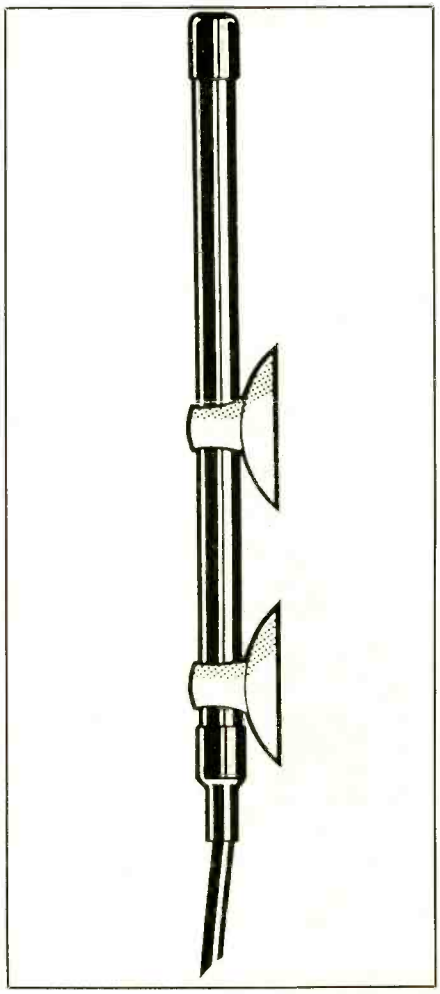
Cellular service suppliers try to eliminate dead spots, however they also point out that customers eager to save a buck frequently tend to have inferior or inadequate transceivers or antennas, installed poorly. They point out that problems telephone users will stoically accept on landline phones become intolerable to cellular users, probably because of the higher fees.

Different regional coverage problems have been vexing. When the BellSouth system went on line, it went to war with the lob-lolly pine, the needles of which caused significant reception problems, a phenomenon known in the industry as green-leaf attenuation. To overcome it, BellSouth added cell sites (at $1-million each) and reoriented antennas.

Further north, cellular signals from Toronto skimmed across Lake Erie and richocheted off a cliff to wreak havoc with service in Buffalo. Some customers were getting billed for phantom international calls. The two companies involved ultimately worked out the problem.

U.S. West Cellular recently opened up two new service areas in Arizona.

Cellular One of Nashville now offers a cellular backup feature for central alarm system installations.



A neat little CMT antenna with suction-cup mounts just arrived from England.

Nokia's new P-30 handheld CMT.

Still, many coverage problems do become, as claimed, created by the consumers themselves when they try too hard to save money. In some instances, poorly informed sales personnel don't understand the importance of the antenna. Installers may compound the problem by mounting the antenna below the roof-line of the vehicle, resulting in a distorted and directional signal pattern when an omnidirectional pattern is what's needed for optimum service. As a result, the computer that switches the signals between cells goes crazy trying to serve the customer because it can't figure out what to do.

This points out the wisdom of purchasing cellular equipment at, and having it installed by, professional communications dealers as

opposed to department or discount stores, office supply or home appliance dealers, and all of the many other clowns now offering to sell and install CMT's. Whom would you rather buy a CMT from, a professional communications dealer, or someone who mostly sells electric ranges, VCR's, camcorders, washing machines, and toaster ovens, but will be happy to show you any CMT he's got on display? You figure it out.

These are things that, like the emperor's clothes, aren't generally brought up in discussions of CMT's. CMT equipment and those companies offering cellular services are constantly fine tuning everything and expanding coverage areas, and a CMT is a useful and convenient consumer communications tool. Nevertheless, understanding the most commonly encountered gripes of CMT users lets you know what they are and how some can be easily avoided.

Service Notes

Racal Telecom has joined a consortium formed by car manufacturer BMW, Bell-South, and others to bid for a license to operate a cellular service in West Germany. The West German government has invited companies and groups to bid for a license to establish a national cellular network in competition with a service to be established by the German PTT, Bundespost. Both nets, which are due to be operational in the early 1990's, will be based on the new digital standard that has been developed by the Special Mobile Group of the European Conference of Posts and Telecommunications and will form part of the pan-European cellular network.

Two major cell sites have recently been opened in the Phoenix, AZ area by U.S. West Cellular. One site improves service in the vicinity of Tatum Blvd. and Lincoln Ave. The other is in Mesa and will improve service from Stapley Drive to Country Club Rd., and from the Superstition Freeway north to the Salt River.

Nokia-Mobira, Inc., has secured a contract to deliver its CMT's for service in Caracas, Venezuela. This nation uses the North American standard for cellular phones (AMPS), so the equipment is identical to that sold in the U.S.A. and Canada.

Cellular One of Nashville, in conjunction with ADS (a local security systems company), has developed a cellular security backup system. The Cellular One Emergency Phone System/ADS Security Interface provides a virtually tamper-proof backup to conventional security systems connected to a central alarm monitor via landline telephone. Should the landline fail (or be deliberately cut), the system automatically selects the cellular option to transmit the alarm. When line integrity is restored, the system switches itself back to that line. The cellular hardware in this system is a Motorola handheld that operates on AC and batteries, and still retains its ability to be used to place and receive standard cellular phone calls.

Shintom offers the CM-7600 with an optional Lavaliere microphone.

Available to Cellular One's subscribers in Nashville, TN, the security interface is about $295, and the emergency phone system's price is about $950. There's a $20 per month service charge, and airtime is $1 per minute.

Product News

An English-made cellular antenna is now available here. It's the Model PA-010 Cellmaster Stick On Antenna, and all-black mobile job that hangs on to any smooth nonmetallic surface by measn of suction cups. It has a 25 watt power rating and a VSWR of less than 1.5:1 over its entire bandwidth of 850 to 970 MHz, thus making it suited for CMT, plus the 902 to 928 MHz ham band, as well as other services in this region of the spectrum. Manufacturer claims an approximate gain of 3 dB. The antenna is 6 inches in height and comes with 13 ft. of low loss 50 ohm coaxial cable. The antenna, which is available through local dealers, is distributed to dealers through Les Wallen USA, 19 Aero Drive, Amherst, NY 14225. Dealer inquiries are invited. Contact Jerry Hirsch at the company.

The Nokia P-30 is a new multi-featured handheld CMT from Nokia-Mobira. This unit has a 40-number memory, 15-hours of standby time (1.2 hours of talk time), A/B system select, scratch pad, and electronic lock. It weighs only 25 ounces. One of the things we liked about the P-30 was its battery saving feature whereby the LED display shuts itself off after 15 seconds of inactivity (pressing any key restores the display). The entire phone can be programmed for automatic shut off.

More info on the P-30 from Nokia-Mobira Inc., 2300 Tall Pines Drive, Suite 100, Largo, FL 34641, or circle 107 on our Readers' Service.

The CM-7600 is a new full-featured hands-free mobile unit from Shintom. It's got a nifty 39-number (each up to 32 digits) scratch pad memory. Although Shintom has had wide cellular experience in overseas markets, this is the company's first entry into the North American market. The CM-7600 carries a MSRP if $799.95, which makes it immediately appealing. A second model, a handheld unit, came on the market this past spring.

More information on the CM-7600 from Shintom West Corporation of America, 20435 South Western Avenue, Torrance, CA 90501, or circle 108 on our Readers' Service.

We are always pleased to receive your questions, comments, and experiences relating to cellular phones. Also, we're anxious to hear from cellular manufacturers as well as dealers, installers, service techs, and service suppliers with their thoughts, suggestions, and opinions. PC

PIRATES DEN

FOCUS ON FREE RADIO BROADCASTING

BY EDWARD TEACH

A new, local pirate station in the Pittsburg, Pennsylvania area is **WRBM**—Radio Blue Monday, which is usually on the air only ten to 12 minutes Monday mornings, beginning at about 12:01 AM EST. The station was operating on both 102.1 FM and 640 AM, but only the AM frequency was expected to be used during the summer months. After that, station operators weren't sure if the FM would return or not. The station's format is "eclectic/progressive AOR featuring local talent." If you are in the area and happen to catch this one the station's address is P.O. Box 81921, Pittsburgh, PA 15217.

Another local FM pirate, **New World Radio**, advises that they have discontinued broadcasting, at least for the time being, because "too many of the wrong people in this area know about our station." The station, which is apparently in Washington State, says it's considering a frequency change but that probably means only a change to another FM frequency and not a move to shortwave and a more widespread possible audience.

WKND was heard by Jim Kalach in Connecticut from 0358 to 0404 UTC on 6243. Programming was contemporary rock and a comedy song but around 0405 the station began cutting in and out and was soon lost for good so it was apparently having technical difficulties. I don't believe an address exists for the station, Jim.

Dan Spooner of Massachusetts says he heard **WKMB** on 6240 at 0552 to 0650, but I'm wondering if it wasn't **WKND** that Dan had, since the station was sloganeering as "commercial free pirate *weekend* radio. Your radio knows . . ." "WKND" is taken from "weekend" and would certainly be easily mistaken for "WKMB." The format was 60's and 70's music, 0650 close with no announcer name given.

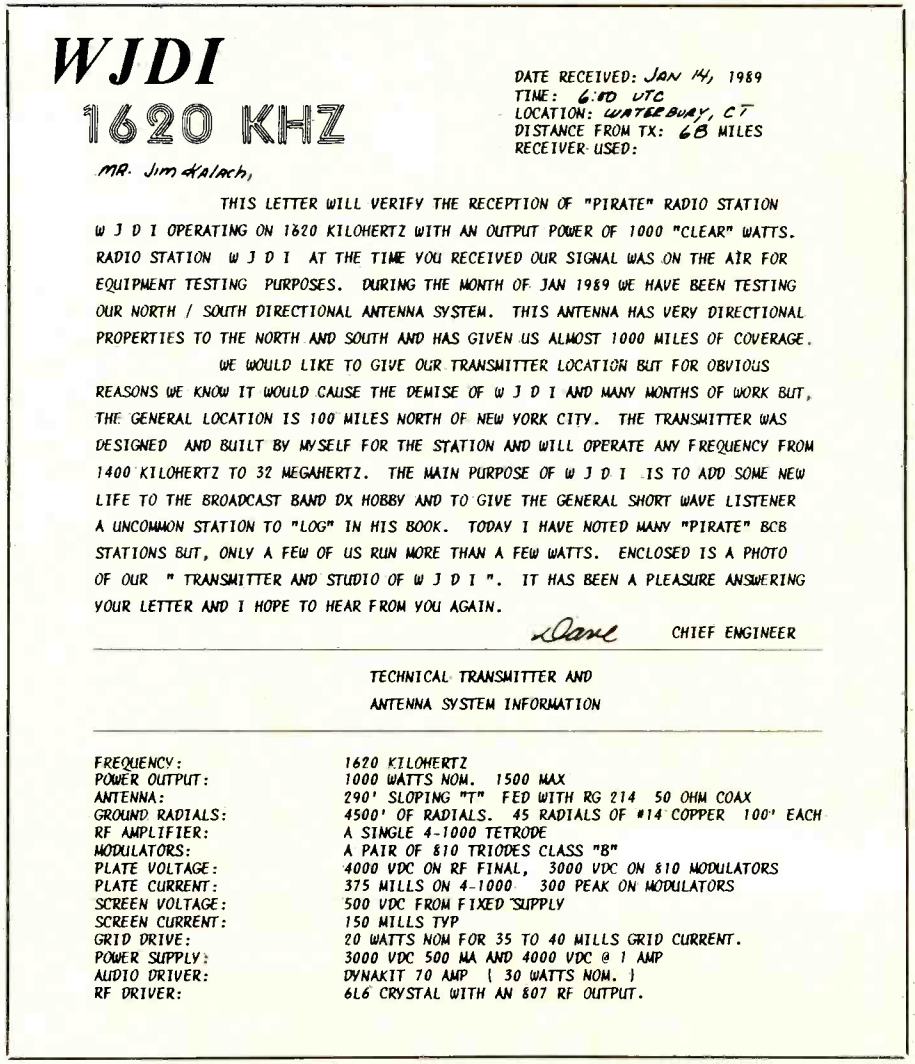
Jim Hayes in New York heard **WJDI** on 1620 kHz at 0500 Saturday and Sunday and had a quick QSL from the station, as did several other reporters. Jim says the station's reply indicated that it has "been under siege from the FCC" but that it expected to be back on the air running at a power of anywhere between 3,000 and 5,000 watts—as Jim notes, an extraordinary power level for a pirate station. Barry Bowan in Pennsylvania had the station using such slogans as "The Voice of New York," "Bootleg of New York" and "Bootleg of the East Coast." He notes that they give out an address of Box 142, Cottekill, NY 12419.

Several readers sent copies of the WJDI QSL which has a great deal of information about the station. The transmitter, which is a homebrew, can operate anywhere between 1400 kHz and 32 MHz. Power was recently increased to 1,500 watts. The antenna is a north/south directional arrangement which, the station says, "provides almost 1,000 miles of coverage." The station's "general location" is listed as 100 miles north of New York City. Chief Engineer "Dave," who built the transmitter, says the main purpose of the station is to "add some new life to the broadcast band DX hobby and give the general shortwave listener an uncommon station to 'log' in his book."

The elusive **Voice of Tomorrow** was logged by Barry Rowan in Pennsylvania from 2133 to 2200 on 6240 with, says Barry "one of their usual racist lectures." He also heard a tape that contained the statement ". . . everyday we are sending more of our boys to Vietnam . . ." and wonders if the station is known for playing tapes which are that old. They were still announcing the Box 314, Clackamas, Oregon 97015 address. This station makes very infrequent appearances of late and, to my knowledge, hasn't responded to any mail in quite a long while.

Larry Sven of New York heard **WHOT** on 91.5 from 1200-1330. The format was 60's pop hits along with live renditions of Beatles tunes sung by someone named Joanne and accompanied by an unidentified guitar player. The station noted they were broadcasting from Brooklyn and Larry thinks they may have run all night on this occasion.

James W. Parker, who is with the US Air Force in Sicily, got a log on **Radio Caroline** on 6215 til he tuned out at 0045. He



WJDI
1620 KHZ

DATE RECEIVED: JAN 14, 1989
TIME: 6:50 UTC
LOCATION: WATERBURY, CT
DISTANCE FROM TX: 68 MILES
RECEIVER USED:

MR. Jim Kalach,

THIS LETTER WILL VERIFY THE RECEPTION OF "PIRATE" RADIO STATION W J D I OPERATING ON 1620 KILOHERTZ WITH AN OUTPUT POWER OF 1000 "CLEAR" WATTS. RADIO STATION W J D I AT THE TIME YOU RECEIVED OUR SIGNAL WAS ON THE AIR FOR EQUIPMENT TESTING PURPOSES. DURING THE MONTH OF JAN 1989 WE HAVE BEEN TESTING OUR NORTH / SOUTH DIRECTIONAL ANTENNA SYSTEM. THIS ANTENNA HAS VERY DIRECTIONAL PROPERTIES TO THE NORTH AND SOUTH AND HAS GIVEN US ALMOST 1000 MILES OF COVERAGE.

WE WOULD LIKE TO GIVE OUR TRANSMITTER LOCATION BUT FOR OBVIOUS REASONS WE KNOW IT WOULD CAUSE THE DEMISE OF W J D I AND MANY MONTHS OF WORK BUT, THE GENERAL LOCATION IS 100 MILES NORTH OF NEW YORK CITY. THE TRANSMITTER WAS DESIGNED AND BUILT BY MYSELF FOR THE STATION AND WILL OPERATE ANY FREQUENCY FROM 1400 KILOHERTZ TO 32 MEGAHERTZ. THE MAIN PURPOSE OF W J D I IS TO ADD SOME NEW LIFE TO THE BROADCAST BAND DX HOBBY AND TO GIVE THE GENERAL SHORT WAVE LISTENER A UNCOMMON STATION TO "LOG" IN HIS BOOK. TODAY I HAVE NOTED MANY "PIRATE" BCB STATIONS BUT, ONLY A FEW OF US RUN MORE THAN A FEW WATTS. ENCLOSED IS A PHOTO OF OUR " TRANSMITTER AND STUDIO OF W J D I ". IT HAS BEEN A PLEASURE ANSWERING YOUR LETTER AND I HOPE TO HEAR FROM YOU AGAIN.

Dave CHIEF ENGINEER

TECHNICAL TRANSMITTER AND
ANTENNA SYSTEM INFORMATION

FREQUENCY:	1620 KILOHERTZ
POWER OUTPUT:	1000 WATTS NOM. 1500 MAX
ANTENNA:	290' SLOPING "T" FED WITH RG 214 50 OHM COAX
GROUND RADIALS:	4500' OF RADIALS. 45 RADIALS OF #14 COPPER 100' EACH
RF AMPLIFIER:	A SINGLE 4-1000 TETRODE
MODULATORS:	A PAIR OF 810 TRIODES CLASS "B"
PLATE VOLTAGE:	4000 VDC ON RF FINAL, 3000 VDC ON 810 MODULATORS
PLATE CURRENT:	375 MILLS ON 4-1000 300 PEAK ON MODULATORS
SCREEN VOLTAGE:	500 VDC FROM FIXED SUPPLY
SCREEN CURRENT:	150 MILLS TYP
GRID DRIVE:	20 WATTS NOM FOR 35 TO 40 MILLS GRID CURRENT.
POWER SUPPLY:	3000 VDC 500 MA AND 4000 VDC @ 1 AMP
AUDIO DRIVER:	DYNAKIT 70 AMP (30 WATTS NOM.)
RF DRIVER:	6L6 CRYSTAL WITH AN 807 RF OUTPUT.

This full page, info-filled QSL from WJDI was received by Jim Kalach of Waterbury, CT.

noted some commercials for the Canadian lottery. Bob Bohn in Ohio also took a log on the station and wonders about an address. The most recent one I have is P.O. Box 146, Playa d'Aro, Gerona, Spain.

Bob also reports what seems to be a new one, **Radio Angeline**—The Voice of Inner Truth. Bob heard this on 7415 at 1850 playing a mix of new wave and classic rock. Signals were strong. No address was announced.

Mike Decerbo found **WENJ**—J-Rock—on 7415 at 2135 with disc jockey Jack Beane who announced a number to call to report reception. He also announced the Box 5074, Hilo, HI 96720 maildrop and mentions operations in the 6.2, 7.4 and 7.5 MHz bands.

Jim Smith in Missouri got a QSL from **WRFT** confirming his reception of the broadcast which was underway when the station was busted by the FCC. The note on the QSL ends with the letters "F.F.F.R"—Fight For Free Radio.

"The Midnight Rider" writes from Houston to advise that his pirate TV station, KVHS-TV is on Channel 17. KVHS-TV's day begins at 10:30 pm local with a slide showing the jolly roger, call sign and schedule. From 11 pm til around 1 am there are VHF tapes of local events such as parties, festivals, airshows and some programs taped from the local public access channel. "Rider" says the audience grew a great deal after word spread through a large apartment complex that programming included footage of sunbathing around the complex's pool! The station uses 15 watts through home built equipment and gets out 3 to 5 miles. Top DX report has been 9 miles. Rider says the station will change its location from time to time.

That covers the news for this time. Remember to forward your pirate station loggings, copies of the QSL's, schedules and background info you may receive fromt he stations. Station ops are encouraged to write and provide the story of the station you operate so it can be passed along to our readers who are very interested in your operations and programs.

More next month! PC

SATELLITE VIEW

BY DONALD E. DICKERSON

INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

News & Notes

During these dog days of summer, I thought it would be a good time to review some of the activity that has taken place in space during the past 12 months. We'll look at some of the changes in our own space program. We'll take a look at who is launching what and provide you with a list of recent satellite launches. I have also included the most current list of what satellites are operating in the Low band (130 to 175 MHz). So sit back, relax, and depending on your taste, pour yourself another tall glass of iced tea, a second scotch, preferably served at room temperature, or just pop the top on another cold one as we review these notes.

BURAN—The Soviet's Space Shuttle will, on one of its few manned missions, capture and return to earth the now mothballed Salyut 7 space station. I predict it will be reconditioned and relaunched to become part of the Mir space complex.

TV SATELLITES—Europe now has three Direct Broadcast TV satellites to choose from. The first to be launched was TV-SAT-1. It belongs to West Germany. France, which built the W. German satellite, also launched a TV satellite, TDF-1. It failed to deploy, but TDF-2 is close behind. The third satellite belongs to Luxembourg. It is called Astra.

THE REAGAN LEGACY—For the first time in history portions of the radio spectrum are being auctioned off to the highest bidder. This is happening because the airwaves are no longer Public Domain. This simple declaration by the Reagan administration is all it took. The first attack by big business is on an easy target, the Amateur radio allocations. The Land Mobile services want them. According to WARC's 87 declaration in Geneva, all the Amateur satellite Allocations above 220 MHz and between 1.3 and 3.0 GHz are targeted.

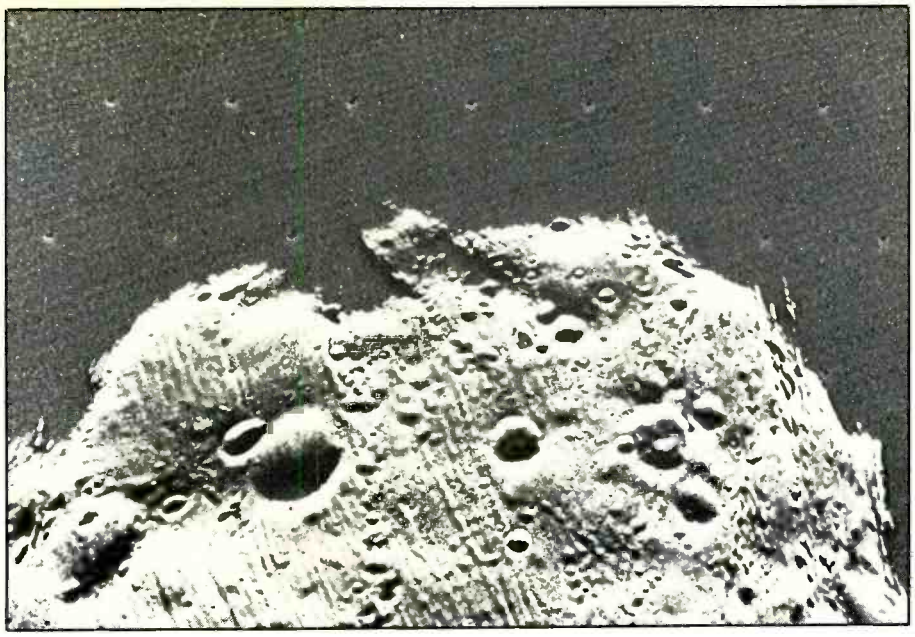
NASA—The Shuttle Emergency Mission Control Center (EMCC) which was located at Goddard Spaceflight Center has been moved to White Sands, NM. This 14 member team maintain communications with the shuttle and continuously calculates data for the immediate return of the shuttle in an emergency. This information is then relayed to the Shuttle Commander. This move was made possible by the successful deployment of TDRS 3. The TDRS control center is also located at White Sands.

MIR—The Soviet space complex has begun Amateur radio operation from space. FM is now in use on 145.550 and 145.650

The $55 million plus shuttle carrier by Boeing. (NASA)

Satellite	Type	Country	Launch Date
Molniya 1-74	TV/telecom	USSR	Dec. 28, 1988
Ekran 19	TV/direct BC	USSR	Dec. 10, 1988
Skynet 4B	Military	England	Dec. 11, 1988
Astra 1	TV	Luxenbourg	Dec. 11, 1988
PRC 25	Telecommunications	China	Dec. 22, 1988
Molniya 3-34	TV	USSR	Dec. 23, 1988
Buran	Shuttle	USSR	Nov. 23, 1988
TDF 1	Telecommunications	France	Oct. 28, 1988
Raduga 22	TV/Radio/telephone	USSR	Oct. 20, 1988
TDRS C	Date Relay (shuttle)	USA	Sept. 29, 1988
STS 26	Space Shuttle	USA	Sept. 29, 1988
Molniya 3-33	TV	USSR	Sept. 29, 1988
NOAA 11	Weather	USA	Sept. 24, 1988
Horizon 1	Experimental	Israel	Sept. 19, 1988
CS 3B	Telecommunications	Japan	Sept. 16, 1988
Progress 38	Space Tug	USSR	Sept. 9, 1988
SBS	Teletext (Business)	USA	Sept. 8, 1988
GStar 3	Telephone	USA	Sept. 8, 1988
Fengyun 1	Weather	China	Sept. 6, 1988
Soyuz TM 6	Manned	USSR	Aug. 29, 1988
Gorizont 16	TV/Telecom	USSR	Aug. 16, 1988
Molniya 1-73	TV	USSR	Aug. 12, 1988
Meteor 3-2	Weather	USSR	July 26, 1988
ECS 5	Telecomm	ESA (France)	July 21, 1988
Insat 1C	Telecomm	India	July 21, 1988
Phobos 2	Mars Probe	USSR	July 12, 1988
Phobos 1	Mars Probe	USSR	July 7, 1988

A GOES weather satellite launch. (NASA)



This is the surface of Phobos. It is 18 miles long and six wide. (NASA)

simplex. Packet radio will be added. Send your reports along with a self-addressed envelope and 2 IRC's to Boris Stephanov, UW3AX, P.O. Box 679, Moscow 107207, USSR.

SKYNET—The British military has a new telecommunications satellite, Skynet 4. It is believed to be similar to the DCSC-III and NATO-3 satellites.

EOSAT-EOSAT is the company that took over operations of the Landsat spacecraft from the government in order to sell the services of this imaging satellite for profit. EOSAT is now in financial trouble and is looking to the government for a bailout, or handout, depending on how you look at it. According to an unnamed NOAA source, the company is trying to pressure Congress into giving the military control of all NOAA's weather satellites so that those funds used for NOAA satellite operations could be given to EOSAT. So much for free enterprise.

STAR WARS—The first battle in Star Wars has already begun. It's between NASA and DOD. It began before Weinberger left the Defense Department. He and President Reagan wanted the proposed US space station, Freedom, to be used by the military for SDI and related experiments over the objections of NASA. If DOD is successful, it would mean that the European Space Agency, Japan & Canada could be forced out of the program. ESA and Japan are unwilling to take part in a military space program as their charter prevents it. If they are forced out it would leave the full cost of the space station on the backs of US taxpayers. And according to NASA, using the station for SDI and related experiments would be a violation of the 1972 ABM treaty.

CHINA—The People's Republic has a new quasi-geosynchronous telecommunications satellite. Its location is 110° E. Longitude.

$55 MILLION—No that's not the price of a new Space Shuttle. It is the proposed price for a new 747 to transport shuttle spacecraft on. That's $55 million plus cost! The contract is with Boeing.

PHOBOS—As two Soviet spacecraft orbit Phobos, a tiny Martian moon, the essential tracking data, which will permit the space probes to orbit and land small research craft on Phobos, will be provided by NASA's Deep Space Network (DSN), NASA scientists will use radio astronomy techniques called very long baseline interferometry (VLBI) which employs widely spaced ground antennas as well as doppler and range tracking to locate Phobos. The DSN will receive telemetry and images along with a wide variety of other scientific measurements from two landers. DSN stations are located in California, Spain, Australia and the Crimea, USSR.

SBS—Satellite Business Systems has a new spacecraft SBS5. SBS is a Kuband informtion (non video) satellite service. Each of the SBS satellites are located between 89 and 100° W. This is an IBM computer information service which transmits wideband digital signals.

Satellite	Frequency	Orbit	Inclination/Location	
ATS1	137.35 Mhz	Geo	14 deg	120 deg W
SIRIO	136.14 MHz	Geo	1.9 deg	75 deg E
OSCAR 13	150/400 MHz	Polar	89.7 deg	
GOES 2	136.38 MHz	Geo	6.7 deg	112.8 deg W
ATS 3	136.37/137.35 MHz	Geo	12.1 deg	105 deg W
ETS 2	136.11	Geo	7.9 deg	130.1 deg W
OSCAR 20	150/400 MHz	Polar	89.7	
GOES 1	136.38 MHz	Geo	8.4 deg	82.9 W
METELSAT 1	137.05 MHz	Geo	7.3 deg	5 deg E
OSCAR 27	150/400 MHz	Polar	90.3 deg	
POLAR BEAR	150/400 MHz	Polar	89.9 deg	
MARECES 2	137.17 MHz	Geo	2.5 deg	22.2 W
OSCAR 24	150/400 Mhz	Polar	89.9	
NOAA 10	137.50 MHz	Polar	98.6 deg	
IUE	136.86 MHz	LEO	31.5 deg	
NOVA 3	150/400 MHz	Polar	90.0	
NOAA 9	137.62 MHz	Polar	99.12	
HILAT	150/400 MHz	Polar	82.0 deg	
GOES 3	136.38 Mhz	GEO	5.7 deg	111.2 deg W
OSCAR 30	150/400 Mhz	Polar	89.9 deg	
NOVA 1	150/400 MHz	Polar	90.0 deg	
NOAA 11	136.77/137.77	Polar	98.9 deg	

DELTA—The Delta launch vehicle has been turned over to the Air Force, along with the two launch sites at Kennedy, according to NASA officials.

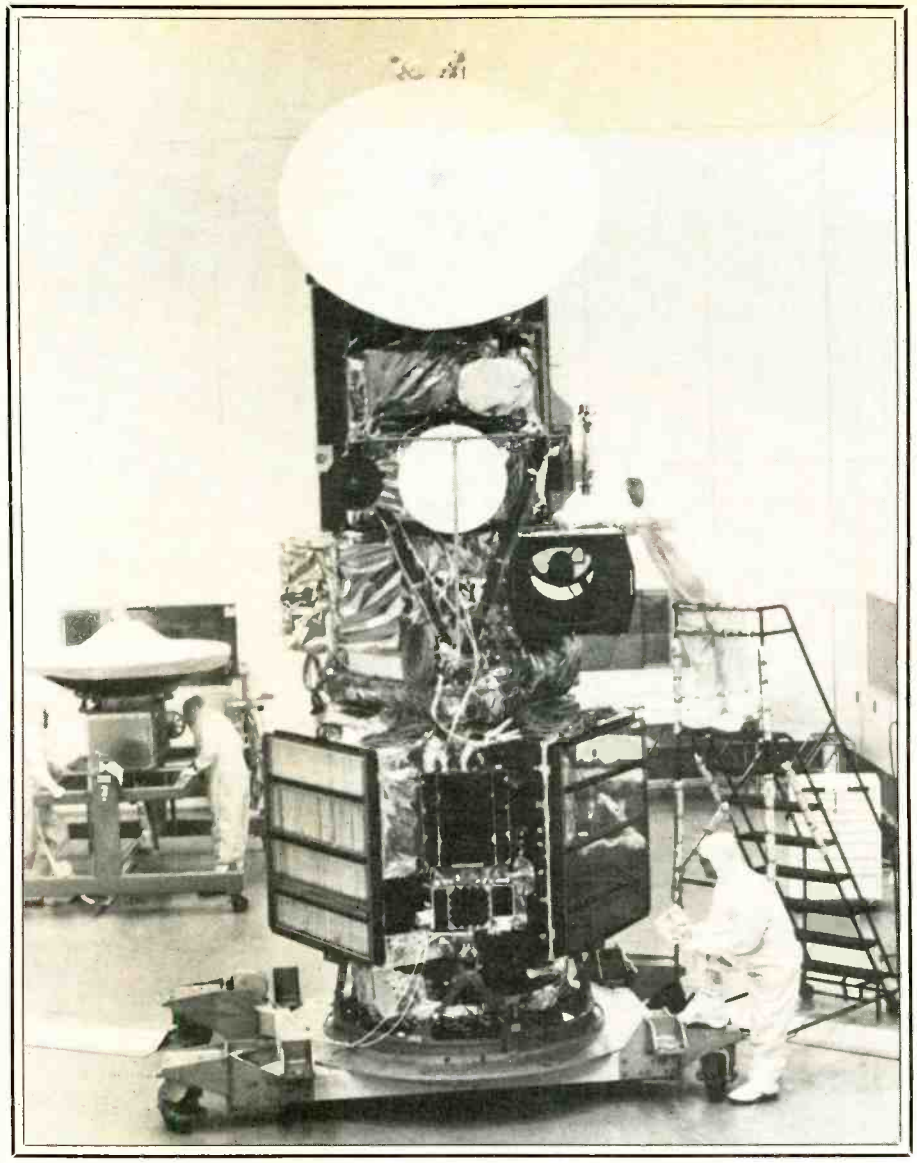
ERBE—Earth Radiation Budget Experiment satellites are studying the greenhouse effect. Unfortunately they have little good news to tell. The first three spacecraft were launched from the shuttle in 1984. NOAA 9, 10 and 11 have also carried ERBE instrumentation. The studies will continue.

STS-27—America is back in space and with the first shuttle launch came the subsequent launch of TDRS 3 and the third of a series of mystery satellites, USA 34, launched by DOD. Two earlier satellites, identified as USA 32 and 33 were launched from Vandenberg.

SOVIET TV—Four new Molniya TV satellites have been launched during the past year. These are in highly elliptical orbits. Three new Ekran satellites have been launched since January of last year. These are the geo-stationary direct broadcast satellites. One each of the Gorizont and Raduga spacecraft were launched. Both carry TV and telecommunication transponders and are in geo-stationary orbits.

FENGYUN—No it's not the name of the stuff that grows on the dark side of a tree, but China's first weather satellite. It has a period of 102 minutes, an altitude of 900 km and an inclination of 99.1%.

SPACE CLINIC—Since doctors no longer make housecalls, what does a space traveler do when he becomes ill on a long mission in space. Astronauts onboard the space station, Freedom, will have Star Trek technology to transport high resolution video and even space specimens to medical facilities on the ground. Corabi International Telemetrics, Inc. has signed an agreement with NASA to provide systems for the new space station that even 'Bones' would be proud of.



The Landsat remote imaging spacecraft. (NASA)

VOYAGER 2—Voyager 2 is scheduled to reach Neptune by August '89. As the spacecraft will be nearly three billion miles from earth the Jet Propulsion Laboratory (JPL) is taking great pains to make the fly-by a success. JPL's Deep Space Network (DSN) is responsible for all communications with our space probes. They are joining forces with the National Radio Astronomy Observatory (NRAO). NRAO operates the Very Large Array (VLA) in New Mexico. It consists of 27 dish antennas, each is 82 feet in diameter, and will be linked to the DSN antennas. This will double our ability to hear Voyager. DSN has a 230 foot and a 112 foot dish. All of these antenna will feed a X band receiver with advanced circuits which are kept chilled with liquid helium to suppress internal electronic noise.

SEASAT—10 years ago NASA launched a satellite which has contributed a great deal to space research. The satellite was Seasat, it pioneered the Synthetic Aperture Radar, radar techniques which will be used on our next generation spy satellites, scanning multi-channel microwave radiometers and passive visual and infrared radiometers. The next generation satellite of this type will be a joint venture with the French space agency, CNES, and will be called Topex/Poseidon.

DIAL-A-SHUTTLE—Don't forget during shuttle missions the National Space Society sponsors a 24 hour toll telephone service on which you can hear live shuttle communications. Dial 1-900-909-NASA. See you next month. PC

Firefighter Helps Save Choking Infant Over The Phone

A firefighter in Manchester, New Hampshire, was credited with helping to save a choking victim over the telephone. It was his second such lifesaving act in three months.

The incident began when 23-year-old Pamela Purdy of Manchester placed a call on the 911-emergency telephone line, after she found her baby girl was choking. The call was answered by Manchester Firefighter Thomas Levensalor.

SCAN PUBLIC SERVICE AWARD

"She said the child wasn't breathing at all," Levensalor told the *Manchester Union-Leader*. "She was quite frantic."

Purdy had put her baby girl, Jennifer Lynn, down for a nap and was in another room when she heard the baby gasping for air on an electronic intercom. "It looked to me like she couldn't get any air," she told the *Union-Leader*. "It was awful.

"You just don't know what to do. But, luckily, there was a number I could call and there was somebody at the other end who could help me."

Levensalor, a three-and-a-half year veteran of the fire department, said that he could almost hear the baby gasping as he led the mother through the rescue procedure.

"I wasn't thinking about anything except getting her to breathe," Purdy said. "I listened to every word he said and I did exactly what he said in hopes that it would work."

When the baby coughed up a small piece of plastic and started crying, Purdy knew she would be all right. While Levensalor talked Purdy through the procedure, Danny Sullivan, another Manchester firefighter, took over the communications controls and dispatched rescue crews. The crews arrived immediately after the baby was breathing again, and reported that the baby was in good shape except for slight bleeding caused by a sharp edge of the piece of plastic she had swallowed. Purdy identified the plastic as coming from the safety seal of a medicine bottle.

"It must have fallen on the floor and I overlooked it when I was picking up and she must have gotten it," she told the *Union-Leader*.

Levensalor said he was nervous during the first moments of the call. "You get a little anxious in the beginning, especially if you have children," he said. "But when the person starts responding, you calm down yourself. We're up there every day and we handle thousands of calls. You get used to handling these things."

Levesalor didn't want to make too much of his actions. "I was just doing my job," he said. "I just did what I'm trained to do. We get very fine training (from) the fire department, so I was able to keep control of the situation and talk the lady through it. She deserves a lot of credit. She did a fine job. She kept her cool quite well after the initial call."

Three months earlier, Levensalor helped save the life of a two-year-old boy who had swallowed a British coin. In that case, he also talked a mother through the first aid procedure for choking.

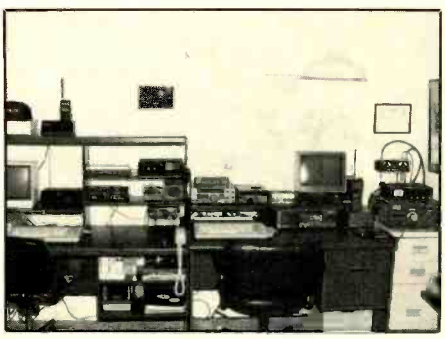
For his quick actions, Firefighter Thomas Levensalor will receive the SCAN Public Service Award, which consists of a special commendation plaque and a cash prize. For making the nomination, Jack Sheehy of Henniker, New Hampshire, will also receive a plaque. Congratulations to both of you.

SCAN PHOTO CONTEST WINNERS

Best Equipped

Dennis Wolfe's interest in scanning led him to become interested in shortwave listening and amateur radio. The Marietta, Georgia, monitor writes that his listening station is computerized with a 675-channel capacity, continuous coverage from 100 kHz to 30 MHz, and a 12-volt backup system in the event of a power failure.

Scanners used include a Uniden-Bearcat 210XLT and a Realistic PRO-2004. A Yaesu 9600 communications receiver interfaced with a Commodore computer offers on-screen display of frequency, name of service, and signal strength. An ICOM 7000 discone antenna is used with the Yaesu.



Dennis also uses a Kenwood TS-440S and a 100-foot dipole antenna, Kenwood TS-520SE and Yaesu 727 VHF/UHF handheld. Accessories include an AEA CP-1 for reading RTTY and CW, MFJ antenna tuner, extension speakers and audio filters.

Dennis enjoys scanning the local police frequencies because he lives in the Atlanta metropolitan area. He also monitors the amateur bands and activity from a nearby air force base.

Best Appearing

John E. Kovacs of Akron, Ohio, has enjoyed scanner monitoring for 15 years and shortwave monitoring off and on for the last 25 years. But in the last three years he has really "gotten serious."

John's scanner lineup includes a Bearcat 175XL and Regency 10-channel executive

scanner. Not shown is a Bearcat IV scanner used for bedside monitoring of fire and police frequencies.

For shortwave listening, John uses a Kenwood R-2000 and an R-1000 for RTTY and CW reception. Other equipment includes a Realistic Patrolman, CTR-68 cassette recorder and Stereo Mate portable cassette recorder. An MFJ-1020A indoor active antenna and MFJ 12/24 dual LCD clock and Kantronics radio tap are also used. A Commodore 64 computer is used to monitor RTTY and CW, and two file card holders record frequencies logged. A Sony ICF-2002 shortwave receiver is used when John is on duty as a fireman for the City of Akron. An outside antenna is strung between two trees 30 feet above the ground.

SCANNING VHF-UHF

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

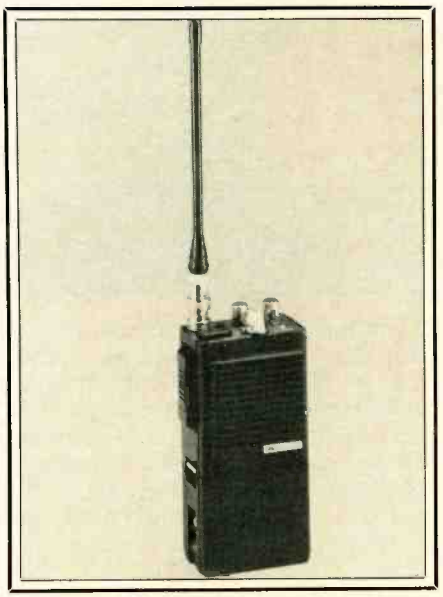
BY CHUCK GYSI, N2DUP

The summer is in full swing and your scanners are going on vacation, right? Now's the time to send in those lists of frequencies from amusement parks, state parks and other places of interest that you visit so that others will be able to tune in when they visit next year.

In March, we made mention of a Maine reader who was hearing signals from fire departments in Louisiana on 33.70. Mark Girod of Gosnell, Arkansas, passes on some additional information on the system. He said that the Jefferson Parish Consolidated Fire Department in Metairie, Louisiana, used to use 33.70 several years ago, but are now using the 800 MHz band. Apparently, 851.3875 is used for dispatch, while 33.70 is used every morning only for radio checks with a few fire departments still on the low-band channel. The departments that still dispatch on 33.70 are the cities of Kenner (fireground 33.44) and Harahan (fireground 33.64) and the Third District Volunteer Fire Department (fireground 33.56). There are 19 fire departments in Jefferson Parish and most of them are using an 800 MHz conventional and trunking radio system. The Third District department also uses 852.0125 for dispatch, according to Mark, who is a member of the department. Mark also asks if anyone knows the 800 MHz frequency used by the East Jefferson Hospital Ambulance. If you know, pass it along and we'll publish it.

David Stearns of Kansas City, Missouri, says the police department in his city has obtained a license under the callsign of KNJU810 for an 800 Mhz trunked radio system. The system will utilize 20 channels. Although the system is not yet on the air, readers in the K.C. area may want to keep an ear out as the system does become active. It's interesting watching an 800 Mhz trunked system become reality. The radio technicians probably will have radios on the system and you can learn a lot about a system as they chat about receiver sites and system parameters. In any event, KCPD system will use: 856.2125, 856.2375, 856.2625, 856,4375, 857.2125, 857.2375, 857.2625, 857.4375, 858.2125, 858.2375, 858.2625, 858.4375, 859.2125, 859.2375, 859.2625, 859.4375, 860.2125, 860.2375, 860.2625 and 860.4375.

William Pittman of New Port Richey, Florida, writes in to describe how his new 800 MHz converter works with his scanner. After his county's sheriffs moved to 800 MHz, he wanted to be able to listen, but did not want to spend the money for a new scanner with 800 MHz capability, which was the only thing his current scanner lacked. So he purchased the GRE 8001 800 MHz converter, plugged it in and bingo, there was the sheriff's office coming in clear. Within an hour, William said he installed a "T" adapter to test how the scanner would work with both the converter and an outside antenna at the same time. He programmed in all the local low and high band VHF, UHF and now 800 MHz frequencies and was hearing communications on all bands, even with the converter in use. He says that the only drawback to using the converter is that it uses a 9-volt battery and not an AC adapter. However, he reports the 9-volt battery lasting for 40 to 45 days with only an hour or so use each day.



Will digital communications replace the standard walkie-talkie, mobile radios and base stations? Chances are most walkie-talkie users will continue to use voice because the message gets through with ease and minimal confusion.

Michael J. Magliocco of Carle Place, New York, says he is 14 years old and owns a Uniden Bearcat 800XLT. He says he likes listening to hams and was wondering whether there was a way to modify the 800XLT to tune in the 220 MHz band. No, Michael, there is no way to modify your scanner, but you might want to consider a converter. Hamtronics Inc. (65 Moul Road, Hilton, NY 14468-9535) manufactures receiving converters for several bands, including the 220 MHz band. Write or call them for details.

Gordon Johnsen of La Tuque, Quebec, says he has a Radio Shack Realistic Pro-2004 (what serious scanner hobbyist doesn't these days?) and would like to modify the radio to receive the missing 520-760 MHz band. Actually, Gordon, there's not a real good reason to be able to tune this band, because all you'll hear is the audio and visual signals of UHF TV channels. There are no radio communications authorized in these bands in either Canada or the United States, however, the land mobile radio industry is pushing the FCC to open up more UHF bands for communications. My theory is that if you want to listen to TV, turn on a TV. Gordon also wants to know if the search increments of 5, 12.5 and 50 kHz can be modified for 1 kHz, for instance. Sorry, Gordon, we haven't heard of any such modification. But stay tuned! The PRO-2004 is the most popular scanner to modify and maybe someone will figure that one out!

Richard Sweitzer of Houston, Texas, says that he's read about digital communications of the future that will eliminate voice communications. He wonders why the scanner manufacturers don't notify scanner buyers that their radios may become "100 percent obsolete and useless in a few years." First of all, that isn't true. Voice communications have been with us a long time and probably will continue. No farmer, small police department or small security force is going to replace their voice communications handheld radios with some new-fangled, megabuck digital communicators. True, some big cities may use digital communications, but by the time it became more universally accepted, the scanner manufacturers probably will have figured out a way for receivers to decode information. But, in any event plain voice communications are here for a long time to come. So go out and buy all the scanners you want. The scanners you buy today will be long forgotten in the decades it will take for digital communications to catch on.

Richard also wonders why I list 800 MHz trunked radio system frequencies in this column when it is so hard to follow conversations on say, a 20-channel system. The trunked radio system often has conversations jump from channel to channel each time the microphone is keyed. In fact, Richard goes on to accuse me of not ever having monitored a trunked radio system and try to follow a conversation from frequency to frequency as the conversation jumps around.

However, I do monitor trunked radio systems every day. In fact, I live in New Jersey, which has a statewide 800 MHz trunked radio system used by state police, law enforcement units of various branches as well as corrections. I monitor this system because my hometown does not have a local police force and we rely on state police coverage. Thus, I listen to this 20-channel system to find out what's going on in my small town. I also hear everything else that's going on in

my small town. I also hear everything else that's going on in my state on the trunked system.

But, I have mastered the art of following a conversation from channel to channel. The first trick is to remember the voice. If you step scan through all 20 channels (actually less, because there may be one or more data channels that you can lock out), you WILL find that same voice again. And you keep following them around by listening to the voice, whether it be a particular zone dispatcher, a patrol unit on the scene or a particular investigator tailing a subject. It takes work, and not too many people are willing to put some effort into their scanning. However, if you go the extra mile you'll enhance your listening capability. Uniden has been promoting the fact that they expect to market the Bearcat 1000XLT sometime in the future and that the scanner actually will be able to follow trunked conversations. However, there are so many groups on a trunked system, that it seems you'll hear more than you want.

We welcome your questions, frequency updates and comments here at Scanner Scene. We also need photographs (black and white or good contrast color) of your monitoring posts, dispatch sites, mobile radio installations, tower locations, etc. Here's your chance to get published in *POP' COMM*. Write to: Chuck Gysi, Scanner Scene, Popular Communications, 76 North Broadway, Hicksville, NY 11801-2909. PC

ON THE LINE

NEW AND EXCITING TELEPHONE TECHNOLOGY

BY JULIAN MACASSEY, N6ARE

It's Your Dime, But I Own The Payphone

Sooner or later, you will pull into a gas station, stroll into the phone booth, and see a pay phone that is very unfamiliar. You may also notice that local calls cost more on this telephone. If you come across these phones you are experiencing one of the results of phone company deregulation. Gone is the phone company monopoly of pay phones. In many states today, anyone may own and operate a pay phone. These free enterprise pay phones are known as COPT's (Customer Owned Pay Telephone).

How do you know that the pay phone you are about to drop your coin into is a COPT? They often look just like a regular telco pay phone except instead of the local phone company name such as Ipswitch Bell it will have the name of company you have never heard of like East Ipswitch Telephone. Also the number to call with complaints is usually given as an 800 number. Some COPT's have fluorescent displays on them and some look like no pay phone you have ever seen before. The good news for the hard of hearing is that they all have Hearing Impaired Receivers for coupling into hearing aids.

There are several reasons that companies other than the phone company are now offering pay phones. First of all, it makes sense that in these days of deregulation the phone company should not be granted a monopoly in an area where anyone could compete. The phone company could have kept their equipment on many of the sites that have since converted to COPT installations. They have lost these sites because they have refused to compete. For some reason many phone companies have had trouble adapting from being a regulated utility to a free market company with open competition.

Traditionally, the phone company installed and maintained coin telephones and paid no compensation, commission or rent to the site owner. Some sites had to pay some phone companies to keep a pay phone on a site. What this really meant was that your local gas station and greasy spoon were providing telephone access as a service to the customer. Like the "Free Air" at the gas station, phone company pay phones may become a thing of the past. In its place we will have more expensive pay phones with restricted features.

There is nothing to stop the local phone companies from competing head to head

with the COPT companies. They could do what the COPT's do—offer a percentage of the take, a rental of site, or even sell the equipment to the site owner. If they did, they would beat out the competition as they still have the lowest operating costs and can offer the best service. Either greed or stupidity prevents these companies from trying to compete.

To the site owner, the difference between a phone company pay phone and a COPT is money. To the phone customer the difference is money and convenience. There are some major differences between COPT and telco pay phones. The most obvious is the price of a local call. This may be a nickel or dime higher than a local call on a telco pay phone. Long distance calls can become outrageous.

Many subscribers now have phone answering machines with remote access. It is convenient to step into a phone booth and call home and get your messages from your machine by entering tones via the Touch-Tone pad. With a COPT, to prevent fraud on their machines they disable the pad after the destination number has been dialed. This makes a COPT useless for remote message retrieval from phone answering machines.

Traditionally, shady characters and private eyes have run their "office" from the pay phone in a coffee shop or bar. If the local Smokey Joe's has been your office, you had better move out when Joe puts a COPT in. You can not call into a COPT phone. If you dial into a COPT, the pay phone will answer and return a model tone. The COPT manufacturers install modems in these phones so the owner can access the microprocessor in the phone and make rate adjustments, see how much money is in the box etc. With a telco pay phone, the smarts are in the exchange whereas a COPT has all the smarts in the phone. This means that a COPT costs more than a telco pay phone. Somehow, the telco thinks they can not afford to pay site owners the commission which COPT owners with their higher equipment costs can. The fact that there is a modem inside a COPT is somewhat tempting to computer hackers, but merely a major inconvenience to phone users. If all pay phones become COPT's where are spies going to receive their phone calls?

The standard pay phone is what is called a "Pre Pay" device. You plop in your quarter then call the office. The coin is held in a place called the "Escrow Unit," if the caller hangs up before the call goes through the coin is returned. All this is possible because the phone company provides "Supervision" to its own pay phones. A DC signal is sent to a telco pay phone that activates a solenoid to either return the coin or drop it into the cash box. The telco will not supply supervision to COPT phones so the usual way to pay for a call is to disconnect the handset and connect it to the phone line after the coin has been dropped in. The coin is dropped after the called party answers, hence the Post Pay scheme. To install a COPT phone, the owner uses a standard business line which is very different from a telco pay phone line.

One thing the privately owned pay phone has done that is more philosophical than technical is remove the pay phone from the arena of amenities and put it in the vending machine arena. Private companies are now selling telephone use. Some of companies that administer soda machines, cigarette machines and candy machines also install and service pay phones. PC

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS

2000 Channel Scanner Covers 5MHz to 1500MHz

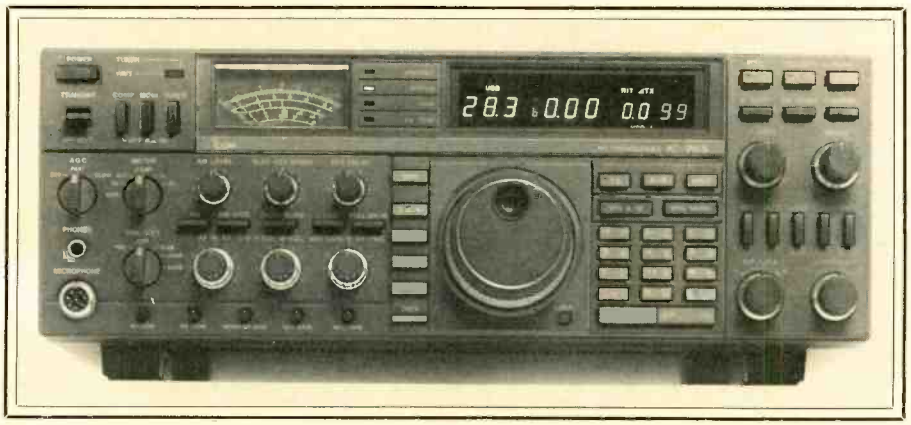
AOR, Ltd. announced the introduction of a scanner which features 2000 channels, extremely broad coverage, and high speed scanning. Additionally, the unit has a built in interface to a computer's RS232 port for programming, unattended control and frequency activity logging.

The new radio is designed for either table top or underdash use, and has dimensions of 3½"H × 5⅝"W × 7⅞"D and weighs 2 lbs. 10 oz. Frequency coverage of the receiver allows it to pull in distant shortwave broadcasts from all over the world in addition to being able to listen to super high frequency microwave broadcasts; and everything in between.

The design of the unit assures an extremely high level of image rejection, the most common cause of interference in broad coverage receivers. Sensitivity will typically be better than .35 uV @ 12dB Sinad in narrow band FM from 10MHz to 1.5GHz. AM sensitivity in the 10MHz to 1.0 GHz range is better than 1.2uV for 10db S/N. Tuning increments are 5KHz, 10KHz, 12.5KHz plus 25KHz and are user selectable. A BFO with finer tuning resolution and SSB ability will be available as an option.

The receiver is capable of scanning 62 banks of 32 frequencies each for a total of 1984 scanned frequencies. An additional 16 memory locations are set aside for beginning and ending search limit frequency pairs. Bank 1 can be designated as a priority bank, thus giving higher priority to up to 32 different frequencies. The scan rate of 36 channels or search increments per second will automatically slow to compensate for tuning lags if adjacent frequencies are more than 30MHz apart.

A built in RS232 interface device allows the radio to be controlled or programmed by any computer with a standard serial port. A suggested retail price of $695 has been set for the unit. Present owners of AR2002's can have their units upgraded to AR2515's for $250. For more information: Ace Communications Monitor Division, 10707 East 106th Street, Indianapolis, IN 46256, or circle 102 on our Reader's Service card.



ICOM Announces New HF Transceiver

ICOM announced the ICOM IC-765 HF transceiver. Designed with the most often requested features, the IC-765 combines performance with reliability to bring you quality HF operation. The IC-765 features:

- Direct Digital Synthesizer. Assures Ultra-fast PLL switching and lock-in for excellent PACKET, AMTOR and CW QSK operations.
- Band Stacking Registers. Each band's VFO's retain their last selected frequency, mode and filter choice. Produces the equivalent of 20 VFO's; two per band. Great for multi-band DX'ing!
- 99 Fully Tunable Memories. Store frequency, mode and filter selections. Each one can be retuned and/or reprogrammed independent of VFO operations. Memories 90-99 also store split Tx/Rx frequencies.
- CW Pitch Control. An iambic keyer with adjustable speed and weight is built-in to provide total operating comfort and convenience.
- Maximum Operating Flexibility. Three step attenuator cuts multi-station overloads. RF preamp pulls weak signals in perfectly.
- Built-in AC Supply. 100 percent duty cycle for cool operation and superb long term performance on all modes.
- Fully Automatic Antenna Tuner. With built-in CPU and memory for extremely fast tuning and one-touch opertion.
- 10 Hz Readout. Perfect on-the-dot frequency selection for nets, DX skeds and data communication modes. Large, easy-to-read display.

The IC-765 comes with narrow 500 Hz CW filters included. ICOM's FL-32A and FL-52A deliver razor sharp selectivity. Optional filters include the 250 Hz FL-53A and FL-101.

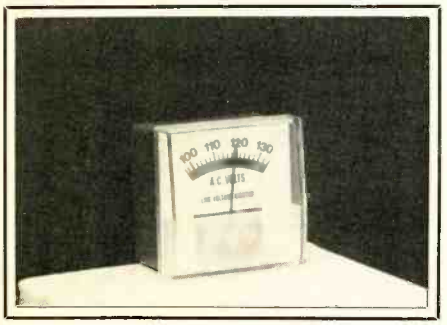
For more information, contact ICOM America, Inc., P.O. Box C-90029, Bellevue, WA 98009-9029, or circle 103 on our Readers' Service.

AC Line Voltage Monitor

The new MFJ-850 is the easiest protection you can get against low voltage "brown-out" conditions that can damage your expensive electrical equipment.

All you do is plug it in and it tells you at a glance when your line voltage is at a low "brown-out" level. The expanded scale reads from 95-135 volts. Color coding makes across the room reading easy.

Just plug it into any AC outlet for plus/minus 2% accuracy along the entire expanded scale.



You can leave it plugged in permanently for constant monitoring—it comes with MFJ's One year unconditional guarantee.

It measures a compact 2¼ × 2¼ × 1½ inches. You can use it anywhere—around the house, in your ham shack, on your boat or in your RV—or use it to check your valuable computer/peripheral or video setup.

It is especially useful for checking portable generators and all kinds of temporary electrical set-ups.

For more information contact any MFJ dealer or MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762, or circle 101 on our Readers Service.

CB SCENE

27 MHz COMMUNICATIONS ACTIVITIES

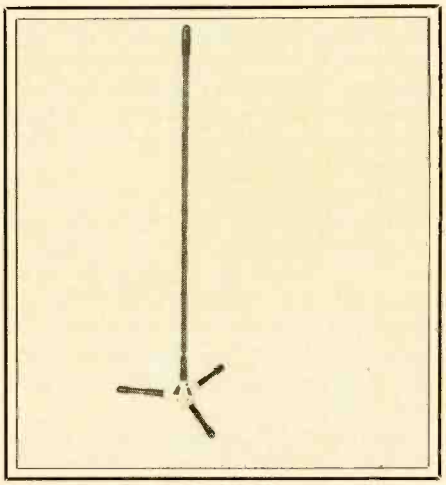
BY BILL SANDERS, SSB-295

Whether it's cold, or whether it's hot, we're gonna have weather, whether or not. And the Midland 77-162 is a mobile CB rig that takes this into account by providing a front panel switch that will tune in each of the three major 162 MHz NOAA weather channels. Other than that, it's a deluxe AM rig featuring adjustable RF gain, switchable noise elimination, instant access to Channels 9 and 19, large amber LED readout, detachable microphone, and a mylar speaker for extra moisture protection, thus making it suited to maritime as well as vehicle installations.

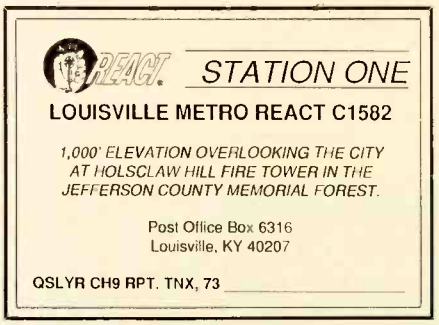
The MSRP of the Midland 77-172 is $219.95. For more information, contact Midland International, Consumer Communications Division, 1690 North Topping, Kansas City, MO 64120, or circle 105 on our Readers' Service.

Good news, too, from Valor Enterprises, Inc. They sent us information about their new Tri-Star, a mobile antenna with the styling (and Valor says performance) of a base station antenna. They describe it as a 500 watt full wave antenna, heli-wound top loaded, fiberglass with solid copper wire. The three radial elements are color coordinated red, white, or black. The antenna comes in 2 ft., 3 ft., or 4 ft. size, each fitting into a ⅜ × 24 mounting base. More info on this one from Valor Enterprises, Inc., 185 West Hamilton St., West Milton, OH 45383, or circle 106 on our Readers' Service.

Midland offers this combo CB mobile rig and VHF weather receiver.



The Valor Tri-Star is made for mobile use, but looks like a base station antenna.



Lousiville Metro REACT now offers this attractive QSL to those who report their signals.

Brightly colored QSL from Steve Moore, SSB Network member SSB-24F, of Ayer, MA. It's a real eye-catcher!

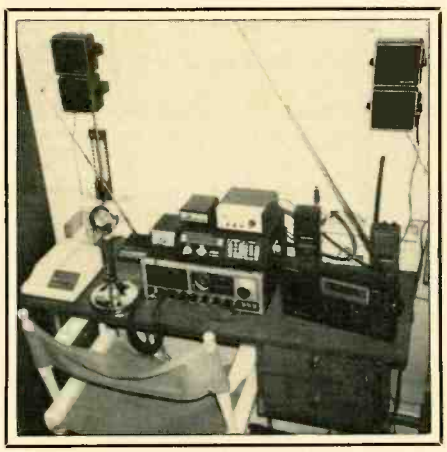
Hot Off The Band

In the February issue ran a letter from a reader complaining about Channel 9 abuses by Spanish speaking stations prone to trying for using the relatively quiet channel as a method of making free long distance phone calls between operators in the Caribbean area and their relatives in the States. A letter from H.W. Morgan of Knoxville, TN arrived to add that Channel 9 is not set aside for emergency purposes in some Latin American nations. Venezuela and "many others," he notes, utilize Channel 11 for emergencies. He feels, therefore, that some of the "abuses" of Channel 9, although annoying, may be more inadvertent than inconsiderate.

We received a card from Bram in South Africa saying that sometime in July he's going on a DXpedition to Mozambique. He'll be ID'ing as 204-AT-0 running 300 watts into a 3 element yagi. In the past he has turned up around 27.500 MHz USB. Last time he went on a DXpedition, they heard him in 40 countries. Reports for his 204-AT-0 trip go (with $1) to Bram, PB 14986, Verwoerdburg 0140, Republic of South Africa.

Our March issue carried a reader letter wondering why manufacturers don't offer CB equipment with backlit controls. In reply, Charles Tubby, SSB Network member SSB-33Y, of Wilmington, DE points out that the Uniden PRO-640e is designed with backlit controls. You can even vary the brightness of the pleasing green glow.

Sad story from John Eary, Ashland, KY. About a year ago, John ran an ad looking for parts for his Browning Golden Eagle Mark III base station. Not long after the ad ran, someone broke into John's home and ripped off his beautiful Browning. John's a disabled vet, and says that the Browning had far more sentimental value to him than any monetary value it could have to anybody else. He'd like to get back his Golden Eagle, no questions asked. Anybody that can offer John leads to the whereabouts of his set can contact him at 2315 Beech Street (Lot 6), Ashland, KY 41101. In addition to his radio, John would also like a photo of Alice Brannigan.



Unit 320, operated by Dean Burgess, Manchester, MA looks like this. Main ingredients include a Uniden Washington CB rig, a DX-440 receiver, and a bunch of scanners led off with a Realistic PRO-2021 scanner with a GRE 800 MHz converter.

The operating position at station SSB-24F includes a President Washington, and Astatic D-104 mike. A Moonraker IV is on the roof.

Chris Hubbard, of Milwaukee, WI monitors sideband on Channel 37 with his Cobra 142-GTL and PDL-2 quad beam. He ID's as ZX-671.

Mike W. Talkington, Elkton, MD is 12 years old. Right now he only monitors CB, and also likes to listen to SWBC stations. Says that if his dad would only increase his allowance to $50 a week he'd definitely put in some more formidible electronics hardware at his station. Don't worry Mike, we all started out with simple stations.

Unit 320 shows us why you should use guy wires on your base station antenna. His antenna, mounted on the chimney, had no guy wires. A wind storm came through town and took down the antenna, along with the chimney. Dean says the impact on the roof sounded like a bomb going off.

The Louisville Metro REACT's new monitoring station overlooking the metro area is now using the ID of *Station One*. QSL's are available to those who report hearing this station on Channel 9. Reception reports should be accompanied by a stamped, self-addressed business size return envelope. The address is P.O. Box 6316, Louisville, KY 40207.

A long letter commenting on this 'n that came in from *Nature Girl*, Concord, NH. She's been active on 27 MHz for fifteen years and would like to see lots more courtesy and common sense displayed, at least some semblance of compliance with FCC regulations. She's running a Cobra 2000-GTL and a Datong Auto Notch filter, but still she can't seem to filter out all of the noise that comes through. She reports that *POP' COMM* is her favorite magazine, and *Tomcat's BIG CB Handbook* is her favorite book.

Stretch That Juice

July is probably the height of the time of year when handheld transceivers are in use. if you have one of these (or a handheld scanner) and want to get as much use as possible out of the batteries, here are some suggestions. These ideas are for the standard dry-cell (non-rechargeable) type of batteries that you'd normally throw away after they're used up.

All dry cells diminish in potency with time, even when not actually in use. This is because of loss of moisture and a continuing chemical reaction within the cell. The effects of both damaging factors can be substantially reduced by lowering the cell temperature. The chemical activity in a zinc-carbon type battery comes to a halt at −22° F. Other measurements indicate that cells sitting on a shelf at room temperature for two years retain only half of their charge, while those stored at below zero temps can hold about a 90% charge.

This can be put to your practical use. In many instances, a portable or handheld transceiver (or scanner) might be used only occasionally. Under such circumstances, it becomes feasible to *remove the batteries* to prevent slow discharge when the unit isn't in service. The dry cell batteries may be stored in a refrigerator, which usually maintains a temperature of 40° F.

Even greater improvement in shelf life is possible by storing cells in a home freezer where the temps are about zero. There is one precaution: condesation of moisture on the cells might crack the jackets and increase electrical leakage. For this reason, batteries should be placed in some protective covering such as plastic wrap. Also, the cells should be given time to thaw out to room temperature before placing them back in operation.

It's even possible to revitalize an apparently dead battery by placing it in the refrigerator for a day or two, although this is sort of a last ditch emergency solution. There are also some dry cell electric chargers on the market that charge worn dry cells recently removed from service. These require a charging time of 12 to 16 hours (ampere-hours should be 120 to 180 percent of the ampere-hour discharge). Such cells should be placed back into service as soon as possible since the shelf life of revitalized dry cells isn't very long. Radio Shack's Archer battery charger (#23-120) is only $13.95, which is reasonable if you use lots of batteries in radios, camera flash units, toys, clocks, pocket calculators, and other household gizmos. *Never* attempt to recharge a zinc-carbon or alkaline dry cell in a charger intended to be used with rechargeable nickel-cadmium batteries.

We'll be standing on the side here until next time. In the meantime, we hope you let us hear from you with station photos, CB QSL's, questions, helpful hints, and what-have-you relating to 27 MHz communications. PC

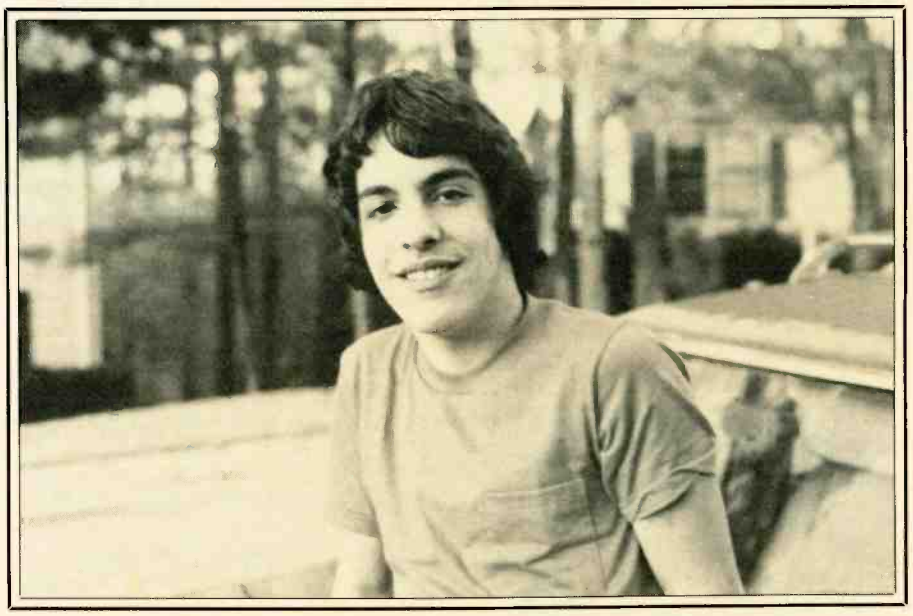
THE HAM COLUMN

BY KIRK KLEINSCHMIDT, NT0Z
AMERICAN RADIO RELAY LEAGUE HQ

GETTING STARTED AS A RADIO AMATEUR

If the recent influx of letters is any indication, one of the most talked about topics in amateur radio today has to be the code/no-code licensing issue. Just look at the opinion and feedback pages of any ham magazine—comments pro and con are splashed all over the place.

The no-code battle rages on, however, for now it's still necessary to learn Morse code to obtain a ham license. Unless something drastic happens to international regulations, the code requirement will remain at least for HF operation. In this month's column, we'll take a look at various ways to learn the code, from tried-and-true methods to those even science-fiction buffs will appreciate!



Renard DellaFave, KC4AQC, has moved from hating the code with a passion, to loving it—after taking four years to learn it!

There's More Than One Way To Skin A Cat

Before there were code practice tapes and home computers, hams learned the code the old fashioned way—using a hand key and a code practice oscillator under the watchful eye (ear?) of their Elmer (radio mentor). It may sound a bit dull by today's hi-tech standards, but using a code practice oscillator is still an effective way to master the code. Using this method, I learned the code in a couple of afternoons. Sure, I wasn't a speed demon, but I could recognize all the letters. This is probably the most interactive way to learn the code. Need extra help with Us, Xs or Zs? No problem. Your instructor can customize each session for maximum learning. he or she will probably make you *send* the code as well—an important exercise because Morse code receiving ability does not necessarily translate into Morse code sending ability!

Code practice oscillators are available from Heathkit® (Box 8589, Benton Harbor, MI 49022), and MFJ Enterprises, Inc. (Box 494, Mississippi State, MS 39762), among others. You can also build your own code practice oscillator.

Next on the list is Morse code training tapes. Learning the code from cassette tapes has become popular in the past few years. Tapes are convenient—you can play them at home, in the car, while walking on the treadmill at the health club, and so on. Tapes aren't as personable as your Elmer, but they can be played back many times. if the tapes are from a reputable source, you're assured that the code is being sent correctly with respect to timing, spacing, speed and so on. This way you won't be able to pick up any of your Elmer's bad CW habits, should he or she not have a perfect fist!

Morse code training tapes are available in speeds from five to 40 words per minute, in standard or Farnsworth spacing. (Farnsworth spacing is a learning method where the code is sent at a slow rate overall [words per minute], but individual characters are sent at a faster rate. This helps the learner recognize each code character as a single sound instead of a group of sequential elements.) Morse code tapes are available from many sources: ARRL, Gordon West's Radio School, 73 magazine, and others.

The microcomputer has revolutionized nearly every aspect of our lives, including the way we learn Morse code. Commercial and public-domain Morse code software is available from many outlets. The programs offer randomized code groups, code groups using specified characters, and the ability to translate computer text files into Morse code. Advanced Electronics Applications Inc. (AEA) manufactures a computerized Morse-code QSO (jargon for a ham radio contact) trainer that allows the computer to engage you in a simulated CW conversation. The trainer, Morse University™ is available from ARRL (for C-64 computers only). The first time I tried out a similar AEA unit (Doctor DX), I was amazed!

Let's not forget the radio itself. Copying Morse-code practice transmissions or listening in on amateur CW frequencies have been popular learning tools over the years. ARRL HQ station W1AW transmits code practice at various speeds and times on several ham bands. Certificates of achievement in code-copying ability are offered to hams and SWLs. For details and a complete schedule, drop me an SASE at the address listed at the end of the column.

There are lots of CW signals to be found on the shortwave "utility" bands. These stations are often fun to copy, but the operators generally keep their code speed up around 18 to 20 WPM. (I frequently listened to these stations when I was studying to pass my 20-WPM code test.)

Renard's CW signals emanate from a Kenwood TS-130 transceiver via an MFJ antenna tuner.

All of the above-mentioned techniques will work for nearly everybody desiring to learn the code. But, if you hate computers, don't have a code prctice oscillator, don't own a receiver, and just the thought of *consciously* listening to code tapes drives you crazy, there's still hope! From the deepest fringes of neuropsychological research come: self-hypnosis and sleep-learning code practice tapes. Ads for these tapes have appeared in the classified ad sections of several amateur radio magazines during the past six months. Although neuropsychology is gaining popularity and prestige, I have no idea whether these tapes are effective. There's one way to find out—buy it and try it—but, my advice is a cautious *caveat emptor*.

So, there you have them: several ways to overcome the Morse code hurdle. Choose your favorite method(s) and dig in!

If you've got an idea for *The Ham Column*, drop me a line at ARRL HQ, Dept. PCN, 225 Main Street, Newington, CT 06111. I'd like to hear from you. My thanks this month to Bob Solon, WD8LKI, and all of you who took the time to write.

How I Learned To Love CW

The following is excerpted from an essay originally submitted to *QST*. It's written by a, Renard DellaFave, KC4AQC, from Raleigh, North Carolina.

"I love Morse code. Had I written that several years ago, however, I would have been a liar. Then, I hated the code more than anything! The cursed code kept me from getting my Novice license for many years. I tried tape course after tape course to no avail. It took the friendly persistence of my Elmer to help me finally get my ticket. With a little dedication and short, but regular, practice sessions it took me a few months, rather than a few years, to learn the code.

"Okay, great. I could copy code at 5 WPM—but I never really intended to use it. I acquired an HF rig and a 2-meter handheld transceiver. I spent a lot of time on 10-meter SSB—talking. After a while, however, using the radio became boring. Ten meters was dying and 2 meters carried the same old nets and boring afternoon ragchews. Rarely was anything of interest [to me] said on either band. So I tuned around and listened to the guys on 80 meters. They seemed to be more knowledgeable about radio topics, so I listened intently. Unfortunately, by this time I had only been able to upgrade to Technician class. Morse code was again standing in my way! To converse with the hams down there, I'd have to master the code—again!

"I tuned to the CW portion of the band. Rats! It's all too fast, I said. And it was true: Most code transmissions in the Novice bands were faster than 5 WPM or too sloppy to bother with. So, I ordered another code practice tape and started listening to W1AW. My code speed improved: I was now at about 7 WPM—fast enough to try it out on the air. My first CW QSO was with KA9VOA. It was a bit rough, but it was one of my most memorable QSO's.

"I think about the code now, how difficult it made getting my first license, how it's keeping me from getting my general class license (13 WPM), and how tough it will be to master the 20-WPM requirement for the extra class license. But I don't hate the code any more. Sure, it can be difficult, just like building a kit can be difficult. With the right attitude, however, all your hard work will pay off.

"For those of you who think Morse code is an obsolete mode enjoyed only by radio nostalgics, here's the surprise. I became interested in ham radio at the age of ten, took four years to learn the code, passed the Novice exam on my 14th birthday, and upgraded to Technician class three months later. I'm 15 now, and I love CW—even if I still have a long way to go before truly mastering it.

"If you dislike Morse code, don't let me change your mind about it. Try it yourself, just once. You might like it."

—Renard DellaFave, KC4AQC

CLANDESTINE COMMUNIQUÉ

WHAT'S NEW WITH THE CLANDESTINES

BY GERRY L. DEXTER

The Voice of the Khmer is one of three clandestine stations beaming programs into Cambodia. Canada's Robert S. Ross forwards a copy of a QSL letter he recently received from the station, which contains some interesting information. The station is a joint operation of the non-communist resistance "fighting for liberation of our country from both the Vietnamese and from Communism." The two groups involved are the Khmer People's National Liberation Front (KPNLF) with an address of P.O. Box 22-25, Ramindra Post Office, Bangkok, Thailand and the National United Front for an Independent, Neutral, Peaceful and Cooperative Cambodia (FUNCINPEC) at P.O. Box 12-1014, Suan Phlue, Bangkok, Thailand. The shortwave frequency of 6325 is received fairly well in North America between 1100 and 1400. In Khmer, the station's name is "Samleing Khmer" which, literally, means "The voice of all the Khmer people." The station would like to get word to Cambodian expatriots who are trying to locate missing friends or relatives because the station is eager to help anyone who needs assistance in this. All one need to do is write to the station with the necessary details. The station says one's political affiliation will have no bearing on its willingness to help. Another task is to teach Cambodian children "who have been cut off from the outside world for so many years, about the culture and traditions in the free world." The QSL letter notes that the location and power of the station cannot be revealed, stating that ". . . we are still fighting a war and our enemies would try to destroy us if they knew where we were." Most interesting stuff and thanks to faithful reporter Bob Ross for sharing it.

Bob also received a QSL from the anti-Afghan station, the *Voice of Unity* through the Box 2605, 2000 Hamburg 60, Federal Republic of Germany address.

He reports a log of *Radio 15 de Septiembre* on 5930 at 1115-1130 in Spanish with various anti-Sandinista comments, speeches and songs. ID was "Esta es Radio Quince de Septiembre."

On the other side of the Central American political divide, Bob reports hearing the anti-El Salvador *Radio Farabundo Marti* at 1213-1220 on 6732.7 with Latin pops and excited talk in Spanish. The station jumped down to 6712 at 1217.

Speaking of jumps, Harold Frodge in Michigan sends an extensive survey of activity in the area between 6600 and 6665 during the time period 0200-0340 one evening. He noted *Radio Venceremos* hopping around, probably *Radio Farabundo Marti or La Voz de Alpha 66* also on the move, too. Also included in the bunch was a station playing only Latin tunes. Excellent work, Harold. Alpha 66 normally stays pretty near 6666 so you probably had both the music jammer and *Farabundo Marti*, along with *Venceremos*, all on the move. There are other clandestine-type things floating around this area, too. We have, or have already had, a feature on the crazy assortment of stations which populate the region between 6.2 and 7.0 MHz, and there's a lot of this activity present.

```
0201 Station noted at 6600 with campesino and upbeat LA mx.  QRM from
     Volmet at 6604.0/USB.
0208 6600 station abruptly off.
0216 Presumably the same station noted at 6630; abruptly off at 0218
     leaving unidentified USB SS traffic.
0220 Presumably the same station noted on 6615 still with mainly campesino
     mx. SIO=3-33-, the best noted so far.
0224 Another station breaking in on 6615; OM w/SS cmtry.  Cmtry station is
     a bit stronger but QRM mess does not allow any logging.
0225 Cmtry station drifts to 6614 leaving mx station on 6615.
0229 Cmtry station drifts to 6613, now also with LA mx.
0231 6615 mx station moves to 6625 but with mucho clatter QRM.
0232 6613 station moves to 6625 to compete with mx station.
0233 Cmtry station on 6625 goes off leaving mx.
0234 Cmtry station noted on 6636.  Cmtry's are political in nature.
0236 Mx station at 6625 off abruptly. 6636 now has LA mx and drifts down to
     6634, unless this is the 6625 station.
0238 6636 definitely gone and 6634 has good signal.
0239 6634 abruptly off.
0240 OM/SS cmtry noted on 6648 with many mentions of "El Salvador" and
     possible "Venceremos" ID--presume this to be the previous cmtry
     station.
0243 6648 getting QRM'd. Cmtry/mx noted at 6663 not //6648.  6663 station
     also mentioning "El Salvador".
0248 6648 still there but getting weaker; 6663 continues.
0251 A new LA mx station noted on 6665 not //6648 or 6663--definitely three
     different stations on.  The three continue on 6648-6663-6665 till
     0257.  6648 drifts up to 6649.
0257 6665 off abruptly--6648 and 6663 still on, 6663 with cmtry re "El
     Salvador" and 6648 with LA mx.  6663 has mainly cmtry with short
     patriotic type mx breaks. 6649 is much weaker.
0324 6649 noted gone; 6663 continues w/cmtry.
0326 6663--OM w/long cmtry re Paraguay.
0332 Drifted down to 6662.5
0336 6662.5--"Radio Venceremos" ID promos by YL & OM and "RV" song to
     s/off at 0338.
```

Harold Frodge in Michigan monitored the area between 6600 and 6665 between 0200 and 0340 one night and found all of this activity! Much of it is clandestine or clandestine-related.

New clandestine buffs soon run across *Radio Caiman* and that seems to be what happened to Bob Pizzi in California who wonder's about this station. Aside from its recent move from 9960 to 9965 to avoid that horrendous interference, there's nothing new that we can report on this one. It continues to keep secret its location, address and the names of its backers, or sponsoring organization.

Information has turned up recently about an anti-Yugoslavia program being aired over the US commercial religious broadcaster WHRI in Indiana. *Radio Libertas* is currently airing in Croatian Mondays through Fridays at 1600 to about 1657 on WHRI (currently on 21840). We don't know the name of the organization behind this but we are checking sources and hope to have more information or you in a column or two.

Another borderline clandestine situation has come to light recently with a news release from the American Jewish Committee in New York which says that it has "clandestinely produced" radio programs which have been beamed into the Soviet Union since 1986. The programs, broadcast over the Voice of Israel, are produced the Academy of the Air for Jewish Studies as a non-political, educational effort. About 250 half hour programs have been produced so far, of which about 150 have been broadcast. The series was initiated in response to appeals from Soviet Jews who met with a delegation from the Committee in 1983. According to the news release the Voice of America has recently expressed an interest in running the programs or having the Academy prepare "programming of a general nature that would be of interest to Jews

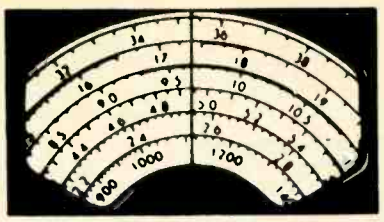
in the USSR." We are trying to find out when the shows air on the Voice of Israel. If anyone knows, please let us know.

Gary Emerson in Colorado logged the *Voice of the National Army of Democratic Kampuchea* on 5408 at 1340 with apparent news in Kampuchean. Gary notes the signal was very weak. And he heard the *Voice of National Unity* (Sudan) at 1400-1500 on 9435 in Arabic and English. From the outset this station was thought to be clandestine in nature but it turns out it is run by the Sudanese Army—which has had its differences with the government from time to time anyway. Anyway, we're considering this one as a legitimate station from now on so you probably won't see it mentioned here again.

On several occasions, we've speculated about *Radio Impacto* in Costa Rica, based on the large amount of anti-Cuban, anti-Sandanista type programming it airs. Vincent P. Collura of Florida, who just received a QSL letter from the station theorizes that the station may be owned by Cuban exiles of which there is a large number in San Jose. Interesting possibility!

Once again we want to remind readers that clandestine station loggings, QSL information, clues to addresses or who may be operating stations or background information on those groups you may find in the press, station schedules, QSL copies and such are all needed. Your input helps us provide a more information-filled column!

All for now. Good hunting! PC



COMMUNICATIONS CONFIDENTIAL

BY DON SCHIMMEL

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

Although I commented on this subject some time ago, I want to again mention it because in recent months I have had additional requests for identification of garbled copy. I am referring to the garbage printout which can result when using a Morse code copier to copy hand sent Morse. These copying devices are great but their few limitations must also be recognized. They copy exactly what they hear. If hand sent Morse does not approach a machine-like quality, the copy will not be completely accurate. So, if your copy seems to be gibberish and full of E's and T's, this may be a clue that you are tuned to hand sent Morse code and the operator has too distinctive a style to his first.

George Osier, NY says he copied a number station on 3225 kHz with a YL using an unidentified language. George thought one of the numbers sounded like "Yibbidah." Sorry George but I am unable to determine the language. Maybe one of our readers can come forth with an identification?

Our congratulations to Steve McDonald, BC, Canada who was the recipient of an award given by the Longwave Club of America. In addition to his many other SWL activities, Steve is a regular contributor to Communications Confidential providing loggings, interesting background comments, plus sharing his QSL's with us. And in regard to the latter, here are some QSL addresses sent in by Steve. Beacon AA, 365 kHz: FAA, AFSFO, RR-2, Box 97, Fargo, ND 58102; Beacon NM, 278 kHz: FSSM Matagami, Transport Canada, PO Box 430, Matagami, PQ, Canada, J0Y 2A0; Beacon CUF, 404 kHz: Tuolumne County Airports, Columbia & Pine Mountain Lake, 10723 Airport Road, Columbia, CA 95310.

Jim Moeller, NY wrote "I am a first time contributor to the column. My station consists of a Heath SW-7800 SW receiver, and a Bearcat 170 Scanner. The Heath is fed to a 18AVT/WB vertical, and the Bearcat is on a ⅝ Wave ground-plane tuned to 145 MHz. I have been an Amateur Radio operator for 24+ years, and have discovered SWL'ing only recently."

From England, Simon Mason advises the time station on 4625 kHz in the Harry Helms article in the December 1988 *POP'COMM* is easily heard in Europe and he has timed the interval between pulses as about 2.8 seconds. "One minute before the hour the pulse gives way to a continuous tone which lasts for 2.45 seconds, drops in frequency for a few milliseconds and continues for another 2.45 seconds and at the hour the usual 'pip' restarts."

C.J. Suire, MS tells us "I use a Kenwood R-2000 with some forty feet of wire in a small horizontal loop (I suffer from the dreaded restricted space disease) for HF. I also use a Realistic Pro-2004, Pro-2021 and several other scanners to keep up with 'local happenings."

Another first time contributor is Alain

Department of Posts & Telecommunications

P.O. BOX 40, SUVA, FIJI

TELEGRAMS POSTGEN, SUVA : TELEX No. FJ21104 : TELEPHONE No. SUVA 019 EXT. 487

YOUR REF : IN REPLY PLEASE QUOTE : P&T 44/123.2

20 September 1988

Mr B Combs

U.S.A

Dear Sir,

RECEPTION REPORT

Thank you for your letter of August 20, 1988 and the attachments.

The data supplied by you are reasonably accurate. Our department has a 1KW Racal 127 wideband power amplifier which is being driven from an ancient Marconi TSG crystal oscillator/driver on frequency 8690/12700KHZ in the AIA made. The system employs a wideband conifan antenna array. This frequency is used by our Coast Station 3DP for maritime HF CH communications with ship stations equipped to operate on radiotelegraphy.

As you are no doubt aware, solar activity during the coming years will be of advantage to long distance radiocommunications in view of the annual rising trend in sunspots towards its cyclic 11 year peak.

This letter serves as a verification of your reception report.

Yours faithfully,

J Turaganivalu
for: Permanent Secretary for Posts & Telecommunications

Informative QSL received by Bob Combs, CA.

Bahrain Telecommunications Company

شركة البحرين للاتصالات السلكية واللاسلكية

MARITIME OPERATING CENTRE (M.O.C.)
DR4
BAHRAIN TELECOMMUNICATIONS COMPANY
P.O.BOX 14, MANAMA
BAHRAIN

Date: 18th OCTOBER , 1988

Subject: QSL VERIFICATION

Mr.Robert Landis

Dear Sir

Thank you for your letter of 4th September 1988 . I found the contents highly interesting.

This is to confirm that your reception report corresponds with our logs. For your information our transmission details are as follows:

DATE:	4th September 1988
TIME:	1722-1730UTC.
FREQUENCY:	17175.2KHz
CALLSIGN:	A9M
POWER:	2KW
ANTENNA:	ROMBIC.

Please keep up the interesting hobby.

Yours faithfully

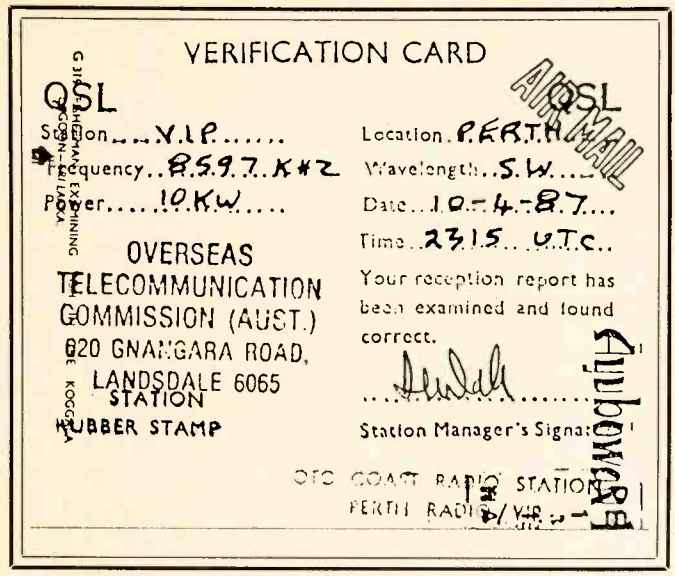
Bahrain Telecommunications Company (B.S.C.)
M. O. C.
18 OCT 1988
Admin. Supervisor

This Middle East QSL was received by Bob Landis, MD.

Table I
New USN MARS Callsigns

CALLSIGN	UNIT
NNN0-NCI	Navy CB (SEABEE) Station Sicily
NSI	Navy CB (SEABEE) Station Sicily
CLP	USS Harry W. Hill DD986
CCJ	USS San Jose AFS7
CKS	Naval Special Warfare Group (SEALS) Naval Amphib. Coronado, CA
NCJ	USCG Training Barque Eagle WIX327
NPM	NAVCAMSWESTPAC (Guam)
NTR	USS Theodore Roosevelt CVN71
CFB	USS Ford FFG54
CJL	USS Jarrett FFG33
CBF	USS Hawes FFG 53
CCQ	USS Conquest MS0448
CDP	USS Reuben James FFG57
CYY	USS San Jacinto CG56*
CYZ	USS Whidbey Island LSD41*

NOTE: *indicates reassigned callsign



A QSL from Australia sent to Dr. A.M. Peterson, IN.

Charret, a French citizen living in West Berlin. His receiver is a FRG-8800 which is connected to a longwire antenna.

Andy Gordon, CT reports he received an invitation to visit the submarine *USS Shark* when they return to their home port. The invitation was included with the QSL. Andy observed the *USS Ranger*, CV61 (using callsign "Gray Eagle") calling the USAF Comms station at McClellan AFB, Sacramento, CA on the USN ISCB-CSS 4066.1 kHz net. Andy later learned that the Ranger regularly makes phone patches thru McClellan when in the SoCal area and uses 8989 & 11239 kHz USB. Andy has compiled some more new MARS callsigns and they appear in Table 1.

Some curious transmissions were logged by J.M., KY consisting of RY's, NOW IS THE TIME, etc. and QUICK BROWN FOX etc. all sent in CW. This type of activity has been noted on 7645, 8022, 10168 kHz and most recently on 13630 kHz when station EOP2 sent the tests in CW first at 15 wpm, then 30 wpm and finally at 45 wpm. Previous callsigns seen were ROVER 4151/8029 and ALPHA 1.

During the recent transmission, part of the test read "AS FOR ME I THINK THAT 960 OF THE LITTLE CHARACTERS IS A BIT MUCH FOR THIS TEST BUT THAT IS WHAT THEY REQUIRE." Now is it just as coincidence that a standard FAX printer output holds 960 dots per line????

Seeing the photos of the antenna systems from Longmont, Colorado in the Feb. 89 column brought back memories. So wrote Marty Hoar, CO. "In 1980 as a High School senior I participated in an 'Executive Internship Program.' I spent a half-day, every day, at the air route traffic control center (ARTCC) in Longmont. It covers a huge 4 or 5 state area (one of the largest) and hands off the traffic control responsibilities to the airport control towers as they cover a 5-20 mile radius around the given airport. During my time in the program, I attended planning meetings and saw the project from start to finish. The multi-band dipole was planned as a future project so I didn't see that to completion. The beam was originally installed on top of the large, solid colored building, in the photo, in the background approximately in the center.

The receiver used was an Aerocomm 2210 HF AM/SSB unit. The transmitter was an Aerocomm 1311 1000 watt SSB unit. The frequency was in the mid 7 MHz band."

Our thanks to Marty for this interesting insiders information.

An unidentified Arabic language activity has been reported by Henri Walser, Switzerland. Henri advises he has observed intensive USB network traffic on 14390 and 14386 kHz for several months.

"One transmitter, which I presume to be the control station, shows up with remarkable field strength here (9++). The others are usually weaker but with moderate to good readability most of the time.

There are several stations involved and the language used exclusively is Arabic. As I am not able to understand Arabic I can only guess at the content of the conversations. Very often the control station rattles off an endless number of sentences which seem to be some kind or orders or reports. Each sentence is repeated twice. Sometimes voices are considerably raised and it seems as if heated arguments are fought out. But maybe this is just their normal way of discussing things. Somethings several stations try at once to get into the fray.

Very rarely could I make out some names (mostly geographic or personal Arabic names like Al Raschid, etc.). Once I believe Arafat was mentioned and one time I distinctly heard several references to 'Panama Canal'.

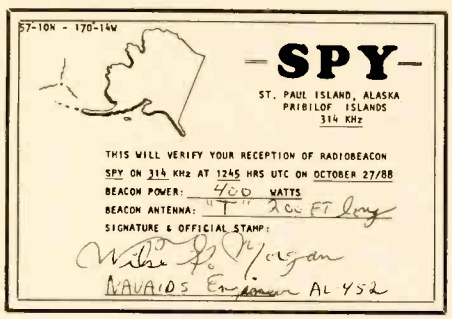
Transmission times are irregular but I found that on weekends between about 0900 and 1700 UTC, the network is usually busy with quiet periods in between.

I have also heard the same or similar traffic on 14386 kHz. Sometimes in this case the 14390 kHz frequency was occupied at the same time by a strong continuous and unmodulated carrier.

It could be a PLO network discussing routing business matters. The Gilfer 'Confidential Frequency List' shows 14384.7 kHz as an "Official" PLO channel. This frequency is sometimes busy with RTTY transmission."

Thanks Henri, we appreciate the detailed rundown and look forward to additional comments regarding this mysterious network. The 14350 to 14600 kHz region is home to many unidentified communications including a suspected terrorist activity plus drug smuggling networks.

Dave Torres, New York City, NY sug-



Steve McDonald, BC, Canada advises this RadioBeacon is located halfway between BC and Siberia and 1,998 miles from his QTH yet its signal is regularly logged in California and Hawaii.

gests listening for what seems to be a new trunked-typed HF system similar in operation to 800 MHz trunked systems. This one, he says, is used for anti-smuggler comms and most often utilizes the following freqs: 4500, 5571, 7527, 8912, 11073.5, 11494, 12138.5, 15867, 18594, 19131, and 23402 kHz. A data burst lets you know when the freq is going to be changed during mid-contact, which is usually to the next higher freq. If you have a receiver that can scan, you can program in all the freqs here and follow the action from one freq to another. He thinks that this system may be taking over from formerly popular freqs such as 11288 and 18666 kHz. Bears checking out.

To all who have contributed items to the column, I wish to extend my sincere thanks. To those readers who have not as yet sent in some loggings, let's hear from you. It is your column.

Ute Intercepts
(All Times Are UTC)

236: Beacon OW, Ottawa, ON at 0448 (George Osier, NY).

248: Beacon GGI, Grinnell, IA at 0357 (Pearce, TX).

263: Beacon YGK, Kingstan, ON at 0455 (Osier).

324: Beacon H, un-ID at 0538 (Dyroff, MA). Could it be 314 kHz from Langara Point, BC?-- Ed.

344: Beacon FCH, Fresno, CA w/aviation bc at 0717 (Sabo, CA).

351: Beacon YKQ, Ft. Rupert, PQ at 0549 (Dyroff, MA).

360: Beacon KIN, Kingston, Jamaica at 0428 (O'Connor, NH).

362: Beacon EZB, Oakland, CA w/aviation bc at 0725 (Sabo, CA).

366: YMW, Moniwaki, PQ at 1146 (Tom Kneitel)

376: Beacon ZIN, Gt. Inagua, Bahamas at 0452 (Pat O'Connar, NH).

377: Beacon HI, un-ID at 2320 (Dyroff, MA).

380: Beacon LIO, Puerto Limon, Costa Rica at 0458 (O'Connor, NH).

396: Beacon NEL, USN Lakehurst, NJ at 0456 (O'Connor, NH).

400: Beacon HIV, Santo Domingo, Dominican Republic at 0459 (O'Connor, NH).

407: Beacon RZZ, Roanoke Rapids, NC at 0452 (O'Connor, NH).

2714: NLZL, **USS Fidelity (MSO-443)** off freq, clg Navy Ops Central Charleston at 1100. Also here was **NAHM, USS Guam (LPH-9)** clg Morehead Tug Control at 1125 (Gordon, CT).

2716: NGUA, **USS McKee (AS-41)** wkg San Diego Control at 1219; NSVN, **USS Nicholas (FFG-47)** at 2252 confirming berth assignment w/Charleston Tug Control; **Navy Tug 824** wkg Little Creek Control w/comms check at 0039. All comms USB (Symington, OH); CGWF, **HMCS Gatineau (DD-236)** clg Halifax Traffic at 2220; Fisher (Cape R.) mkg radio checks w/Canaveral Control at 0945; CZDW, **HMCS Bluethroat (AGOR-114)** clg QHM (Halifax) at 0045; NSVN, **USS Nicholas (FFG-47)** using tactical ID of 1ZX clg Charleston Tug Control at 100'; NNAC, **USS Ortolon (ASR-22)** usind ID Navy Unit 27 clg Charleston Tug Control at 0130; PAVF, **Royal Netherlands Naval Frigate Isaac Sweers (F-814)** clg Canaveral Harbor Control at 0110; 0XV clg Headwaiter Charlie & Autec Operations-- 0XV asked for permission to "enter the range." 0XV also ID'd as Foreclose 35 (believe it's a sub); Barracks 11 (also ID'd as US Navy Dock Master & Canaveral Control) clg Barracks 3, un-ID at 1020. Then called Fisher for radio check & referred to this freq as Net 3; **Pakistani Naval Ship Seif** (ex-USS Garcia, FF-1040) wkg Charleston Navy Tug Control at 1500 (Gordon, CT).

2670: NMO, USCG Commsta Honolulu, HI wkg JHKK re that ship's req for a JJ interpreter. ISB at 0622 (Sabo, CA).

3067: Gold Eagle Center (NCVV, **USS Carl Vinson (CVN-70)**) w/patch thru McClellan AFB, USB at 0543 (Sabo, CA).

3130: 8SE clg B0J but no response, then other stas in net exchanged coded data at 0805. This is USN Atlantic Fleet Area Control freq (Fernandez, MA).

3225: YL in AM-mode w/5F tfc, un-ID lang. One # sounded like Yibbinah. Five tones prior to #'s (Osier, NY).

3237.8: Un-ID auto CW sta at 0438 w/5L grps. Sent few grps then stopped. Vy bad hum came up & few partial characters hrd then brief silence & xmsn resumed to 0440 end (Ed).

3242: At 2200 rapid series of pips to 2205 when YL/RR repeated 185. At 2210 said 31 31 then into 5F grps. Ended w/"Kanet" (Mason, England).

3349: USN MARS net in USB at 0000 had NNN0USN & others plus check in by Army MARS sta AAR3VG.

3370: Signal extended from 3440 kHz. Over the Horizon Radar-B staying here for 5 mins w/skirts that were S-3 to S-5 & center spikes of S-9. At 0816 it came back at 75% of earlier strength for 1 min. This time the center of the sig had 5 separate high sig spikes. Every few 10 kHz the tone sharply changed as tuning across the band continued. For several more mins hrs same sig at vy low strength but in short bursts every min or so. Noted at 0810 (Fernandez, MA).

3378: U ID auto CW sta at 1225 & 0428 w/3 char grps of mixed ltrs/figs. Pauses every 18 grps then repeats sequence. Every so often sequence is changed to different grps (Ed.).

4031: YL/Czech in AM-mode at 1710 w/5F grps (Suire, MS).

4066.1: NDDW, **USS Hewitt (DD-966)** wkg San Diego CSS1 at 0325 req patch w/Camdesron 33; NHKG, **USS Ranger (CV-61)** ID'ing as Gray Eagle Center clg McClellan AFB at 1215. They should have been calling McClellan on 8989 or 11239 kHz where McClellan would handle their patches (Gordon, CT).

4078: Two stas in USB w/scramblers foll by a 3rd weaker sta at 0824 (Fernandez, MA).

4143.6: WXM5364, ship **Alaska Hunter** wkg WTH4325, the **West Track** in USB at 0337 (Sabo)

4419.4: Two Mississippi barge captains at 0830. One was towing 900 ft warth of barges at the time (Fernandez, MA); WYH6348, tug **Sea Breeze** at 0328 in USB clg WHG, but answered by WQZ449; WYT, tug **Sea Prince** at 0451 wkg WQZ449 in Long Beach, CA (Sabo, CA).

4517: AFA3NE, AFA3IL & other in USAF MARS net, USB at 0335 (Sabo, CA).

4580: YL/GG in USB repeating 763 763 763 1 from 2000 for 5 mins. Then Achtung 69 41 59 41 & into 5F grps. Ended w/000 000 Ende (Mason, England).

4588: OM/RR repeating 296 for 5 min at 2100, themn 951 17 & into 5F grps. Ended w/00000 (Mason, England).

4730: YL/SS in AM-mode at 0420 w/5F grps (Osier, NY).

4738: At 2000 a CW sta repeating A7A then 616 26. At 2010, 616 616 26 26 & into 5F grps. Czech sta that alsa uses voice here & on 6675) (Mason).

4740: At 2120, YL/EE repeating 35690 till 2135. Then Ready Ready, 22 22 & into 5F grps. Next day at 2100 same YL w/43101 Ready Ready 18 18 & into 5F grps. Both AM mode. Another day 62794 from 2100 for 4 mins Ready Ready 16 16 & into grps (Mason, England).

4746: MacDill AFB w/Teal 60 in USB at 0042 w/Teal 60 passing Horizontal Observation Data. This data made up of several number grps & key words such as "diagonal." Teal 60 complained that "readings here at the top of the ridge are a little flaky because of the wind." See 8993 kHz intercept. (Suire, MS).

5175: N N N in CW from 1900 for 5 min, then voice xmsn of YL/FF in nec. monotonaus voice w/Group 25 Group 25, foll by 5F grps. Differs from prev format as YL ends w/Finis instead af Fin (Mason, England).

5288: TBO/2, Izmir Navrad, Turkey w/CW marker at 0220 (Kneitel, NY).

5307.3: Beacon O at 0316 (Osier, NY).

5308: OM/RR repeating 327 327 327 1 in AM-mode at 2000-2005 then 679 275 & into 5F grps. Ended w/000 000. At 2100 C & O beacons noted here (Mason, England).

5310: CW sta repeating TIU at 2000. Then ltrs O O O E E & into 5L grps. Used letters TIURQWNOPQ (Mason, England). Do any readers have the breakout for this cut #'s system?-- Ed. .

5318: YL/GG at 2100-2105 repeating 22232 70 369 369 the 5 CW dashes & into 5F grps (Mason).

5320: YL/GG repeating 128 128 128 050 79 149 till 1905, 5 dashes & into 5F grps (Mason, England).

5328: Two OM/SS in USB at 0848 in conversation. This us a USAF freq used by Offutt AFB (Fernandez, MA).

5465.5: CW time pips each sec at 0412, no ID (Osier, NY). Nothing in my records shows a time station here either, George-- Ed.

5500: YL/GG repeating 883 Stish 00 in vy high barking-like voice at 2100-2105. Doesn't seem to actually send any messages though (Masan).

5532: YL in AM-mode at 0738 w/Bulgarian 5F grps (Suire, MS).

5643: Continental 8 a/c to Tahiti Aeradio w/pas report, USB at 0557 (Sabo, CA).

5684: Halifax Military in USB at 0922 w/wx bc foll by RTTY at 0930 (Fernandez, MA).

5692: YL/GG in AM-mode had 3/2F grps at 0831. Another day, in USB, YL/GG had 3/2F msg //with USCG scrambler comms here at 0617 (Fernandez, MA).

Abbreviations Used For Intercepts

AM	**Amplitude Modulation mode**
BC	**Broadcast**
CW	**Morse Code mode**
EE	**English**
GG	**German**
ID	**identifier/ied/ication**
LSB	**Lower Sideband mode**
OM	**Male operator**
PP	**Portuguese**
SS	**Spanish**
tfc	**Traffic**
USB	**Upper Sideband mode**
w/	**with**
wx	**Weather report/forecast**
YL	**Female operator**
4F	**4-figure coded groups (i.e. 5739)**
5F	**5-figure coded groups**
5L	**5-letter coded groups (i.e. IGRXJ)**

5718: Halifax Military to Medevac 5457 in USB at 0329. A/c enroute to get a patient (Sabo, CA).

5729: OM/EE (Architect) in USB w/coded msg & item condx in colors. This is the RAF. Hrd at 0630 (Fernandez, MA).

5762: YL/SS in AM-mode at 0614 w/5F grps. Then 0615 several grps of 2F & at 0616 5F text resumed (Fernandez, MA).

5748.2: YL/GG in USB at 2347 w/5F grps, each repeated X2 (Kneitel, NY).

6432: Un-ID auto CW sta at 1254 w/5L grps. Ended w/BT AR Y & off. Multiplex sig then foll briefly (Ed.).

6518.8: Halifax CG Radio, NS in USB at 0814 w/wx bc by OM (Fernandez, MA).

6522: Poss smuggler ops in USB at 0019, then QSY to "C-8" (Suire, MS).

6655: Honolulu Aeradio wkg several a/c, USB at 0017 (Suire, MS).

6735: Beacon X at 0245 (Kneitel, NY).

6738: Navy SF-08 wkg McClellan AFB in USB w/patch to Duty Office at 1016; Lark 77 wkg McClellan w/patch to Fosdick, USB at 0623 (Symington, OH).

6746: Ditty Bag to Bellhop, USB at 0620 on SAC's SA freq (Sabo, CA).

6756: SAM 86972, USB at 2000 for almost 3 hrs w/US Secr of State aboard enroute Europe (Lamor, FL).

6835: Repairman 26 & 26C w/camms checks in USB/LSB/AM modes at 1530 (J.M., KY).

6840: YL/EE in AM-mode 2316-2340 w/3F grps. Was //5046 but not 5090 (Suire, MS).

6853: YL/GG in USB at 0848 had 3/2F grps, each grp X2 (Fernandez, MA).

6982.5: NA4XA3/mobile, & NA4XAB/base. NASA barge ops in USB at 1552. NA4XAB opr was aboard BA4XAR, NASA barge **Orion** at 1600 to check out xmtr on 14455 kHz (J.M., KY).

6995: At 2000 N N N in CW & at 2005 YL/EE w/Group 30 (X2) then 5F grps. New voice used for this EE/FF & Yiddish sta. Vy deadpan monotone voice barely any improvement over stacatto voice of orifinal op (Mason, England).

7407: YL/GG in AM at 0840 had 3/2F grps (Suire, MS).

7435: Beacon A at 0749, sent slowly every 2.5 secs (Fernandez, MA).

7527: Un-ID auto CW sta at 0019 w/5L cut # grps. Off w/AR (X3) SK (X3) at 0021. At end of every 10 grps there was a slight pause. Msg foll by 2 bursts at 0023 & 0024. 1-0=ANDUWRIGMT-- Ed.

7550.5: Un-ID CW sta at 1342 w/5L grps. Heading was DE 07A date/time GR120 BT. Vy loud sig, but op had sloppy fist (Ed.).

7565: Balladeer clg Gatepost in USB at 1745 (J.M., KY).

7590: YL/EE in AM-mode at 0404 had 3/2F grps (Osier, NY).

7641.9: CZN clg THL w/QSA? in CW at 1354. Both un-ID. Later hrd THL w/tfc of mixed 5-character grps. Figs were 2, & 8 + SS character nyeh (MW) (Ed.).

7860: F4P telling Z6S to execute procedures D & E, USB at 0115 (J.M., KY).

7973.5: SPW, Warsow R., Poland in CW at 0415 w/QSX marker (Osier, NY).

8101: Easy Way & Presidio in USB at 0430 on SAC's AP channel (Sabo, CA).

8112.2: YL/SS in AM-mode w/5F grps at 0608, ending w/Finale Finale (Fernandez, MA).

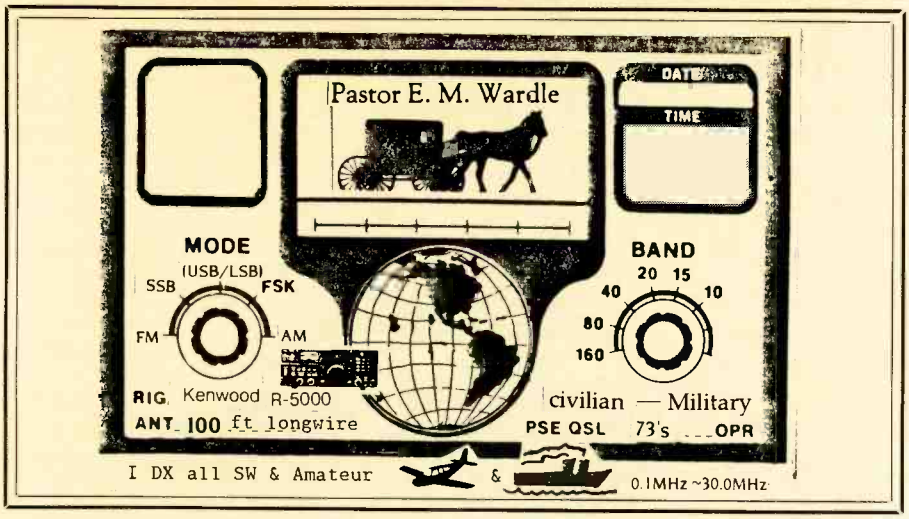
8124: Un-ID CW sta at 0413 w/5L grps (Osier)

8247.7: NGRQ, **USS Anchorage (LSD-36)** clg San Diego CSS2 at 0220. CSS2 is much less used than CSS1 freq (Gordon, CT).

8294.2: KKP, Seattle, WA in USB at 0341 wkg tugs **Sidney Foss & Jeffrey Foss** (O'Connor, NH).

8462: SVT, Athens R., Greece in CW at 0432 w/marker (Osier, NT).

8473: A7D, Doha R., Qatar w/CW marker at 0147 (Kneitel, NY).



Here is the neat QSL card used by E.M. Wardle, OH.

8486: Pyramid 08 asking Freemason about circuit ops, USB at 1418 (J.M., KY).

8532: LZW, Varna R., Bulgaria w/CW marker at 0156 (Kneitel, NY).

8553: CTP NATO Lisbon, Portugal w/CW marker at 0200 (Kneitel, NY).

8669.5: Beacon U at 0005 (Kneitel, NY).

8700: YUR, Rijeka R., Yugoslavia w/CW marker at 0218 (Kneitel, NY).

8707.5: UAT, Moscow R., USSR w/CW marker at 0347 (Kneitel, NY).

8731: WOM wkg **M/V Sky Princess** w/patch, USB at 0011 (Suire, MS).

8737.5: 5BA42, Cyprus R., Nicosia, Cyprus w/voice mirror at 0352 in USB. An OM in EE & Greek ID'ing as Cyprus Radiotelephone Marine Service (Kneitel, NY).

8774.7: NMC, USCG Camspac San Francisco wkg **M/V Titan** in USB at 0720 re med emergency aboard. QSY 4143.1 kHz at 0729 then had hourly check-ins (Sabo, CA).

8903: TRK, Libreville Aeradio, Gabon in USB at 0414 wkg AGC 812 (O'Connor, NH).

8912: Longhorn to 58, USB at 0031; 58 was on a/c in Galvestan, TX. At 0041 Longhorn advises 58 re danger of dropping off passenger. Anti-smuggler ops on YC channel.

8942: Japan Air 718 wkg Ho Chi Minh R., USB at 1654 (Sabo, CA).

8957: Shannon VOLMET, Eire in USB at 2005 w/wx obs at European locs (Fernandez, MA).

8972: J6E, 6RU, & 6RN at 0400 in USB exchanging coded tfc an USN Kilo freq (Kneitel)

8989: USAF Medevac a/c clg McClellan AFB for patch to McChord AFB at 0250. A/c ID'd as Medevac 50263 w/comms re a Canadian C-130 that went down in bad wx in AK during a joint US/Canada exercise (Gordan, CT).

8993: MacDill AFB w/SAC phonetics at 0017; to Sentry 58 at 0021 w/radio check; clg Bookshelf at 0022 but no response; at 2223 hrd Gull 32 w/patch via MacDill giving obs data hrd 4 days earlier on 4746 kHz. Gull 32 then patched to Charleston CP. All USB (Suire, MS).

10000: BPM, PRC time sta in CW at 0858 mixing w/WWV (Fernandez, MA).

10004: RID, Irkutsk, USSR time sta in CW at 1958. Also weakly RWM, Moscow on 9996 kHz (Fernandez, MA).

10195: Zero clg 1, 2, 3, & 6, USB at 1958. Also noted w/radio checks 1 kHz higher in freq a little later (J.M., KY).

10225: KCP63, FAA Longmont, CO clg WWJ50, FHWA, Newport, OR in USB on FHWA freq F-33 (J.M., KY).

10258: USN MARS in USB at 0240. NNN0CBC wkg Whidbey Island NAS, WA w/patches (Sabo).

10390: FSB57, Interpol HQ Paris, France in CW at 0449 w/CW ID & ARQ phasing sig (Osier, NY).

10643.5: Beacons S & C at 0458 (Osier, NY).

10865: YL/SS in AM-mode w/callup at 0744 foll by 5F grps. Think it was a live xmsn. Finale/Finale at 0755 quickly foll by another callup, then 5F grps to 0759 w/abrupt end & xmtr shut down 30 sec later. Op appeared to be constantly changing distance from mic & near end sounded exhausted & bored from reciting the lengthy string of #'s (Fernandez, MA).

10891: KAD200, US Immigration & Naturalization Service HQ, Washington, DC w/msg re "String Project Yo Yo" for WWK75, FHWA Indianapolis, IN at 1510; WWJ77, FHWA Brownwood, TX in USB at 1545 explaining AEA PK-232 operations to WWJ82, FHWA Lincoln, NE (J.M., KY).

11045: WWJ44, FHWA Dahlonega, GA w/Region 4 roll call at 1531. Other Reg 4 stas incl WWJ63 at Nashville; WWJ66 at Greenwood, MS; WWJ69 at DeFuniak Springs, FL; & WWJ70 Montgomery, AL. This is FHWA freq F-35 (J.M., KY).

11080: USN radio op training net in USB at 2226. Various USN alphanumeric tactical ID's used for practice msgs (Sabo, CA).

11155.5: Beacon K at 0416 (Osier, NY).

11176: A/c MAC-40641 coordinating overflight of Niger & Benin w/Format at 0620 (J.M., KY).

11178: OM/EE in USB, MAC-40621 & others (Moeller, NY). Time?-- Ed.

11244: Rushmore Control wkg Kiska, USB at 1928. Tfc re talk of "3 re-entries" & that Rushmore Control would contact Bomber Control (Moeller, NY)

11246: Spiny 21 wkg MacDill w/patches to Pope AFB in USB at 2011; King 29 wkg MacDill in USB at 2028 (Symington, OH).

11267: USN Unit 01E clg any sta for radio check. Response from 7KC at 0036. Same routine between 4YR & 2 LX at 1134. Units RK5, 4YR, 2LX, & KRK at 1208. 2JU clg 2LX at 1212 but no joy. Then 2JU to any sta in net for radio check. SAC type phonetics from 7FS at 0013 (Suire, MS).

11288: Slingshot, Omaha 24, Flamingo, etc. in active anti-smuggler a/c tracking net, USB at 2333. This is YD freq (Suire, MS).

11566: YL in AM-mode at 0405 w/phonetics in grps of 5 (Osier, NY).

11610: YL/GG in AM-mode at 1545 w/5F grps (Suire, MS).

12149.5: Beacon I at 0438 (Osier, NY).

12168: AAC46, US Army, Ft. Eustis, VA; AAC35, Ft. Belvoir, VA; AAC25, Ft. Derrick, MD; & AAC43, un-ID loc, w/sig checks & roll call, USB at 1926 (J.M., KY).

12327.5: Beacon U at 0447 (Osier, NY); at 0255 (Kneitel, NY).

12533.5: UPLK, Soviet bulk carrier **Akademik Bakulev** in CW wkg UFB at 0520 (McDonald, BC).

12705: DHJ59, Sengwarden Navrad, FRG in CW at 0426 w/marker (Osier, NY).

12740: ZLB5, Awarua, New Zealand in CW at 0500 w/marker (Osier, NY).

13054: JDC, Chosi R., Japan in CW at 0335 w/marker (Osier, NY).

13169: High Seas Op clg cruise ship **Norway** (12398 kHz) at 1450 in USB for patches (Ed.).

13201: A/c Ghostrider 1 to McClellan AFB for radio check, USB at 0317 (Sabo, CA).

13244: MacDill AFB, USB at 1938 w/patch to McGuire AFB (Moeller, NY).

13330: Middle East Airlines #230 to Cedar Base (Lebanon), USB at 0613 (Sabo, CA).

13377: 2 un-ID stas in CW at 1814 exch 5L grps. One sta vy weak (Ed.).

13380: TIM, Timon R., Costa Rica in CW at 2121 w/marker (Ed.).

13412: Air Force 2 carrying VP to Andrews AFB from FL, LSB at 1900 for 2 hrs (Lamar, FL).

13430.7: Un-ID SS sta in CW advising another (unheard) sta that he's standing by (Ed.).

13630: WUI5, US Army Corps of Engineers, Albuquerque, NM clg KDC20, FAA Salt Lake City, UT in USB at 2110; WHX20, FAA Seattle, WA, KDM53 at Anchorage, AK, & KAD200 at INS HQ in DC all here in USB at 1820 (J.M., KY).

13974: NAWF, USS **Aubrey Fitch (FFG-34)** (NNN0EMC) wkg NNN0NBL at 2300 (Gordon, CT).

14408: AGA0HO, Howard AB, Panama, AFA3BZ & AFA4JK in USAF MARS net, USB at 2337 (Sabo)

14426.5: Un-ID auto CW sta at 1501 w/5F grps, cut 0 as letter T, off w/TTT TTT (Ed.).

14383.5: WWJ46, FHWA at Ft. Worth, TX w/msg re emerg lighting system for NNN0NIG, USB at 1634 (J.M., KY).

14430: YL/GG in USB at 1229 sending 3/2F grps (Kneitel, NY).

14445: NA4XAK, NASA barge (**Orion**?) w/info re LOX eqpt at 2105, USB. Went to 6982.5 (Channel 3) at 2120 but nothing hrd (J.M., KY). Canada's CFARS sta CIW202 advised he was QSY to Charlie freq then he was monitored on 14458.5 kHz, USB at 1741 (Sabo, CA).

14448: Repossess clg Fearless, USB at 2134 on AJ freq (J.M., KY). Believe this is a USAF freq-- Ed.

14463.1: NNN0CMJ, **USS Charles Adams (DDG 2)** in USB at 0015 w/patch thru NNN0ZLI (O'Connar, NH).

14469: CLP1, MFA Havana, Cuba w/CW marker at 1904 (J.M., KY).

14477: NNN0CUO, **USS Spruance (DD-963)** wkg NNN0UXK w/patches. Vessel aground off Andros Isl in Bahamas while wkg for Autec Ops (Gordon, CT).

14488: 4USC & 6USC w/MARS tfc & patches, USB at 2055 (Suire, MS).

14686: Ambush wkg Atlas, anti-smuggler ops in USB on P channel (Sabo, CA).

14700: X5 clg X6 several times w/o response at 2240, USB. Seems to be a USN freq but ID's aren't typical of USN (Suire, MS).

14752: YL/EE in AM-mode at 1009 running 4F grps (Suire, MS).

14945: YL repeating Kilo Whiskey, USB at 1430, then 908 908 Gruppen 844 82 Gruppen & into GG 5F grps (Mason, England).

14967: Beacon U at 1313-- sometimes letter U sent so that it was a borderline K (Kneitel, NY).

14968: CMU967, Soviet Navrad, Santiago, Cuba in CW at 1317 exchanging comms with another sta (not hrd) (Kneitel, NY).

14996: RWM, Moscow, USSR time sta in CW at 0411 (Osier, NY).

15081: Trenton Military, Ontario, at 1905 w/selcal test & USB patch for an a/c (Suire, MS).

15610: OM/RR repeating 176 in AM-mode at 1300, then 585 26 & into 5F grps. Ended w/585 26 00000 (Mason, England).

15968: Weak un-ID personal chit-chat re radio gear on a ship or in an office. Some X-rated words & mention of next nite's sked. In LSB at 1833 (Suire, MS).

16348: KCP63, FAA Longmont, CO w/patch from Challis Alpha (AWACS) to Raymond 24 at 1745, USB. Said this was Channel 13 (J.M., KY).

16463.1: IBHE, Italian pass liner **Achille Lauro** in USB at 1535 w/patches thru GKT62 (O'Connar, NH).

16593.3: **M/V's Pac Princess, Pac Glory, Pac Emperor, Pac Baron, Pac Majesty,** bulk carriers of Kasca Shipping of Pusan, S. Korea in USB at 2305 (Sabo, CA).

16780: 9HCV2, cargo ship **Seafighter** in CW at 1932 wkg DZJ (O'Connor, NH).

17210.5: NMN, USCG Portsmouth, VA in CW & RTTY at 1920 w/marker (Fernandez, MA).

17329.1: 5BA62, Nicosia, Cyprus in USB at 1514 w/EE & Greek voice mirror (O'Connar, NH).

17975: OM/EE in USB at 2003. ID sounded like it was Bear Trap, passing coded tfc an SAC freq (Fernandez, MA).

18002: AFI, McClellan AFB, CA w/SAC EAM in USB at 1814 (J.M., KY).

18110: KA2XUK, experimental sta, Lakewood, NJ & sta KA2XAE discussing radio eqpt at 1623. This was 8 hrs before band was opened to hams. KA2XUK mentioned in POP'COMM Washington Pulse column of 9/88 (J.M., KY).

18666: A/c's 350 & 351 wkg Atlas in USB at 1933 in anti-smuggler ops on H channel (Symington)

19077.4: OM/AA in contact with another sta (not hrd), LSB at 2047. Speaking slowly & pronouncing carefully, repeating each word X4, spelling out many words. Included lists of words or names. Eventually several other stas joined into net (Kneitel, NY).

20188.5: AIR, USAF MARS HQ, Pentagon wkg un-ID & unhrd sta, USB at 2201 (Sabo, CA).

20545: Un-ID sta w/5F grps to another un-ID sta on 19640.4 kHz. Prob Cuba/Angola mil CW circuit. Intercepted at 2141 (Ed.).

21765: Portland R. (Royal Navy), England wkg a/c Orion 826 over N. Atlantic. USB at 1657 (Sabo, CA).

21823.9: US Army MARS net w/patches in USB at 2314. Included ABM1US at Camp Zama, Japan (Sabo, CA).

22515: KFS, Palo Alto, CA w/tfc list in CW at 1538 (J.M., KY).

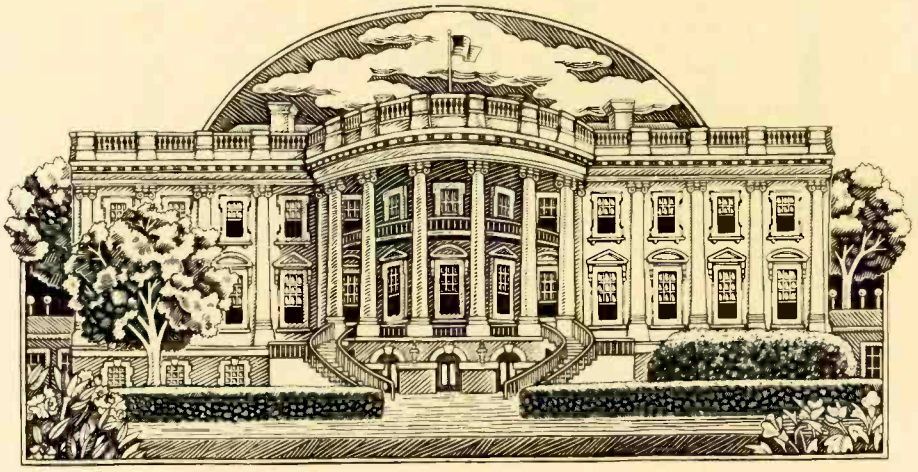
23441: Abalone w/Alpha Monitor tfc, USB at 0358 on PACAF's Victor Channel (Sabo, CA).

26755: G0E clg U0E just prior to RTTY xmsns. In USB at 1845 (J.M., KY).

27974: NNN0CYT, **USS Yorktown (CG-48)** clg NNN0FAB w/o luck. Op said his 35' whip broke so they were using a 37' longwire strung on a diagonal off the yardarm (Gordan, CT).

WASHINGTON PULSE

FCC ACTIONS AFFECTING COMMUNICATIONS



Rules For Government/ Non-Government Use Of 932-935/941-944 MHz Bands

The Commission adopted coordination procedures, licensing requirements and technical standards for shared federal government/non-government fixed service use of the 932-935 and 941-944 MHz bands.

In 1984, the FCC allocated the 932-935 and 941-944 MHz bands for government/ non-government use, but it did not at that time address procedural and technica rules. In November 1986, the Commissio proposed procedures and rules to be fc lowed in sharing the 932-935/941-9 MHz bands whereby government and non-government users would have equal access.

The Commission reserved five of the six megahertz for point-to-point use, and one megahertz for point-to-multipoint (multiple address) use. The technical standards for both government and non-government users are similar to those currently in use in non-government private fixed bands. Government and non-government entities will have co-equal access to the new fixed bands as proposed.

The FCC established an initial one-week filing window that will apply to both point-to-point and point-to-multipoint government and non-government applications. Public notice of the filing period will be issued by the Commission. Following the receipt of applications by the FCC and the National Telecommunications and Information Administration (NTIA), all acceptable applications will appear on a public notice to be issued by the Commission after consideration with the NTIA. Following issuance of the public notice, 30 days will be allowed for technical objections to be filed.

Coordination between government and non-government users will be accomplished via the Interdepartment Radio Advisory Committee of the NTIA. After the initial one-week filing window, licenses will be granted to qualified applicants on a daily first-come, first-served basis. In the event of mutually exclusive applications, lotteries will be used to grant licenses.

Concerning Advisory Labeling Of Radio Receivers

The FCC terminated the proceeding that would have required advisory labeling for radio receivers.

Last year, the Commission proposed amending Part 15 of the rules to require labeling of radio communications receivers to advise users that it may be unlawful to intercept protected radio communications. Regency Electronics had asked the FCC to require advisory labeling to educate the public that certain uses of communications scanning receivers could be illegal in light of the passage of the Electronic Communications Privacy Act (ECPA) of 1986.

Although the ECPA prohibits interception of certain classes of communications, the frequencies on which these communications are transmitted can be used for unprotected communications as well. The FCC had tentatively concluded that an advisory label would be the simplest and least burdensome way of alerting the public that some uses of scanning devices are prohibited.

The Commission was persuaded that, given the complexities of the ECPA, it was impractical for a single label to provide sufficient information to properly advise users of the legal requirements. The Commission agreed with some of the commenters that, in some instances, a warning label, by calling attention to a prohibited activity, might encourage it. Furthermore, it noted that the comments indicated that some manufacturers are voluntarily taking steps to comply with the intent of the ECPA either by informing users of ECPA provisions or by redesigning equipment to omit certain frequencies. In view of these considerations, the Commission concluded that regulatory action was unnecessary at this time.

Propose Amendment Of Amateur Rules To Relocate Certain Beacons

The Commission proposed amending its Amateur Radio Service rules to relocate certain beacon operations in segments of the 2 meter (m) and 70 centimeter (cm) bands.

Amateur stations in beacon operation are used to facilitate the measurement of radio equipment characteristics, the adjustment of radio equipment, the observation of propagation phenomena, or other such experimental activities. Because automatically-controlled beacons transmit continuously, they dominate the channel utilized. Commission rules therefore limit this type of beacon to small segments where continuous one-way transmissions can be accommodated.

The proximity of continuous transmissions to frequencies where moonbounce and other weak-signal experimentation takes place may result in interference to the latter. Such interference deprives experimenters of the propagation information which they regularly use in their operations. Therefore, the Commission said is appears desirable to relocate the 2 m and 70 cm band segments for automatically-controlled stations in beacon operation. Comments are requested on this proposal.

The Commission emphasized, however, that it is not proposing to change either segment authorized for beacons in the 1.25 m band. The frequencies between 220-222 MHz have been reallocated exclusively to the land mobile service for both government and nongovernment operations. The beacon segment in this part of the 1.25 m band will be removed when 220-222 MHz is deleted from the amateur service rules and incorporated into the land mobile service rules. Beacons may continue to transmit in the 220-222 MHz segment until such time as rules are adopted effecting the change. The beacon segment between 222 and 225 MHz in the 1.25 m band that continues to be allocated to the amateur service is not affected. PC

COMMUNICATIONS SHOP

Advertising Rates: SCAN members and *POP'COMM* subscribers are entitled to one FREE 30-word, non-commercial classified ad per year. Enclose subscription name label with ad copy. For those people not in the previously mentioned groups, non-commercial ads are 30 cents per word, including abbreviations and addresses; minimum charge $6.00 per issue. Ads from firms offering commercial products or services are $1.00 per word; minimum charge $20.00 per issue. Boldface words are $1.20 each (specify which words). Leading key words set in all caps at no additional charge. All ads must be prepaid in full at time of insertion; a 5% discount is offered for prepaid 6 time insertions. All ads must be typewritten double spaced.

Approval: All ad copy is subject to Publisher's approval and may be modified to eliminate references to equipment and practices which are either illegal or otherwise not within the spirit or coverage scope of the magazine.

Closing Date: The 10th day in the third month preceding date of publication. Because the advertisers and equipment contained in Communications Shop have not been investigated, the Publisher of Popular Communications cannot vouch for the merchandise listed therein. Direct all correspondence and ad copy to: PC Communications Shop, 76 N. Broadway, Hicksville, NY 11801.

MIL-SPEC COMMUNICATIONS—new and used equipment, repair services and installations. Box 461. Wakefield, RI 02880, 401-783-7106. Catalog $2.00 Credit to purchase.

MOST DANGEROUS BOOK EVER PUBLISHED—NBC, CAN YOU—duplicate CIA tricks; open locks, sales; save on surveillance gear, listen thru walls; see in the dark; get unlisted phone numbers, credit/personal records; beat the lie detector; chemically read thru envelopes, etc? HOW TO GET ANYTHING ON ANYBODY, 264 pages, 8½ × 11, $33.00 postpaid. CEP, INCORPORATED, P.O. Box 865-9LP, Boulder, Colorado 80306 (303) 443-2294.

CATV converters & descramblers. Quality products. Professional service. Call 1-800-541-5487. VISA, M/C accepted. Mountaintech Inc., Box 5074, Mt. Crested Butte, CO 81225.

ELECTRONIC SPYING is the name of the game. It's also the title of a startling book which reveals the closely guarded methods & equipment used by professionals & amateurs who eavesdrop on homes & businesses with (sometimes) legal and (usually) illegal *bugs & wiretaps*. Written in non-technical language everyone can easily understand, ELECTRONIC SPYING has photos & illustrations clearly revealing exactly how they do it & where they get the equipment (much of it inexpensive & easily available). Leaves nothing to the imagination! Latest techniques covered & offers an in-depth wealth of information on the ever increasing electronic invasion unavailable from any other source. This book is used by law enforcement agencies as a reference manual. Only $8.95 (plus $1.00 postage) per copy from CRB Research, P.O. Box 56, Commack, N.Y. 11725. (NY residents add sales tax.)

SIDEBAND OPERATORS! Join the oldest/largest network of 27 MHz SSB operators. Now more than 100,000 strong! Send self-addressed stamped long (#10) envelope for FREE details and application (no obligation). SSB Network, P.O. Box 908, Smithtown, NY 11787.

COMMUNICATIONS PLANS, BOOKS, KITS! AM/FM broadcasting (licensed/unlicensed), 1750 Meter transceivers, Ham/CB amplifiers, surveillance bugs, more. FREE catalog. PANCOM, Box 130-P07, Paradise, CA 95967.

WANTED—PRO2004's in non-working condition. Wanted for parts will pay reasonable price. Must have all internal parts. Send description and price wanted to Lester Jernigan, P.O. Box 2406, Orange Park, Fl 32067-2406.

FOR SALE Kenwood R-1000, 2 and 4 kHz modified ceramic filters, Realistic DX200, Sperry MK6 Loran, Bearcat III scanner, best offers. Michelle Shute, P.O. Box 15391, Pensacola, FL 32514.

FCC Commercial General Radiotelephone License Prep Course by correspondence. 60 individual lessons, $89.50. Payment plan. Also BASIC COMPUTERS, $39.50; certificates. Details free. AMERICAN TECHNICAL INSTITUTE, Box 201, Cedar Mountain, NC 28718.

ELECTRONICS—COMPUTER—SECURITY—ENERGY—MEDICAL Publications, Products, Services. Catalogs $3. CONSUMERTRONICS, 2011 Crescent, Alamogordo, NM 88310. 505-434-0234.

WANTED: SHARP VC-7844U VCR Schematics/Parts/Repairs, IBM PC/XT/AT or Clone, Laser/Other Printer, MIDI Board, Electronic Parts. Williams, 2011 Crescent, Alamogordo, 88310. 505-434-0234.

COMMODORE/AMIGA CHIPS (6510, 6522, 6526, 6567, 6581, 82S100, many more as low as $10.25, 901 ROM-Series $12.50), REPAIRS (e.g., C64-$49.95 + UPS), diagnostics, parts. Lowest prices + ship worldwide. Send for free catalog. VISA/MC. Kasara Microsystems (Div. of Q.E.P.), 9 Kay Fries Drive, Stony Point, NY 10980-0678, 1-800-248-2983.

Wanted—Bearcat Alert model BC-Wa weather radio in good working and physical conditions. Kenneth Petche, 300 N. Zeeb Rd., Ann Arbor, MI 48106.

INTRODUCING INTERNATIONAL RADIO—by Kenneth MacHarg. Non-technical beginner's guide to shortwave. From bookstores, or for $3.95 plus $1 shipping from: Radio, Box 1345, Jeffersonville, IN 47131.

CABLE TV CONVERTERS. Scientific Atlanta, Jerrold, Oak, Zenith, Hamlin. Many others. "New" **VIDEO HOPPER** "The Copy Killer." Visa, M/C & Amex **1-800-826-7623. B&B Inc., P.O. Box 21-327, St. Paul, MN 55121.**

TOMCAT'S BIG CB HANDBOOK, by Tom Kneitel. Just published, 221 large pages, fully illustrated. Complete guide to worldwide AM, SSB, Freeband, 27 MHz operations. Everything they never told you (legal & otherwise) from world's leading CB authority. Only $13.95 (plus $2 postage to North America) from CRB Research Books, Inc., P.O. Box 56, Commack, NY 11725. (NYS residents add sales tax). Dealer inquiries invited.

CB Tricks of the Trade booklet. Learn repair techniques and CB tuning procedures. Sen d $19.95 cash or m.o. to Medicine Man CB, P.O. Box 37, Clarksville, AR 72830.

PRO2004 OWNERS-400 CHANNELS/30 CPS SCAN RATE KIT-$35.00 INSTALLED-$55.00. LESTER JERNIGAN, 818 LOUISIANA, CHARLESTON, SC 29404.

SCANNER FREQUENCY SEARCH SERVICE. Hear all there is to hear! SASE to: Heald, 6886P Jefferson Street, North Branch, MI 48461

Radio Shack Dealer—lowest prices nationwide—new PRO-2005 scanner—400 channels reg. $420, only $399. PRO-34—reg. $330, only $319. DX shortwave—reg. $199, only $189. Save big on all R.S. equipment. No tax outside Florida. Call free orders only (800) 848-3004 or (407) 286-3040 for info. Cotronics, Inc., 2200 S.E. Federal Hwy., Stuart, FL 34994.

Mr. Dealer, do you sell **CB Radios, Antennas, Accessories,** and **Electronics? Send Five Dollars! Refundable** from your first order. Receive **monthly flyers, catalog,** and **dealer price list.** Twenty-one years of serving quality conscious dealers and distributors coast to coast and abroad. **Bennies Warehouse Distribution Center,** RD1, Box 1997, Berwick, PA 18603. Phone (717) 795-2201.

VIDEOCIPHER II Chips. Send SASE for INFO, 3715 Murdoch Ave. 109, Parkersburg, WV 26102.

AUSTIN TRI-BAND scanner and ham antennas. Only a single coaxial line is needed. No radials. SASE Ed Noll W3FQJ, P.O. Box 1042, Doylestown, PA 18901.

"SUGAR CUBE" TRANSMITTER: Sugar cube sized, VHF F.M. Voice Transmitter. Complete Plans. Listing $1.00. Random Technical Productions, P.O.B. 7396, Saskatoon, Saskatchewan, Canada S7K 4J3.

MILITARY ELECTRONICS: CPRC-26 Infantry Manpack Radio, compact, 50-54 MHz FM, Receiver-Transmitter sections, case, antenna, crystal, handset: $22.50 a piece complete, $39.50/pair. Patrol Seismic Intrusion Device ("PSID") TRC-3, $42.50 apiece, $147.50/set of four. R-108 Vehicular/Field Receiver, 20-28 MHz; $27.50 mint. 45 Day Replacement Guarantee. Add $4.50/piece shipping, $9 maximum. Baytronics, Box 591, Sandusky, OH 44870.

ATTENTION: Will "Bunky" of Illinois' (February RTTY Department) please contact me regarding TTY. Joe Hueter please contact me regarding WAVE. Wm. Bauer, W4NZY, 119 North Birchwood, Louisville, Kentucky 40206.

BENNIES
Distribution Center

Mr. Dealer, do you sell **CB Radios, Antennas, Accessories,** and **Electronics? Send Five Dollars! Refundable** from your first order. Receive **monthly flyers, catalog,** and **dealer price list.** Twenty-one years of serving quality conscious dealers and distributors coast to coast and abroad.

Bennies Warehouse Distribution Center
RD1, Box 1997, Berwick, PA 18603
Phone (717) 795-2201

Please send all reader inquiries directly.

RADIO WEST
SHORTWAVE AND AM RADIO EQUIPMENT

SONY 2010 MODIFICATIONS

RADIO WEST'S SONY 2010 FILTER MODIFICATIONS WILL IMPROVE YOUR SELECTIVITY FOR ENHANCED DXING ABILITY. WE HAVE TWO VERSIONS, THE "SWL" & "DX'ER." THE "SWL" VERSION IS A MIX OF GOOD AUDIO & BETTER SELECTIVITY. THE "DX'ER" HAS THE BEST SELECTIVITY OF THE TWO. THE NARROW REPLACEMENT FILTER IS 2.6KHz @ -6dB AND 4.1 KHz @ -50dB. $40.00 + $6.00 S/H EACH.

SONY 2010 RECEIVER $345 $6 S/H

850 ANNS WAY
VISTA, CALIFORNIA 92083
(619) 726-3910

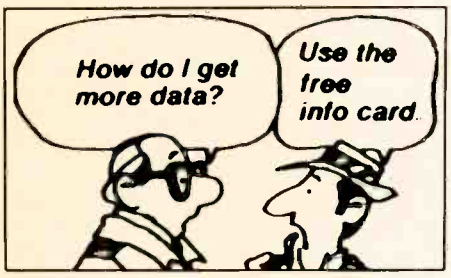
Price list $1.00 postpaid.

"Sail around the world with RADIO WEST"

CIRCLE 118 ON READER SERVICE CARD

World Probe
$29.95 + $3 P&H
World Band Scanner Antenna
• Cuts Noise • Improves Reception • Indoors or Out •
• Works with all World Band Portables and Scanners •
• Sleek 6-ft Probe with Integral 25-ft Low-Loss Shielded Feedline •
• Fully Insulated and Weather Sealed • Decorator White Design •
AntennasWest Box 50062-P Provo, UT 84605 *801 373 8425*
FREE Storage Pouch & Universal Connector Kit

CIRCLE 11 ON READER SERVICE CARD



CIRCLE 121 ON READER SERVICE CARD

Log More RTTY with the
Essential
RTTY Frequency List
Over 1,000 active frequencies.
$10.95 plus $1.25 ($2 foreign)
US Funds
Tiare Publications
P.O. Box 493
Lake Geneva WI 53147

Beaming In

(from page 4)

coating on a pill that I have always found very tasty, It seemed patronizing and giving in to the temptation to talk down to these people. My experience has been that these people are a lot sharper than some would give them credit. After getting past the initial novelty of hearing Stockholm, Havana, and Madrid, they usually get so fired up on what that little box can do for them that they crave lots of information.

Still, I can't deny the "worldband approach" has been a way of getting technophobic persons to at least take that first faltering step towards doing something that they might never otherwise even thought of trying. Some may never seek to expand their involvement to a level more complex than those early stages, but the mail we are receiving here at the magazine looks to us like lots of these people soon have good questions, become seekers of knowledge, turn into avid POP'COMM readers, and emerging participants in the more traditional aspects of the SWL'ing hobby, like joining DX clubs, etc. Many are first introduced to listening by means of an excellent guide called *Passport To Worldband Radio*.

Generally speaking, it's exhilarating to see all this activity in a hobby that, only as recently as seven or eight years ago, was given up by many as fading away, or else lost somewhere out there in the twilight zone.

The reasons for this interest in monitoring the airwaves? Possibly it's the availability of these attractive all-band portables, or are the receivers merely the effect rather than the cause? Maybe it was the popularity of CB radio beginning 15 years ago that opened the doors to the public's knowledge of the wonders of tuning in distant places on the radio. Surely, many different factors must have all worked in conjunction to bring about the happy results.

I don't wish to appear immodest, but I like to think that POP'COMM has made a significant contribution towards actually getting the ball rolling into some distinct direction that is placing SWL'ing back in the big leagues again, where it belongs.

Now that it's growing again and receiving lots of publicity in the national media, there's a message that should be copied by all concerned. It is , of course, that our hobby must continue to thrive. It can never again be permitted to be ignored and become a faint and diffused blur. While it's true that the monitoring hobby is, if examined under a microscope, an amalgam of assorted specialties and degrees of involvement, it's also a fact that all of its members are its stewards and are responsible for its future.

You and I, all of us, have to continue to talk up the hobby, encourage new members, and support its various institutions to the best of each of our abilities. If *we* don't do it, then who will? PC

USE

YOUR

FREE

INFORMATION

CARD

Scanning Today *(from page 7)*

have to do a searching around until you hear it. Remember that there are periods on silence on the Shuttle channel, so don't give up on your first few searches through. Also, in some areas where the repeater is the only or primary one—or designated for emergency use—they may take a break to attend to normal business. There are also a few areas where a non-repeater frequency is used for the Shuttle in the 144-146 MHz range, or a repeater in the 420-450 MHz. But generally you find the transmissions rebroadcast in the 146-148 MHz range. Have a listen . . . it's fun and very interesting.

Summer Is Time For Portable And Mobile Scanners

If you don't own a mobile or portable scanner for summer travel, you'll be missing some of the real enjoyment that can be had while traveling. In a strange city or town it can give you a whole new perspective of what the area is like, as well as providing some very useful information from state Highway Patrols, road highway repair crews, etc.

Again this year SCAN is offering the state-by-state legal guide for traveling. It's indispensible in making sure you don't inadvertently violate a scanner use law somewhere while traveling. By the time you read this, the latest updated version should be off the press. Many hours of legal research goes into developing the guide. It is available for just $1.50 if you provide a business-size self-addressed and stamped envelope.

Otherwise the cost is $2.50. Be sure to send your order to SCAN Legal Guide, P.O. Box 414, Western Springs, IL 60558 for proper handling.

C.B.'s, scanners, radar detectors, car phones, car audio, fax machines, copiers and much, much more. If you are tired of high priced retail stores and want to save some extra cash, then Ice Enterprise is the answer. Our prices are so low compared to the stores, you won't believe the difference. The fact is we don't have any overhead like the stores do because we are strictly a mail order business. Therefore, we can discount our merchandise to prices you should be paying, instead of those outrageous store prices. Write today and compare tomorrow. You will not be disappointed. For our free brochure and info on ordering your new equipment write to Ice Enterprise, P.O. Box 3666, Cherry Hill, NJ 08034-0564. If you already have something in mind and want to compare my prices with your local stores, please write your phone number down and the correct information and we will call you back as soon as possible; so dare to compare and write today.

FOR SALE: Regency MX-7000. Mint condition. Continuous coverage 25-550 MHz/800 MHz-1.3 GHz. 20 channels. $325.00 David: (713) 341-7302 leave message. Will ship UPS C.O.D. cash/money order only.

HOW TO KEEP YOUR VCR ALIVE – "This detailed, step-by-step manual enables anyone with no previous knowledge or experience to fix most VCR problems easily, quickly, and inexpensively with a few simple tools."—*Small Press Review*. "A handy book"—*This Week in Consumer Electronics* 376-page book, with 704 illustrations, plus professional head-cleaning tool. $24.95. Mail check or MO to Worthington Publishing Company, 6907 Halifax River Drive, Suite 202J, Tampa, FL 33617. Faster: call (813) 988-5751 for C.O.D., Visa, or Mastercard. Money-back satisfaction guarantee.

WANTED: Portables: Zenith Trans-Oceanics, Grundig Satellites, NordMende Globetravelers, etc. Gary Stejskal, 1412 26th Street N.W., Cedar Rapids, Iowa 52405.

AMATEUR RADIO FORUM. "Talk Radio" at its best. Send SASE for schedule and ARF Newsletter ($1.00 for back issues). Jack Schmidling NR9Q, 4501 North Moody, Chicago 60630.

Military radio battery adapters, comp plans. **CB**'ers tune up guide, for the layman. Crisis Commo Newsletter, SASE for free info E&D products POB 4053, Downey, CA 90241.

POP'COMMS August 1983-August 1986 (Sept. '85 missing), all 36 issues, $27 (includes 2 POP'COMM binders). David Wilson, 22 Willow Park, Wellesley Hills, MA 02181. 617-235-0986.

MILITARY RADIO BATTERY Adapter Units. No modifications required—form-fit—direct connect socket—use standard batteries. For radio sets; BC-611, AN/CPRC-26, AN/URC-68, AN/PRC-6,8,9,10,25,28, & 77, AN/PRT-4, AN/PRR-9. We have Operator Technical Manuals too. Act now! Send $1.00 for details: TNM Enterprises, P.O. Box 2330-PC, Anaheim, CA 92814-0330.

ICOM R7000 + IBM-PC + 801-SCAN = ULTIMATE SCANNING SYSTEM! Scan up to 1800 channels per database with intelligent delay and lockout features. Windowed display shows your text description of active channel. Search multiple ranges with logging. Build channel database from search. Sophisticated user interface with online help, pop-up forms and menus for control and data entry. XT/AT, 512K required. Demo diskette: $8.00. Complete system with interface card: $98.00. TX residents add sales tax. Write 801-SCAN, Suite 212, 397 DAL-RICH Village, Richardson, TX 75080.

POPULAR COMMUNICATIONS Complete Set 1st issue Sept. 1982-Dec. 1989, 88 issues. Best offer over $50.00. Shipping extra approximately 30 lbs. Gene T. Suchecki, 3444 S. 25th Street, Milwaukee, WI 53215.

For Sale—Realistic Pro—2021 200 ch. scanner w/GRE—800 MHz Super converter. Excellent condition. $300.00. (518) 731-2002, C. Jenkins, 14 Water St., Coxsackie, NY 12051.

WANTED: tape recordings of Cajun music programs of LA local stations. Will pay for tape & postage or swap with European programs. E. Oliva, via Camozzini 3, 16158 Genova, Italy.

Sell: Tempo One (Grey), Palomar meter, Shure 444 mic, new finals $275.00; Midland 13-898B SSB/AM converted 40 ch., with frequency counter, Turner Plus 3 mic $250.00. Pete, P.O. 463 Austin, MN 55912, 507-437-8125.

FOR SALE: Bearcat 100XLT, like new, $170. Steve Marshall, 1635 Stowe Rd., Reston, VA 22094. Call: Sunday-Thursday, 1-800-368-3024 (D.C. metro area, 703-276-3665. Evenings: 703-481-6483.

For Sale: ICOM R71-A general coverage receiver $700.00, INFO-TECH M-6000 V2 code converter $675.00, Call Dave 302-328-0322.

INFO-TECH M-6000 V.5, RTTY, Packet, CW, TDM, ECT $600.00; M-800 V.2 FAX $250.00; excellent condition with manuals and original boxes, Robert, WD9IDV 312-731-1774, 8505 S. Yates, Chicao, IL 60617.

Knight R100A Receiver mint first $50. Bearcat BC170 Scanner W/Aircraft band. New in the box first $100. U.P.S. Paid on both. Griff Patchett, 2090 Bluehaven Ct., San Diego, CA 92154.

"FREE CELLULAR" BC-200XLT $279, BC-760XLT $279, TS-2 $275, ICF-2010 $335. HR-2600 HF MOBILE CALL!! CBs, SHORTWAVE, ACCESSORIES, MORE!! 1989 CATALOG $1.00, USED GEAR LIST $.25. GALAXY, BOX-1202, 67 EBER AVENUE, AKRON, OHIO 44309, (216) 376-2402. WE TAKE TRADES!! WE DO RADIO SHACK MODS!!

Wide range Tunable Ultrasonic Receiver, Long Range Listening "TUBE", Bug detector, BC DX Booster, Scanmate, Voice coder/decoder, and other interesting products. Catalog $1.00. KRYSTAL KITS, P.O. 445, BENTONVILLE, AR 72712.

PASS Publishing's **CW Mental-Block Buster** program helps you **explode mental blocks** that hold you back. This powerful program is based on over 40 years of research in accelerated human development. **CW Mental-Block Buster** uses guided meditation, visualization, and affirmations to **explode mental blocks.** This is not a CW practice tape. The **CW Mental-Block Buster** audio cassette and practice booklet are only $19.95 ppd. in the U.S. (NY residents add $1.50 sales tax). PASS Publishing, P.O. Box 570, Stony Brook, NY 11790.

CW have you down? Why let a mental block against CW stand between you and upgrading? When you use the PASS Publishing **CW Mental-Block Buster,** you will **explode mental blocks** with guided meditation, visualization and affirmations. This is not a CW practice tape. PASS Publishing's **CW Mental-Block Buster** audio cassette and practice booklet are only $19.95 ppd. in the U.S. (NY residents add $1.50 sales tax). PASS Publishing, P.O. Box 570, Stony Brook, NY 11790.

FREQUENCY AGILE PHASE LOCKED FM SIGNAL GENERATORS. 88-108 MHz. Meets broadcast specs. Pre-assembled/tested 3 × 5 PC board, 12 vdc powered. For info send SASE business size: JT Communications, 579 NE 44th Ave., Ocala, FL 32671.

SURVEILLANCE, Debugging, Protection, World's largest new catalog—$5.00 Kits—Assembled—All price ranges, TECHNOLOGY SERVICES, 829 Ginette, Gretna, LA 70056.

MASSACHUSETTS SCANNER OWNERS New Revised Second Edition 400 page Scanner Guide with 12,410 listings. $17.95 plus $2.05 shipping. OFFICIAL SCANNER GUIDE, Post Office Box 712, Londonderry, New Hampshire 03053.

RHODE ISLAND SCANNERS OWNERS First Edition of OFFICIAL RHODE ISLAND 145 page Scanner Guide with 3,083 listings. $14.95 plus 12.05 shipping. OFFICIAL SCANNER GUIDE, Post Office Box 712, Londonderry, New Hampshire 03053.

VERMONT SCANNER OWNERS 176 Page Scanner Guide with 3,824 listings $14.95 plus $2.05 shipping OFFICIAL SCANNER GUIDE, Post Office Box 712, Londonderry, New Hampshire 03053.

FREDERICK 1635 four channel commercial RTTY demodulator. All bauds and shifts keypad/remote programmable, red plasma display. Unused surplus from a federal agency, original cost $7000, sell $900. Terry Thompson, Box 935, Dania, FL 33004. (305) 920-1909.

Shortwave receivers, hand-held CBs, radar detectors, antennas, Commodore accesories, telephones, car electronics. Catalog $1. Expo-tronics Enterprises, Dept.-G, 1222 Highland, Berwyn, Il 60402.

TELEVISION SETS made before 1946 wanted for substantial cash. Especially interested in "mirror-in-the-lid" and spinning disc sets. Finder's fee paid for leads. Arnold Chase, 9 Rushleigh Road, West Hartford, CT 06117 (203) 521-5280.

JUST ISSUED! HEAR YOUR GOV'T. IN ACTION! The gigantic new 6th Edition of Kneitel's TOP SECRET REGISTRY OF U.S. Gov't. Radio Freqs., the ultimate scanner directory. Revised/Expanded to cover 80 + agencies, 192 large-size pages, 125,000 listings: freqs., many locations, callsigns, tactical ID's, codenames, agent buzzwords, freq usage/designator codes, code signals. Latest info: FBI, DEA, Secret Service, FCC, ATF, Immigration, Customs, Border patrol, CIA, NSA, Nat'l Forests, Nat'l Parks, GSA, FEMA, Treasury, Marshals, NASA, FAA, EPA, all Armed Forces, bug/surveillance freqs., much more, plus UHF Aero and many Canadian freqs. Extra: Most important 2-25 MHz HF freqs included. Contains more and digs deeper than ever before! New 6th Ed. is $17.95, add $1 postage for 4th Class mail to N. American addresses, or $3 for First Class mail. You Ain't Heard Nothin' Yet! Get your copy now. CRB Research, P.O. Box 56, Commack, NY 11725. NY Residents add sales tax. (Dealer inquiries invited—write on company letterhead.)

BUGGED? COUNTERMEASURE SWEEPS. Telephones, Offices, Watercraft, Aircraft. Confidentiality Assured. Write or call for a free eavesdrop brochure and estimate. Central States Investigations, 1007 West Jefferson Street, Suite 160, Sprfld. IL 62702-4835. AC/217 525-9499.

PROPAGANDA TAPES! Authentic, rare recordings of WWII German and Japanese shortwave broadcasts by "Tokyo Rose," Axis Sally," others. Cassette $9.95. D-W Research, 4548 Auburn Blvd., #231-B, Sacramento, CA 95841.

Advertiser's Index

CB TRICKS OF THE TRADE BOOK **$19.95**

- Troubleshooting Instructions
- Illustrated with Schematics & Drawings
- Covers all types of CB Radios—American and Import, AM, FM, SSB units
- CB Repair made simple
- CB Antenna theory & Antenna problems
- CB Television Interference
- CB Peaking & Boosting
- Internal Component problems

Medicine Man CB
P.O. Box 37, Clarksville, AR 72830
C.O.D. Orders (501) 754-2076

Watch for "CB Tricks II" Coming Soon!

CIRCLE 177 ON READER SERVICE CARD

Yaesu has serious listeners for the serious listener.

Yaesu's serious about giving you better ways to tune in the world around you.

And whether it's for local action or worldwide DX, you'll find our VHF/UHF and HF receivers are the superior match for all your listening needs.

The FRG-9600. A premium VHF/UHF scanning communications receiver. The 9600 is no typical scanner. And it's easy to see why.

You won't miss any local action with continuous coverage from 60 to 905 MHz.

You have more operating modes to listen in on: upper or lower sideband, CW, AM wide or narrow, and FM wide or narrow.

You can even watch television programs by plugging in a video monitor into the optional video output.

Scan in steps of 5, 10, 12½, 25 and 100 KHz. Store any frequency and related operating mode into any of the 99 memories. Scan the memories. Or in between them. Or simply "dial up" any frequency with the frequency entry pad.

Plus there's more, including a 24-hour clock, multiplexed output, fluorescent readout, signal strength graph, and an AC power adapter.

The FRG-8800 HF communications receiver. A better way to listen to the world. If you want a complete communications package, the FRG-8800 is just right for you.

You get continuous worldwide coverage from 150 KHz to 30 MHz. And local coverage from 118 to 174 MHz with an optional VHF converter.

Listen in on any mode: upper and lower sideband, CW, AM wide or narrow, and FM.

Store frequencies and operating modes into any of the twelve channels for instant recall.

Scan the airwaves with a number of programmable scanning functions.

Plus you get keyboard frequency entry. An LCD display for easy readout. A SINPO signal graph. Computer interface capability for advanced listening functions. Two 24 hour clocks. Recording functions. And much more to make your listening station complete.

Listen in. When you want more from your VHF/UHF or HF receivers, just look to Yaesu. We take your listening seriously.

YAESU

Yaesu USA
17210 Edwards Road, Cerritos, CA 90701
(213) 404-2700

CIRCLE 94 ON READER SERVICE CARD

Prices and specifications subject to change without notice.
FRG-9600 SSB coverage: 60 to 460 MHz.

KENWOOD

...pacesetter in Amateur Radio

NEW RZ-1 Wide-Band Receiver.

Hear it All!

R-5000
R-2000
High performance receivers.

Scan the entire frequency range from 100 kHz to 905 MHz with Kenwood's R-5000, R-2000 and RZ-1. Listen in on foreign music, news, and commentary. Monitor local police, fire, and other public safety services, as well as the Marine channels, and the many other services 50 MHz and above.

(The VHF converter options must be used in the R-5000 and R-2000.)

R-5000

The R-5000 is a high performance, top-of-the-line receiver, with 100 memory channels, and direct keyboard or main dial tuning—makes station selection super easy! Other useful features include programmable scanning, large, built-in speaker, 110 volt AC or 12 volt DC operation (with optional DCK-2 cable), VHF capability (108-174 MHz) with the VC-20 option, dual 24-hour clocks with timer, and even voice frequency readout with the VS-1 option.

R-2000

The R-2000 is an all band, all mode receiver with 10 memory channels and many deluxe features such as programmable scanning, dual 24-hour clocks with timer, all-mode squelch and noise blankers, a large, front-mounted speaker, 110 volt AC or 12 volt DC operation (with the DCK-1 cable kit), and 118-174 MHz VHF capability with VC-10 option.

RZ-1
Wide-band scanning receiver

The RZ-1 wide-band, scanning receiver covers 500 kHz-905 MHz, in AM, and narrow or wideband FM. The automatic mode selection function makes listening easier. One hundred memory channels with message and band marker, direct keyboard or VFO frequency entry, and versatile scanning functions, such as memory channel and band scan, with four types of scan stop. The RZ-1 is a 12 volt DC operated, compact unit, with built-in speaker, front-mounted phones jack, switchable AGC, squelch for narrow FM, illuminated keys, and a "beeper" to confirm keyboard operation.

Optional Accessory
- **PG-2N** Extra DC cable

Optional Accessories

R-2000:
- **VC-10** VHF converter
- **DCK-1** DC cable kit for 12 volt DC use.

R-5000:
- **VC-20** VHF converter
- **VS-1** Voice module
- **DCK-2** for 12 volt DC operation
- **YK-88A-1** AM filter
- **YK-88SN** SSB filter
- **YK-88C** CW filter
- **MB-430** Mounting bracket.

Other Accessories:
- **SP-430** External speaker
- **SP-41** Compact mobile speaker
- **SP-50B** Mobile speaker
- **HS-5** Deluxe headphones
- **HS-6** Lightweight headphones
- **HS-7** Mini-headphones.

KENWOOD

KENWOOD U.S.A. CORPORATION
2201 E. Dominguez St., Long Beach, CA 90810
P.O. Box 22745, Long Beach, CA 90801-5745

Specifications, features, and prices are subject to change without notice or obligation.

CIRCLE 41 ON READER SERVICE CARD