

ICD-08635

POPULAR COMMUNICATIONS

JULY 1985 \$1.95

\$2.50 CANADA

Accident Emergencies



- Ethiopian Shortwave Pleads For Aid (In 1935!)
- Broadcasting In South Africa
- We Visit A Jamming Station
- Selected English Language Broadcasts
- Outlaw Radio Networks
- Eavesdropping On Aero Emergencies



KENWOOD

...pacesetter in amateur radio

Scan the World.

R-2000

Kenwood's R-2000 receiver has opened the doors to a new world in the 150-kHz to 30-MHz HF bands, with microprocessor controlled operating features and an UP conversion PLL circuit for maximum flexibility and to enhance the excitement of listening to stations from east to west, and from pole to pole. An optional VC-10 VHF converter, for 118 to 174-MHz, allows access to police, aviation, marine, commercial, and two meter Amateur frequencies. With dual digital VFO's, ten memories that store frequency, band and mode information, memory scan, programmable band scan, fluorescent tube digital display, and dual 24-hour clock with timer, this outstanding radio has the versatility needed to reach out and catch those distant and elusive stations in the most remote areas of the world.

The R-2000 receives in the USB, LSB, CW, AM, and FM modes, and its ten memories allow moving from band to band without concern for mode of operation. The programmable band scan feature permits scanning over operator selected

limits, reducing scan cycle time. Memory scan allows the operator to scan all, or only specific memories. Lithium battery memory backup (Estimated 5 year life) is built-in.

With the sensitive R-2000, only the best in selectivity will do. It has three built-in IF filters, with NARROW/WIDE selector switch, and an optional 500-Hz narrow CW filter is available. A noise blanker, and an all-mode squelch circuit further enhance the operators control of his listening environment. An AGC switch, and an RF attenuator switch allow selection of the best signal-to-noise ratio. It has a large, front mounted speaker, a tone control, an "S" meter, high and low impedance antenna terminals, and operates on 100/120/220/240 VAC, or on 13.8 VDC, with an optional DCK-1 DC cable kit. Other features include a record output jack, an audible "beeper," a carrying handle, a headphone jack, and an external speaker jack.

The R-2000 places the world at your finger tips.

R-2000 optional accessories:
VC-10 VHF converter • HS-4, HS-5, and HS-6 headphones • DCK-1 DC cable kit • YG-455C 500-Hz CW filter.



R-1000 High performance receiver
• 200 kHz—30 MHz • digital display/clock/timer • 3 IF filters • PLL UP conversion • noise blanker • RF step attenuator • 120-240 VAC (Optional 13.8 VDC).



R-600 General coverage receiver
• 150 kHz—30 MHz • digital display
• 2 IF filters • PLL UP conversion • noise blanker • RF attenuator • front speaker
• 100-240 VAC (Optional 13.8 VDC).

More information on these products is available from authorized dealers of Trio-Kenwood Communications, 1111 West Walnut Street, Compton, California 90220.

CIRCLE 71 ON READER SERVICE CARD

Specifications and prices are subject to change without notice or obligation.



Advanced Electronic Applications



AEA

SWL-TEXT™

CP-1 Computer Patch™



SWL-TEXT is the software and CP-1 is the interface that when combined with your Commodore C64™ and communications receiver, will give you everything you could ask for in a CW/RTTY intercept station!

- Automatically determines RTTY speed and indicates if ASCII or Baudot
- Copies AMTOR, ARQ and FEC
- Samples data to determine bit inversion and transposition pattern
- Complete printer control
- 24 hour clock
- Complete buffer control with the ability to store buffer on tape or disk
- Complete with all cables for Commodore C64
- Copies CW 5 to 99 WPM
- Copies Russian RTTY and Japanese RTTY & CW

Our Lab Has Checked Them All. This Is The Ultimate.
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J.I.L. SX-400

100 kHz with Optics



- A professionally created scanner for the serious listener
- Wide frequency coverage 26 to 520 MHz (with optional converters 100 kHz to 1400 MHz)
- Continuous coverage. You'll hear everything.
- Birdie-Free, no internal 'signals' to interfere with scanning
- 20 Channel memory, AM-FM Mode memory, Priority memory
- Carrier Operated Relay (COR) permits automatic start/stop of a recorder
- Four low-noise front end converters for optimum performance
- 12 Volt DC operation (120 Volt AC power supply optional)
- Check JIL's ad in this issue for further details

Sale Price **\$549.95** List **\$739.90**
 P-1A Power Supply **\$34.95**
 Other options call




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EEB—THE NATIONS LEADING SWL SUPPLIER



WORLD CLASS RECEIVER

ICOM introduces the **IC-R71A** 100KHz-30MHz superior-grade general coverage receiver with innovative features including keyboard frequency entry and wireless remote control (optional).

This easy-to-use and versatile receiver is ideal for anyone wanting to listen in to world-wide communications. Demanding no previous shortwave receiver experience, the **IC-R71A** will accommodate an SWL (shortwave listener), Ham (amateur radio operator), maritime operator or commercial operator.

With 32 programmable memory channels, SSB/AM/RTTY/CW/FM (optional), dual VFO's, scanning, selectable AGC and noise blanker, the **IC-R71A's** versatility is unmatched by any other commercial grade unit in its price range.

Utilizing ICOM's DFM (Direct Feed Mixer), the **IC-R71A** is virtually immune to interference from strong adjacent signals, and has a 100dB dynamic range.

ICOM introduces a unique feature to shortwave receivers... direct keyboard entry for simplified operation. Precise frequencies can be selected by pushing the digit keys in sequence of frequency. The frequency will be automatically entered without changing the main tuning control. Memory channels may be called up by pressing the VFO/M (memory) switch, then keying in the memory channel number from 1 to 32.

Thirty-two tunable memories offer instant recall of your favorite frequency. Each memory stores frequency, operating mode, and a backup battery maintains the memories for up to five years.

Specifications.

- **Frequency Coverage:** 0.1 MHz-30.0 MHz
- **Frequency Control:** CPU based 10 Hz step Digital PLL synthesizer with dual VFO system. Direct frequency entry through keyboard or RC-11 remote unit. • **Memories:** 32 tunable memories store frequency and mode. • **Scanning:** Memory and band scan with auto-stop. • **Frequency Readout:** 6 digit 100 Hz fluorescent readout. • **Frequency Stability:** Less than 250 Hz after switch on 1 min to 60 mins, and less than 50 Hz after 1 hour. With option CR-64 high stability crystal: Less than +50 Hz after switch on 1 min to 60 mins, and less than ±10 Hz after 1 hour at normal room temperature. Less than ±100 Hz in the range of -10°C to +60°C. • **Receiving Mode:** A¹, A² (USB, LSB), F¹ (Output FSK audio signal), A¹, F². • **IF Frequencies:** 1st: 70.4515 MHz, 2nd: 9.0115 MHz, 3rd: 455KHz, 4th: 9.0115MHz (except F²); with continuous Passband Tuning (except F²). • **2nd IF Center Frequency:** SSB (A¹/J) FM² (F²)—9.0115 MHz, CW (A¹) RTTY (F¹)—9.0106 MHz, AM (A²)—9.0100 MHz. • **Sensitivity (when preamplifier is ON):** SSB, CW, RTTY: Less than 0.15 microvolts (0.1—1.6 MHz: 1 microvolt) for 10 dB S+N/N; AM: Less than 0.5 microvolts (0.1—1.6 MHz: 3 microvolts); FM²: Less than 0.3 microvolts for 12dB SINAD (1.6—30MHz). • **Selectivity:** SSB, CW, RTTY: 2.3 KHz at -6dB (Adjustable to 500 Hz min), 4.2KHz at -6dB; CW-N, RTTY-N: 500 Hz at -6dB, 1.5KHz at -6dB; AM: 6KHz at -6dB (Adjustable to 2.7KHz min), 15KHz at -50dB; FM²: 15KHz at -6dB, 25KHz at -60dB. • **Antenna Impedance:** 50 ohms Unbalanced (Single wire can be used on 0.1—1.6MHz). • **Weight:** 7.5kg (16.5 lbs.). • **Dimensions:** 111mm(H)x286mm(W)x276mm(D)(4 1/4 in. x 11 1/4 in x 10 7/8 in.). • **Power Supply Requirements:** 117V or 235V ± 10% 50-60Hz 30V A, (100V/200V/220V use requires internal modification).

ICOM R71A OPTIONS

CK-70 12 Volt DC Kit	\$9.95
CR-64 High Stability Osc.	\$56.00
EX-310 Voice Synthesizer	\$39.95
EX-257 FM unit (10M Ham)	\$38.00
FL-32 CW filter, 500Hz 9MHz	\$59.50
FL-44 2.4KHz 455KHz SSB Crystal Filter	\$159.00
FL-63 CW filter 250Hz 9MHz	\$48.50
RC-11 Remote Control	\$59.95

INSTALLATION... options can be installed by a skilled user/owner. **EEB** will do it for you!

- 1-3 options.....\$35
- 4 and up.....\$45

ICOM IC-R71A with full factory warranty but without **EEB's** extra service/no installed options

SALE \$649

EEB—EXCLUSIVE OPTIONS

- **24 hour bench test**, realignment for optimum performance and 90 day extended warranty (prerequisite for any other installed option).....\$40
- **Mechanical 2.4KHz filter**—replaces stock ceramic filter—improves SSB, ECSS, AM narrow selectivity.....\$95
- **Front end upgrade**—Improves dynamic range (plus), pre-amplifier below 1600KHz.....\$35
- **4KHz filter** replaces stock 6KHz wide filter. Improves AM selectivity.....\$50

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Scanners

Communications Electronics,™ the world's largest distributor of radio scanners, introduces new scanners and scanner accessories from J.I.L., Regency and Uniden/Bearcat. Chances are the police, fire and weather emergencies you'll read about in tomorrow's paper are coming through on a scanner today.

NEW! Regency® MX7000-H

List price \$699.95/CE price \$449.00
10-Band, 20 Channel • Crystalless • AC/DC
 Frequency range: 25-550 MHz. continuous coverage and 800 MHz. to 1.2 GHz. continuous coverage
 In addition to normal scanner listening, the MX7000 offers CB, VHF, and UHF TV audio, FM Broadcast, all aircraft bands (civil and military), 800 MHz communications, cellular telephone, and when connected to a printer or CRT, satellite weather pictures.

NEW! Regency® MX5000-H

List price \$599.95/CE price \$354.00
Multi-Band, 20 Channel • No-crystal scanner
Search • Lockout • Priority • AC/DC
Selectable AM-FM modes • LCD display
World's first continuous coverage scanner
 Frequency range: 25-550 MHz. continuous coverage.
 Never before have so many features come in such a small package. The Regency MX5000 mobile or home scanner has continuous coverage from 25 to 550 MHz. That means you can hear CB, Television audio, FM broadcast stations, all aircraft bands including military and the normal scanner bands, all on your choice of 20 programmable channels.

NEW! Regency® MX4000-H

List price \$629.95/CE price \$394.00
Multi-Band, 20 Channel • No-crystal scanner
Search • Lockout • Priority • AC/DC
Selectable AM-FM modes • LCD display
 Bands: 30-50, 118-136, 144-174, 440-512, 800-950 MHz.
 The Regency MX4000 gives coverage in the standard VHF and UHF ranges with the important addition of the 800 MHz. and aircraft bands. It features keyboard entry, multifunction liquid crystal display and variable search increments.

NEW! Regency® Z60-H

List price \$379.95/CE price \$249.00
8-Band, 60 Channel • No-crystal scanner
 Bands: 30-50, 88-108, 118-136, 144-174, 440-512 MHz.
 Cover your choice of over 15,000 frequencies on 60 channels at the touch of your finger.

NEW! JIL SX-400-H

List price \$799.95/CE price \$499.00
Multi-Band, 20 Channel • No-crystal Scanner
Search • Lockout • Priority • AC/DC
 Frequency range: 26-520 MHz. continuous coverage.
 With optionally equipped RF converters 150KHz-3.7 GHz. The JIL SX-400 synthesized scanner is designed for commercial and professional monitor users that demand features not found in ordinary scanners. The SX-400 will cover from 150 KHz to 3.7 GHz. with RF converters. Order the following RF converters for your SX-400 scanner. **RF-1030-H** at \$259.00 each for frequency range 150 KHz. - 30 MHz. USB, LSB, CW and AM. (CW filter required for CW signal reception); **RF-5080-H** at \$199.00 each for 500-800 MHz.; **RF-8014-H** at \$199.00 each for 800 MHz.-1.4 GHz. Be sure to also order **ACB-300-H** at \$99.00 each which is an antenna control box for connection of the RF converters. Add \$3.00 shipping for each RF converter or antenna control box. If you need further information on the JIL scanners, contact JIL directly at 213-926-6727 or write JIL at 17120 Edwards Road, Cerritos, California 90701.

SPECIAL! JIL SX-200-H

List price \$499.95/CE special price \$189.00
Multi-Band - 16 Channel • No-Crystal Scanner
 Frequency range 26-88, 108-180, 380-514 MHz
 The JIL SX-200 scanner tunes military, F.B.I., Space Satellites, Police and Fire, Drug Enforcement Agencies, Defense Department, Aeronautical AM band, Aero Navigation Band, Fish & Game, Immigration, Paramedics, Amateur Radio, Justice Department, State Department, plus other thousands of radio frequencies most other scanners can't pick up. The SX-200 has selectable AM/FM receiver circuits, tri-switch squelch settings - signal, audio and signal & audio; outdoor AC power supply - DC at 12 volts built-in, quartz clock - bright vacuum fluorescent blue readouts and dimmer, dual level search speeds, tri-level scan delay switches, 16 memory channels in two channels banks, receive fine tune (RIT) ± 2KHz., dual level RF gain settings - 20 db pad, AGC test points for optional signal strength meters. All in all, the JIL SX-200 gives you more features for the money than any other scanner currently on sale. Order your JIL SX-200 scanner at this special price today.

Regency® HX1000-H

List price \$329.95/CE price \$209.00
6-Band, 30 Channel • No Crystal Scanner
Search • Lockout • Priority • Scan delay
Sidelit liquid crystal display • Digital Clock
 Frequency range: 30-50, 144-174, 440-512 MHz.
 The new handheld Regency HX1000 scanner is fully keyboard programmable for the ultimate in versatility. You can scan up to 30 channels at the same time. When you activate the priority control, you automatically override all other calls to listen to your favorite frequency. The LCD display is even sidelit for night use. A die-cast aluminum chassis makes this the most rugged and durable hand-held scanner available. There is even a backup lithium battery to maintain memory for two years. Includes wall charger, carrying case, belt clip, flexible antenna and nicad battery. Order your Regency HX1000 now.

Bearcat® 100-H

The first no-crystal programmable handheld scanner.
 List price \$449.95/CE price \$229.00
8-Band, 16 Channel • Liquid Crystal Display
Search • Limit • Hold • Lockout • AC/DC
 Frequency range: 30-50, 138-174, 406-512 MHz.
 The world's first no-crystal handheld scanner has compressed into a 3" x 7" x 1 1/4" case more scanning power than is found in many base or mobile scanners. The Bearcat 100 has a full 16 channels with frequency coverage that includes all public service bands (Low, High, UHF and "T" bands), the 2-Meter and 70 cm. Amateur bands, plus Military and Federal Government frequencies. Wow... what a scanner!

Included in our low CE price is a sturdy carrying case, earphone, battery charger/AC adapter, six AA ni-cad batteries and flexible antenna. Order your scanner now.

QUANTITY DISCOUNTS AVAILABLE

Order two scanners at the same time and deduct 1%, for three scanners deduct 2%, four scanners deduct 3%, five scanners deduct 4% and six or more scanners purchased at the same time earns you a 5% discount off our super low single unit price.

NEW! Regency® HX2000-H

The World's First 800 MHz. Handheld Scanner
 List price \$569.95/CE price \$359.00
7-Band, 20 Channel • No-crystal scanner
Priority control • Search/Scan • AC/DC
Sidelit liquid crystal display • Memory backup
 Bands: 118-136, 144-174, 440-512, 800-950 MHz.
 The HX2000 scanner operates on 120V AC or 6 VDC. Scans 15 channels per second. Size 3" x 7" x 1 1/2".

OTHER RADIOS AND ACCESSORIES

RD55-H Uniden Visor mount Radar Detector	\$119.00
RD95-H Uniden Remote mount Radar Detector	\$139.00
BC 300-H Bearcat 50 channel scanner	\$344.00
BC 20/20-H Bearcat 40 channel scanner	\$274.00
BC 210XL-H Bearcat 18 channel scanner	\$209.00
BC 260-H Bearcat 16 channel mobile scanner	\$274.00
BC 201-H Bearcat 16 channel scanner	\$189.00
BC 180-H Bearcat 16 channel scanner	\$164.00
BC-WA-H Bearcat Weather Alert™	\$39.00
DX1000-H Bearcat shortwave receiver	\$499.00
PC22-H Uniden remote mount CB transceiver	\$99.00
PC55-H Uniden mobile mount CB transceiver	\$59.00
Z10-H Regency 10 channel scanner	\$149.00
Z30-H Regency 30 channel scanner	\$169.00
Z45-H Regency 45 channel scanner	\$199.00
MX3000-H Regency 30 channel scanner	\$219.00
C403-H Regency 4 channel scanner	\$69.00
R106-H Regency 10 channel scanner	\$99.00
HX650-H Regency 6 channel handheld scanner	\$99.00
HX-650P-H HX650 with batt., case, crystal certs.	\$124.00
RH250B-H Regency 10 channel VHF transceiver	\$379.00
RP410-H 10 ch. handheld no-crystal transceiver	\$399.00
BC10-H Battery charger for Regency RP410	\$79.00
EC10-H Programming tool for Regency RP410	\$20.00
SMRH250-H Service man. for Regency RH250	\$20.00
SMRU150-H Service man. for Regency RU150	\$20.00
SMRPH410-H Service man. for Regency RP410	\$20.00
B-4-H 1 2 V AALAA Ni-Cad batteries (set of four)	\$9.00
A-135C-H Crystal certificate	\$3.00
FB-E-H Frequency Directory for Eastern U.S.A.	\$12.00
FB-W-H Frequency Directory for Western U.S.A.	\$12.00
A60-H Magnet mount mobile antenna	\$35.00
A70-H Base station antenna	\$35.00

Add \$3.00 shipping for all accessories ordered at the same time.
 Add \$12.00 shipping per shortwave receiver.
 Add \$7.00 shipping per scanner and \$3.00 per antenna.

BUY WITH CONFIDENCE

To get the fastest delivery from CE of any scanner, send or phone your order directly to our Scanner Distribution Center. Be sure to calculate your price using the CE prices in this ad. 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 back-order automatically unless CE 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. Ann Arbor, Michigan. No COD's. Most products that we sell have a manufacturer's warranty. Free copies of warranties on these products are available prior to purchase by writing to CE. International orders are invited with a \$20.00 surcharge for special handling in addition to shipping charges. Non-certified checks require bank clearance.

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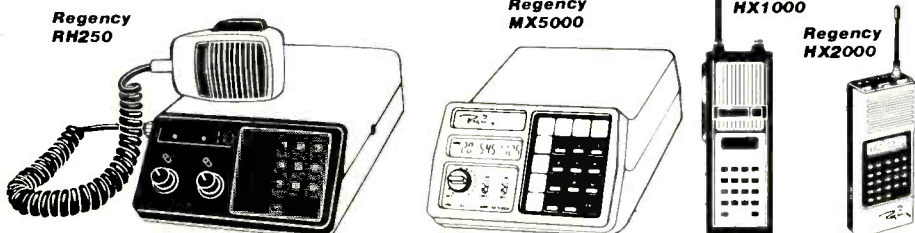
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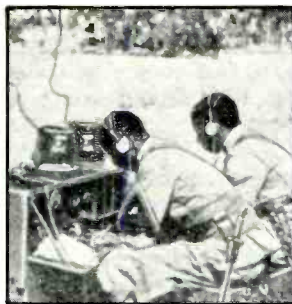
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POPULAR COMMUNICATIONS

JULY 1985

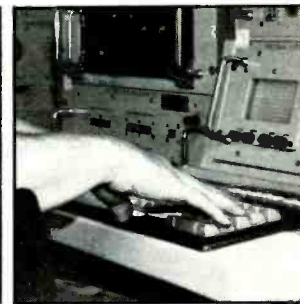
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This month's cover: Police officer John Parrella, Jr., of the Middletown, New York police department comes into contact with an accident and sets into motion a chain of communication events. Photo by Larry Mulvehill, WP2ZPI.

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RECEIVE RTTY/ASCII/CW on your Personal Computer



**RTTY/ASCII/CW
SWL COMPUTER INTERFACE** MFJ-1225
\$ **69.95**

**FREE MFJ RTTY/ASCII/CW Software
TAPE AND CABLE FOR VIC-20 OR C-64. ORDER MFJ-1225/
MFJ-1264 FOR VIC-20 OR MFJ-1225/MFJ-1265 FOR C-64.**

Receives commercial, military, and amateur RTTY/ASCII/CW using your personal computer.

The MFJ-1225 Computer interface plugs between your receiver and VIC-20, Apple, TRS-80C, Atari, TI-99, Commodore 64 and most other personal computers. Requires appropriate software.

Copies all shifts (850, 425, 170 Hz shift and all others) and all speeds. Automatic noise limiter suppresses static crashes for better copy. 2 LED tuning indicator makes tuning fast, easy, positive. 4½ x 1¼ x 4¼ in. 12-15 VDC or 110 VAC with optional adapter, MFJ-1312. \$9.95.

INDOOR TUNED ACTIVE ANTENNA

MFJ-1020
\$ **79.95**



MFJ-1020 New Indoor Active Antenna sits on your desk ready to listen to the world. Rivals, often exceeds, reception of outside long wire. Unique Tuned Active Antenna minimizes intermode, provides RF selectivity, reduces noise outside tuned band. Also use as preselector for external antenna. Covers 300 KHz to 30 MHz in 5 bands. Adjustable telescoping antenna. Controls: Tune, Band Selector, Gain, ON-Off/Bypass, LED, FET, bipolar circuitry. Phone jack for external ant. 6x2x6 in. 9-18 VDC or 9V battery. 110 VAC with adapter, MFJ-1312, \$9.95.

REMOTE ACTIVE ANTENNA

54 Inch remote active antenna mounts outdoor away from electrical noise for maximum signal and minimum noise pickup. Often outperforms longwire hundreds of feet long. Mount anywhere - atop houses, buildings, balconies, apartments, mobile homes, on board ship.

Use with any radio to receive strong clear signals from all over the world. 50 KHz to 30 MHz.

High dynamic range eliminates intermodulation. Inside control unit has 20 dB attenuator, gain control. Switch 2 receivers and auxiliary or active antenna. "On" LED. 6x2x5 in. 50 ft. coax. 12 VDC or 110 VAC with MFJ-1312, \$9.95.



MFJ-1024
\$ **129.95**

Order from MFJ and try it. If not delighted, return within 30 days for refund (less shipping).

One year unconditional guarantee.

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CIRCLE 35 ON READER SERVICE CARD

BEAMING IN

AN EDITORIAL

BY TOM KNEITEL, K2AES

Returning To The Fold

It's really great to hear from readers who have gotten back into communications or broadcast listening after coming across a copy of *POP'COMM*. We've been hearing from these people ever since the magazine began in 1982, and their stories are quite similar.

The people were into HF or VHF monitoring at some point in the past and, for one reason or another, they drifted out of the hobby. Whether it was due to marriage, job change, moved residence, or some other factor, the equipment sat ignored for a while and eventually became relegated to a spot in the attic, garage, or storage closet. There it languished for anywhere from two to eight years or more. Then, quite by accident, a copy of *POPULAR COMMUNICATIONS* was encountered—just reached out from the newsstand and demanded to be noticed. And, so the story goes, the copy of *POP'COMM* was brought home and shortly thereafter there were communications receivers and/or scanners being dragged out from their resting places and re-installed. Antennas were going back up. Orders for new accessories and updated reference books and directories were being placed.

That's one of the best things about our common interest—once you're into it you never really sign off. Unlike fads, communications monitoring somehow manages to make a friend out of folks for life, even though they may take a few detours or even put things on "hold" for a while. Take a fad-type interest such as CB became during 1975 to 1978. Tens of millions of people scrambled to buy CB radios for their homes and vehicles and, when the dust settled, almost all of that gear went into a storage from which there is little likelihood that it will ever emerge.

When the CB (or whatever) equipment was dumped on a shelf, that was "it," and little thought was ever again given to the matter. But radio fans are different. Even if the main station has been mothballed, we still drive a couple of blocks off our travel route to get a better look at a particularly interesting antenna, or we'll take a drive at night and tune across band on the car radio to see how WWVA, WOAI, KSL, CBL, or some other powerhouse DX station is coming through, or see if we can get an identification on that weak station off into the distance. And who among us hasn't watched the summertime skip riding in on TV Channel 2 and gotten that tingling feeling when the DX station jamming the local broadcaster could be identified? That happens to you even if you haven't been active in DX'ing for years!

And here's one of the best parts. When you become inspired to dig out the "old" equipment from the closet or attic, you still have the basic hardware to put you back into monitoring with almost no grief at all. Let's face it, a scanner that was able to tune the VHF high band ten years ago will do the same thing today. A communications receiver that could bring in the world on the 25 meter band ten years ago will do the same thing now—all you missed was the spectacular DX conditions during 1978 to 1982! But don't fret, sunspot cycle #22 is just around the corner!

All you need is an antenna; a spool of wire will do the trick until you can do it right. Contrast this with many other hobby items that get put away for another day. A camera dragged out of long-term storage probably needs a thorough cleaning and all sorts of little repairs. A model railroad that's been stored for a few years will require track work before anything rolls. That small boat you've had sitting on cinder blocks in your backyard for even two short years will cost you almost as much in repairs to get it back in the water as it would cost to replace the thing. And can you imagine how outdated your computer and its software would be after a five year stint on your closet shelf.

This isn't to say that, once back into the mainstream of monitoring, one can be fully content with all of the older equipment. Receiver developments within the past few years have been quite spectacular and if, like most of us, you are into fantasizing about that "dream receiver," you'll find plenty to think about. And, of course, you may want to update your station with RTTY capabilities, or one of the newer scanners that brings in the UHF aero band (225 to 400 MHz) or one that covers up to 900 MHz and beyond.

It's a field of interest that's always on the move. No matter how many stations you may have logged five or ten years ago, when you get back into monitoring, there are many of your old favorites on the air—but they've been supplemented by many new stations and nations you've never before logged.

Nevertheless, when that strange feeling overtakes you, you just know that it's time to dust off the old receiver or scanner. Best of all, it's only minutes from motivation to monitoring. And *POP'COMM* is delighted to have played its part in rekindling the interests of the many readers who have very thoughtfully written to us so that we could share the excitement and enthusiasm of rediscovery.

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LETTERS TO THE EDITOR

The most interesting questions we receive will be answered here in each issue. Address your questions to: Tom Kneitel, Editor, Popular Communications magazine, 76 North Broadway, Hicksville, NY 11801.

They Got Us Covered

I gave serious thought to your May issue editorial (Beaming In) in which you discussed the use of "macho" covers on POP'COMM. I can appreciate your reasoning but, strictly from an aesthetic viewpoint, I like to see antennas and rigs from time to time. In general, however, I'm really most interested in the contents of the magazine, and in that department, you're on target 100 percent.

"Kit" Carson
McSherrystown, PA

The covers on POP'COMM have always been outstanding and very eye-catching. Obviously they have also managed to generate a lot of talk about the magazine and I suspect that may be yet one more motive for your selection of gung-ho subject matter. Keep those "action" covers coming; they do a good job of summing up the high-energy contents of POP'COMM.

Marilyn Cohen
Littleton, CO

While I never would have written you with any objection, now that you have thrown open the topic to discussion, I'm writing to say that some of POP'COMM's covers are a bit too hairy-chested for my own sensitivities.

A. D. Arthur
Tacoma, WA

Change POP'COMM's covers? Blasphemy! That's part of what makes this magazine a unique experience and gives it a flavor of its own. I just won't hear of it! I can't believe that there are readers who can't handle the rush those covers give—a prelude to what is to come inside the most interesting and exciting magazine ever. Kneitel, don't be a toad and knuckle under to a few whiners who want to change even one thing about POP'COMM!

Bob Watson
Houston, TX

Is Canada Dry?

You've mentioned U.S. DX clubs a number of times. How about some information on DX clubs in Canada?

"Corky" MacKenzie
Prince Rupert, BC

There appears to be at least four DX clubs in Canada and we can recommend one very highly—the Ontario DX Association, 3 Camrose Crescent, Scarborough, Ontario M1L 2B5. Membership is open only to Ontarians, but anyone may subscribe to the

club's very handsome bulletin. Membership dues and Canadian/USA subscriptions are \$20 per year. Sample copies of their DX ONTARIO bulletin are \$1.50. Then there are two other groups about which I know nothing more than their names and addresses: Club Ondes Courtes du Quebec, 745 avenue du Chateau, app. 24, Sainte-Foy, Quebec G1X 3P4; also The University of Manitoba DX-SWL Club, Room 517, Box 131, University Centre, Winnipeg, Manitoba R3T 2N2. Lastly, there's a club operating out of Edmonton, Alberta, but that's too far on the fringe to be taken seriously anymore. —Editor

Backlash

I've heard the term "backlash" applied to receivers, but spec sheets from manufacturers don't ever mention it. What is it and how is it rated?

Ted Weinstein
Milton, FL

During the days when receivers were designed with complex gearing or dial-cord interfacing between the frequency control knob and the main tuning capacitor, sometimes everything didn't work as well as it should, especially after the equipment began to age a bit. Sometimes you'd tune to a particular frequency you wanted to hear, and when you removed your hand from the dial, the tuning would shift a few kHz all on its own. You might be able to compensate for this annoyance by using the bandspeed tuning or by trying to retune the main dial in the hope that the tuning backlash would detune everything to the spot you actually wanted. While this was tolerable many years ago, you'd be quite irritated to have to live with backlash while tuning in an SSB or RTTY station. Modern receiver design has long since done away with backlash problems and happily so. —Editor

Heavy Hot Rods

I've always wondered about what eventually becomes of the old two-way radio equipped bullet-proof limousines in the presidential fleet. Are they sold off to the public? How many such cars are there?

M.L. O'Day
Worcester, MA

The Secret Service is reticent about revealing the actual number of such cars currently in use so there's little chance of getting an answer about that. It does seem, however, that the cars last many years since they are driven so infrequently. Eventually there does come a time when they do rack up a sufficient number of miles and also begin to look somewhat outdated and the fleet is upgraded to newer models. At that point the old ones are used for training purposes. They are never auctioned or sold to the pub-

lic and they are eventually destroyed. Bullet-proof vehicles, usually two-way radio equipped, are also produced on special order for the public by various security firms. While expensive, they are in demand by persons in industry, by wealthy foreigners, and various other persons who fear kidnapping or terrorist attack. Many of these vehicles are exported for use overseas. —Editor

Amateur Radio From Space This Summer

Ham-in-Space planners announce that a frequency of 145.55 MHz will be the primary downlink for the Amateur station on Shuttle flight 51-F. Verbal word from NASA/Houston still sets the launch for July 15, with the first Amateur operations coming as early as the second half of Day 2. Early transmissions from astronaut Tony England, WØORE are likely to be slow-scan television rather than two-way voice. After Day 3, chances improve for actual contacts.



The limited opportunity for two-way contacts will be used to fulfill Tony's primary interest: Working youth groups paired with ham clubs. Local Amateur Radio clubs meeting certain guidelines will be able to get a list of special, non-published uplink frequencies to be used for this purpose. Application forms are now available for qualified groups. Requests are going to ARRL Headquarters in Newington, attention: HAM-IN-SPACE MISSION.

A hectic shuttle workload makes advance scheduling of contacts impossible. So NASA planners are agreeing to announce the status of the Amateur station one pass ahead of time. NASA ham clubs will help distribute that information as part of the long-successful effort to re-transmit shuttle talk with ground controllers. WIAW and possibly dedicated telephone numbers will be additional sources of information.

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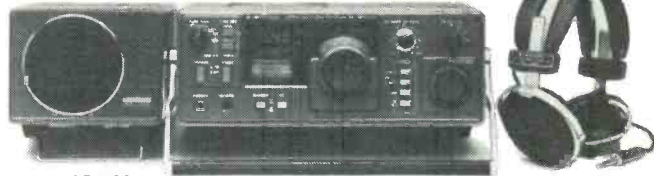
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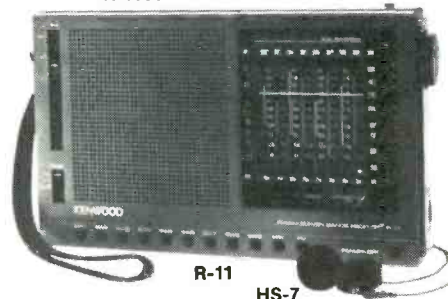
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Radio RSA's English service announcers.

Broadcasting In South Africa

Voices From One Of The World's Headline Makers

BY GERRY L. DEXTER

World shortwave broadcasting on a country-by-country basis range in complexity and size from those with one station operating on one frequency to the incredibly complicated systems of the Soviet Union, the Republic of China, and the Republic of Indonesia. One almost wonders if there isn't some secret contest going on. Perhaps the International Telecommunications Union awards a prize to that nation which is judged to have the most maze-like broadcasting structure. If so, the Republic of South Africa would certainly be in the running. There is a lot more there than the average listener normally discovers, and we're going to take a look at it in this article.

But before going any further, a word about apartheid. It is not the purpose of this article to take a stand either way on the subject, despite its prominent place in the news in recent months. Our purpose is, instead, to examine South African broadcasting and to try to aid the reader in hearing as much of the great variety of programs, services, and stations as possible. Apartheid will enter the picture only as it pertains to broadcasting.

The Beginnings

Here is a delightful piece of international broadcasting trivia: The first radio station in South Africa was owned by a railroad company! South African Railways put the first station on the air from Johannesburg on December 29, 1923. A year later, the Scientific and Technical Club began a broadcasting station on the Witwatersrand and the Cape and Peninsula Broadcasting Association began a station at Cape Town. These early efforts reached only a limited audience and the license fees from those few licensed lis-

teners were not enough to pay operating costs. So, in 1927 a group called the Schlesinger Organization took over all three stations, organizing them as the African Broadcasting Company.

But the money problems continued under the new ownership and it wasn't long before the government ordered up a study of the broadcasting situation in South Africa. The outgrowth of that study was the birth of the South African Broadcasting Corporation (SABC), under government control. It began in 1936 with an English Service and added a service in Afrikaans the following year. Programming in Afrikaans was stipulated in the laws which set up SABC.

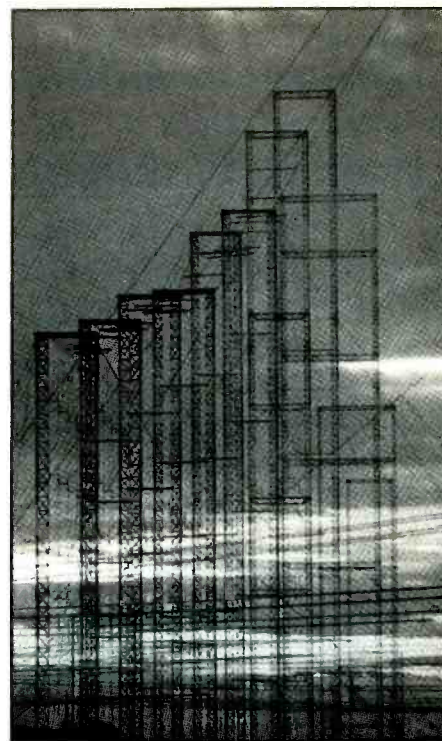
Nearly 15 years went by before the next significant development took place—the opening of a national commercial network—Springbok Radio, in 1950. Four years later the first shortwave transmitters went on the air from Paradys, near Bloemfontein.

In the years that followed, all manner of AM and FM outlets were added throughout South Africa. These carry a wide choice of services, many designed for individual segments of the South African population.

The giant Radio RSA international service didn't put its first programs on the air until 1966 when the high power H.F. Verwoerd Transmitting Station at Bloemendal was completed.

Piet Meyer Building

Named after a former chairman of the SABC, the headquarters building of the SABC and Radio RSA (and the television services) is almost a story in itself. It is actually a complex featuring a 36-story adminis-



Shortwave antennas of Radio RSA—The Voice of South Africa.

trative tower, several floors of radio studios in an adjoining block, and a separate television building.

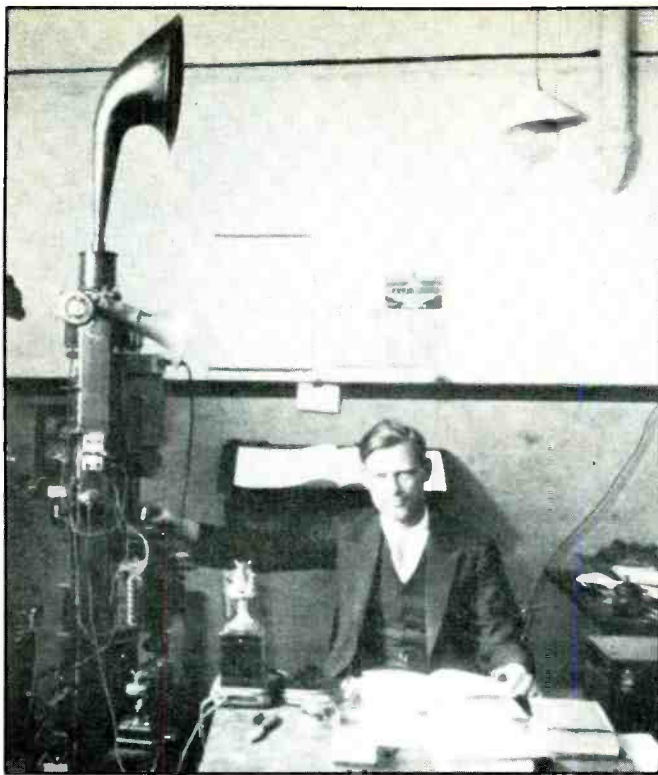
It houses an underground parking facility for 765 cars, its own car wash, several restaurants and cafeterias, a telephone exchange, a bank, five elevators, five music studios in addition to special studios for radio drama and variety programming. The radio studios "hang" from the main concrete structure so as to minimize extraneous sounds and vibrations.

There is a special two-story "artist's block," rehearsal rooms, an auditorium, a chapel, a gymnasium, and a billiards room. Half of the 28th floor is devoted to a reception area called the "Panorama Lounge," which can accommodate up to 400 people. The complex features an automatic document and mail distribution system that can handle seven tons of material per hour. A staff doctor is on call at all times.

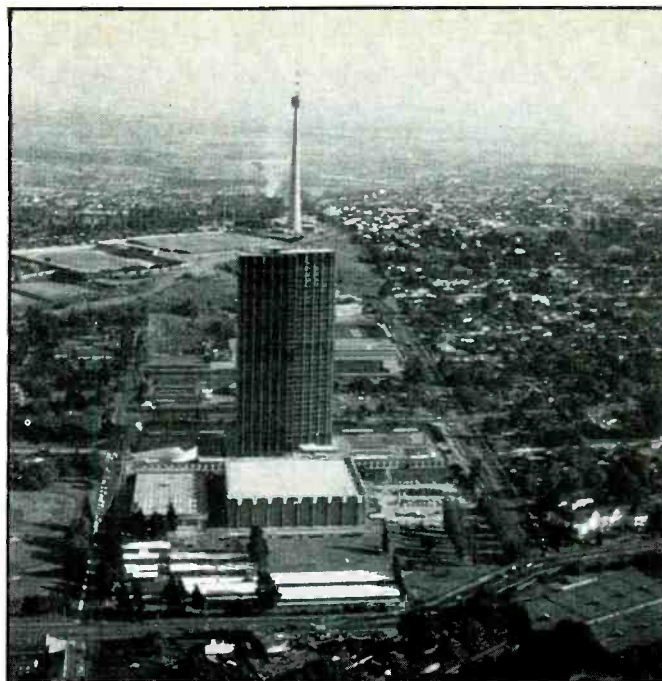
SABC executives in their plush, upper story suites, can "Dial A Program"—that is, call up on a TV screen any rehearsal, on-the-air program or recording session to monitor what's going on.

As you'd expect, the entire complex is beautifully landscaped with promenades, fountains, and trees. It is literally a city within a city. In 1980 it was declared a separate municipal area and named Uitsaaisentrum. So there, ABC, CBS, and NBC!

The large number of ethnic groups that make up the population of South Africa have necessitated the development of many services to provide programming for each, in their own language. This has been done by weaving a mixture of regional shortwave, high and low power medium wave, central



One of the early South African stations.



The South African studio/office/production complex near Johannesburg.

FM stations with numerous low power FM relays, and all manner of programming services. Some services will be intermixed with others at certain times of the day. Many are not audible on shortwave at all; others may be carried for an hour or two; still others for several hours per day.

Here is a step-by-step breakdown of the aural broadcast scene in the Republic of South Africa. Broadcasts that are audible on shortwave have been indicated, with times and frequencies. Times, it should be noted, tend to vary on weekends.

National Services

The *English Service* is aired on 4.835 from 0555 to 1520 GMT; on 11.790 from 0600 to 1515; and 11.900 Saturdays and holidays from 1135 to 1230. (This latter outlet is intended for the South African Defense Forces.) Within the English service (which is also carried on a wide variety of FM outlets continuously from 0400 to 2200) are various regional news bulletins and programs including the Indian Program aired at 0515 to 0600.

The *Afrikaans Service* for the Afrikaaner population, runs on 3.320 from 0510 to 1635, 4.880 at 0550-1520, 9.560 from 0515-1630, and 11.885 from 0555-1515. Within this service there are also provincial news bulletins carried at various times.

Springbok Radio, the national commercial service, offers programming in both English and Afrikaans from 0300 to 2200. At one time, Springbok Radio was a mainstay on shortwave frequencies but it is, unfortunately, now carried only on FM.

Radio Five is an outgrowth of a station old

timers will remember fondly—Lourence Marques Radio (Mozambique)—which used to delight SWL's with its fine variety of music and other programs nightly on 60 meters. Remember the LM chimes? And "Lourence Marques—for happy listening"? LM Radio relied on South African listeners and advertising for much of its support and was taken over from Radio Clube de Mozambique by a private South African firm in 1947. Changing tastes and demographics over the years eventually led to the LM name and format being dropped. Radio Five was incorporated into the SABC in 1972. It got its name from the fact that it became the fifth commercial service of the SABC. It's currently aired on 3.250 from 0300-0545, and 1530-2200, and on 7.170 from 0550-1525.

Radio Orion is an "all night" commercial service and can be found between 2200 and 0400 GMT on most of the domestic channels of the SABC on shortwave.

Regional Commercial Services

These services broadcast in English and Afrikaans and also relay various SABC programs through their 0400-2200 operating schedule. None, however, are carried on shortwave. A main station in a large city feeds numerous low power FM stations throughout each region to get coverage throughout the area. These stations include Radio Highveld (Johannesburg), Radio Good Hope (Cape Town), Radio Port Natal (Durban), and Radio Lotus (Durban). Radio Lotus programs to the Indian population.

Three stations act as subordinates to these

regional outlets—Radio Jacaranda from Pretoria, Radio Orange from Bloemfontein, and Radio Algotou from Port Elizabeth.

Local Stations

A similar pattern exists in local broadcasting. A main station in each of several principal towns feeds a series of low power FM relays to provide full coverage of a particular area or population. These include Radio SeSotho, Johannesburg; Radio Tswana, Sunnyside; Radio Lebowa, Pietersburg; Radio Zulu (Durban); Radio Swazi, Nelspruit; Radio Ndebele at Nylstroom. These stations provide service to the various black population elements. Between them, they produced nearly 1,150 original programs during 1983. None are on shortwave.

The Homeland Radios

Most are familiar with the South African government's idea of establishing "homeland" areas, which envisions the black population being relocated to their original homeland areas. Concordant with the development of infrastructures in these areas is the growth of radio broadcasting.

In Bophuthatswana, there is *Radio Bophuthatswana*, which broadcasts in English and local languages. This is a commercial/government operation using a 100 kilowatt transmitter on 1,098 kHz and several FM outlets between 0200 and 2100. It is not on shortwave.

Strictly commercial is *Bobhuthatswana Commercial Radio*, which runs an English service beamed to South Africa 24 hours a day on 702 kiloHertz using 100 kilowatts. It is not on shortwave.

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A 50 kilowatt religious outlet, Radio Pulpit, broadcasts in Afrikaans, English, and SeTswana to South Africa. Again, there is no shortwave.

In Ciskei, the Ciskei Broadcasting System uses an SABC transmitter for programs in English and Xhosa over an FM frequency.

Transkei's Capital Radio is known to most shortwave listeners for its commercial format from Umtata on 3.930, 7.150, and 9.760. It's scheduled from 0300 to 2300 on 7.150, 1530 to 2300 on 3.930, and 0530 to 1530 on 9.760. However, the 9.760 and 3.930 schedules seem to reverse with the seasons, so in our winters you will probably find 3.930 in use during our local evenings. Medium wave and FM outlets carry this service too.

In Venda, Radio Television Thohoyandou is a commercial/government outlet using 100 kilowatts on 1035 kiloHertz plus FM. This operates from Sibasa in English and local languages. There is no shortwave, although it has been reported to be under consideration or development. A second Venda station is due on: Good News Radio plans a 100 kilowatt medium wave station on 1,233 kHz and will be a commercial/religious format.

Southwest Africa

Also known as Namibia, this area is still administered by South Africa under a United Nations Mandate. The broadcasting pattern is a microcosm of that in South Africa itself. The SABC relinquished control of broadcasting in Namibia in 1979 and that act gave birth to the *South West African Broadcasting Corporation* (SWABC), also known as Radio Southwest Africa. It runs two local services—Radio Ovambo and Radio Herero, in addition to its shortwave services broadcasting from Windhoek.

On shortwave there are two services. Program One, a relay of programs in Herero, Damara, and Nama languages, is carried on 3.270 from 1625-0630 and 7.190 from 0630-1625. Program Two, a relay of local FM programming in English, Afrikaans, and German, can be heard on 3.295 from 1630-0615 and 6.185 from 0615-1630. Hours change somewhat between winter and summer. An "All Night Service" runs between 0400 and 2200. There are still



Charlotte Lavine is an announcer for the Radio Five service.

some relays of SABC programs as well, but these are to be phased out.

The local stations are Radio Ovambo at Oshakati, Radio Herero at Okakara (aired on shortwave from 0400-1000, 1300-1630), Radio Damara-Nama at Khorixas (aired on shortwave from 1000-1300 and 1830-2200), and Radio Kavango at Rundu. Schedules vary on the weekends.

Back in South Africa itself, we cannot forget *Radio RSA*, the external service. This began in 1966 from the then new H.F. Verwoerd Transmitting Station at Meyerton, near Johannesburg, where transmitters of 250 and 500 kilowatts operate on frequencies throughout the shortwave spectrum. Programs are beamed in eleven languages totaling 208 hours per week, to countries in Africa, Latin America, Europe, the Middle East, and North America. For North America, a one hour broadcast in English is at 0200-0300 on 5.980, 6.010, and 9.615.

Program Schedules And Reception Reports

Where To Write

Radio RSA
P.O. Box 4559
Johannesburg 2000
South African Broadcasting Corp.
P.O. Box 8606
Johannesburg 2000
Radio Five
P.O. Box 4301
Johannesburg 2000

Capital Radio
Box 806
Umtata,
Transkei
(Republic of South Africa)
Southwest African Broadcasting Corp.
P.O. Box 321
Windhoek
Southwest Africa/Namibia

Voz de Verdade (The Voice of Truth), which beams programming against the government of Angola and is the official voice of the UNITA opposition party. It can be heard with good African conditions in 4.950 from 0330 sign on, but at last report was maintaining a limited Monday-Wednesday-Friday schedule, in Portuguese.

Voz de Resistencia de Galo Negro (Voice of the Resistance of the Black Cockerel) is another UNITA station, also operating on 4.950 in Portuguese, as well as vernaculars, from an 0430 sign on.

Radio Truth beams programming against the government of Zimbabwe and has, of late, been putting in excellent signals from its 0430 sign on with a rooster crowing. It's in English for half an hour on 5.015.

No Name. The anti-Castro Agrupacion Abdala group is said to operate this station, which broadcasts in Spanish to Castro's troops stationed in Angola. It can be logged on 6.045 with a sign on at 0530.

A fifth clandestine, *The Voice of the Mozambique National Resistance*, operated for many years on 4.765, later 4.772. Accords signed between the South African and Mozambique governments called for this to go off the air and it did—at least for a time. It seems to have returned to the air, at least sporadically. Try 4.772 around 0300. Programming will be in Portuguese.

The South African broadcasting waters run much deeper than the Radio RSA external service, and a little searching at the right times and on the right frequencies should provide a variety of interesting listening targets. If nothing else, the strong signals provided by Radio RSA give the shortwave listener the opportunity to keep abreast of developments in this nation that currently holds much of the world's attention. **PC**



A QSL from Radio RSA.

Radio RSA is funded by the South African government. Programs run from a heavy concentration on news, opinion, and public affairs, with a strong defense of apartheid policies, to African news, a DX program, a language course in Afrikaans, and many other features. The station draws about 100,000 letters per year from listeners. Radio RSA was probably the first to try the international call-in format, which it continues to feature each New Year's Eve.

Clandestines

As many as four or five clandestine stations are generally believed to operate from South African soil. Their programs are aimed at neighboring countries with which the government of South Africa has its differences. It appears that some or all of these may use the former shortwave broadcasting facilities at Paradys, although there are reports that others may now be located in border areas near the target countries. South Africa, while it does not admit it supports (or perhaps actually operates) these radios, still makes no apparent effort to quash news stories and speculation about them in the country's newspapers. All of the so-called South African clandestines can be heard on shortwave in the U.S. They include:

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War Of The Words

1985 Isn't The First Time Ethiopia Has Asked For Global Aid And Sympathy. It Happened 50 Years Ago And Set Off Repercussions In Broadcasting And Communications That Are Still Echoing!

BY TOM KNEITEL, K2AES, EDITOR

Almost forgotten in the aftermath of WWII, which was to follow upon its heels, the Italo-Ethiopian War must be viewed in retrospect as being a proving ground, not only for communications technology but also for a shortwave war of words that was eventually taken up by the rest of the world. It became the basis for much of what you still hear today on the international shortwave broadcast bands.

What with Ethiopia's famine garnering its share of emotional headlines, you'd think that you would have heard more about the problems faced by this ancient African nation exactly fifty years ago. It was also a time of pleading for world sympathy and aid and, in that respect, the present situation in Ethiopia bears a resemblance to the events of the 1930's.

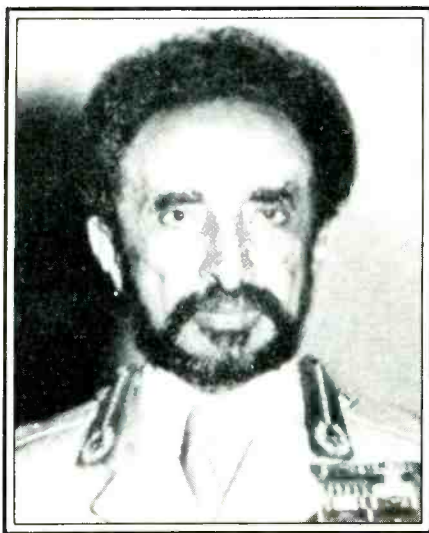
The Italo-Ethiopian War

The Italo-Ethiopian War was fought between Italy and Ethiopia in 1935 and 1936. Italy's dictator, Benito Mussolini, began the war in order to gain a source of raw materials for Italian industry. More importantly, he hoped to turn the attention of Italians away from growing problems within Italy.

After several border skirmishes (starting on 5 December 1934), the Ethiopians notified the League of Nations and appealed for intervention. After various attempts by the League to bring about a peaceful settlement of the border problems between Ethiopia and Italian Somaliland had failed, on 3 October 1935 war broke out when Italian forces invaded from Eritrea (in the north) and Italian Somaliland (in the south).

The League of Nations condemned Italy as the aggressor and set forth a proposal for financial and economic sanctions against Italy. This aroused strong feelings within Italy and the nation responded by dispatching large numbers of reinforcements to Libya. England, feeling the heat getting too close to its interests in Egypt, sent troops and war materials to Egypt and increased its Mediterranean fleet.

Peace efforts continued to no avail, and the mechanized Italian army had little oppo-



Haile Selassie I, Emperor of Ethiopia.

sition from the poorly equipped and trained Ethiopian defenders. Village after village fell under the Italian invasion. Italian bombs made a shambles of the flimsy communities.

Nevertheless, the Ethiopians put up a valiant struggle for seven months. At some point, Emperor Haile Selassie decided it was hopeless to continue to defend the nation against an invader equipped with modern weapons and he fled the country. On 5 May 1936, the Italian forces, under the command of Marshal Pietro Badoglio, marched into the Ethiopian capital of Addis Ababa. A few days later, Mussolini annexed Ethiopia to Italy and proclaimed the king of Italy as emperor. Haile Selassie was in exile and unable to return to his throne until 1941.

That is a thumbnail sketch of the events that made up this strange little war, which served as a backdrop for the events that bore upon broadcasting and communications.

Military Communications

At the beginning of the 20th Century, an army moved blindly, until its feelers came into contact with the enemy. And, when scouts found the enemy, they had the job of

getting back with the news. Officers worked out "problems of visibility" from contour maps and played "kriegspiel" war games on maps, where they set up the enemy's forces when the umpire told them that the enemy was in sight.

It is true that field telegraphs had been invented; but they tied the army down with miles of wire and, when the wire ran out (as it did with the Russians at Tannenberg in 1914), the army broke apart.

But in 1935, for the first time in history, there was a mechanized army equipped with two-way communications for its aircraft, vehicles, and various detachments. The general could know within minutes what his scouts were able to sight. American newspaper reporters leaving wrecked Addis Ababa sent back dispatches telling of the ability of the Italian field commanders using portable transceivers to give instant orders to specific units no matter how far they were separated from the main forces. The reporters marvelled at radio's use in coordinating the advancing Italian forces.

It's an old strategical axiom that an army can't be any better than its communications system, and tactical dogma says that an army without a properly functioning communications system has about the same value as a chain with some of its links removed. The exact nature of the communications system isn't as important as whether it fulfills its purpose, and that it effectively parallels the system used by the enemy.

The usefulness attained with even a primitive communications system in wartime is described by Aeschylus, in his famous *Agamemnon* (verses 274 to 309), in which he reports how the Greeks (in 1184 B.C.), after their victory over Troy, telegraphed their jubilant message to Greece in a surprisingly short time. They used a series of nine relay fires kindled at the tops of high mountains, and bridging by this first known use of "wireless telegraphy" in history, a distance of about 320 miles.

In WWI the importance of a well functioning communications system was impressively demonstrated in 1914 by the famous



Haile Selasse's Minister of War, Fetawrari Mou lou Gueta, shown in ceremonial battle attire, holding the spears and rhinoceros shield used as actual battle gear in the 1930's. Ethiopia's forces were organized in much the same manner as were the feudal armies of Europe in the Middle Ages. The Minister of War rode into battle on a donkey.

Marne victory of General Joffre over the Germans. This victory was attained not only because the Germans had over-extended themselves and also had a defective transportation system, but due to their communications system which at that time wasn't functioning effectively.

The Ethiopians attempted to mimic Joffre's tactics, permitting the enemy (as did Joffre) to freely advance to and occupy important points and then breaking their lines of communications, even going so far as to sever the Djibuti-Addis Ababa railway. It seemed, however, that the Italians had also learned from the Marne battle and were careful not to be strung out without immediately setting up their radio communications. Nothing the Ethiopians could do proved effective in severing radio communications.

The efficacy of two-way radio communications during war had been proven and would, from that point on, take its place in history.

The War Of Words

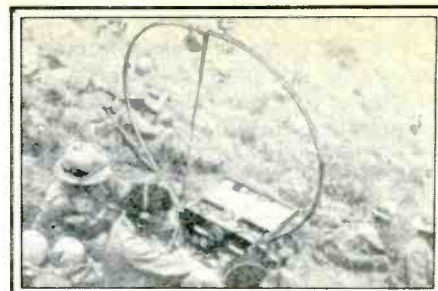
Like most European nations, Italy had established international shortwave broad-



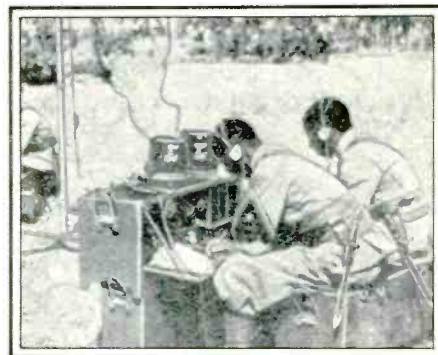
Benito Mussolini, Il Duce, leader of Italy. He rejuvenated the Italian shortwave broadcast station for propaganda programming.



Italian troops in the field could carry their battery-powered transceivers for instant communications.



The Italian transceivers could be set up for operation within minutes.



A field headquarters behind the lines.

An Italian radio officer during the Italo-Ethiopian War. Note that the radio equipment is designed with carrying handles.



casting facilities by the early 1930's. Italy's main station on shortwave was I2RO, an experimental transmitter which (in late 1934) was operating on 5550, 5725, 6070, 6970, 9630, and 9780 kHz. The station had some English programming beamed to the United States as well as programs in other languages beamed to various areas of the world.

Essentially, it seemed to be done in a rather half-hearted manner. The station did offer QSL cards, but they weren't very attractive and, what's worse, the operators of I2RO (E.I.A.R., which stood for Ente Italiano Audizioni Radiofoniche) in Rome were indifferent to answering reception reports.

In a DX magazine of the day, one listener noted that in 1932 he had sent a report to I2RO. After waiting for two months for a QSL, he wrote again. Still no answer. In all, he wrote no less than nine letters, all of which included return postage. Each letter was written after an interval of about a month until his anger reached the boiling point.

Finally, he wrote a letter to Premier Benito Mussolini, explaining that nine letters had been sent to his government-run station without any reply. Moreover, many other listeners were also fed up with the station's discourteous indifference.

Five months later he received a QSL card

mailed to him by the Italian Consul General in New York, extending great regret for the delay. By that time, most listeners had blacklisted I2RO and ceased to even bother requesting their QSL card.

This is mentioned to bring out the contrast with I2RO's activities and attitudes commencing in late 1934 when the border skirmishes began with Ethiopia. By this time, with the Ethiopians complaining to the League of Nations, Mussolini obviously realized that I2RO could be used as an effective tool to explain his position and curry popular support from the nations of the world.

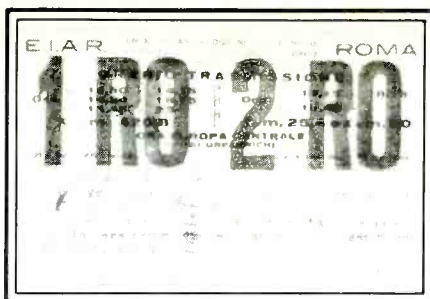
In an effort to build the popularity of I2RO with the world's listeners, the plain looking Italian language QSL was scrapped. A sharp new QSL was made up with a beautiful Art Deco motif, and it was in English! Moreover, Mussolini hired an English speaking correspondent at I2RO to promptly respond to all letters from listeners. Listeners quickly responded to I2RO's new-found friendliness and were eager to tune in to the station, which (by the way) offered lengthy explanations to the world seeking to justify the Italian military actions along the Ethiopian border. Many new frequencies were added and transmitter power was increased.

Ethiopia, on the other hand, had no shortwave broadcasting stations. Emperor Haile Selasse did, however, hastily establish several stations at Akaki (on the outskirts of Addis Ababa) for the primary purpose of accommodating many war correspondents wanting to send communique to their news services. These stations were:

- ETA on 18270 kHz
- ETB on 11955 kHz
- ETC on 11960 kHz
- ETD on 7620 kHz
- ETG on 5880 kHz

Selasse soon added many additional frequencies to his "Imperial Ethiopian Radio Stations," not only to use for point-to-point operations, but also for impromptu direct broadcasts to the world's listeners. These transmissions consisted of highly emotional pleas for military, medical, and other aid from the outside world. His people were suffering from the terrors of war, and they were starving. Interestingly, despite the fact that Selasse's transmitters were not broadcasting stations in the true sense of the term (nor were they operating on international broadcasting frequencies), the Ethiopians issued QSL cards. Selasse was copying the Italians!

For the Ethiopians, the broadcasts produced little in the way of a world audience and even less along the lines of assistance. I2RO had powerful transmitters (at one time I2RO was claiming 120 kW), sophisticated beam antennas, fortified with a large staff of professional wordsmiths. The Imperial Ethiopian Radio Stations were on offbeat "ute" frequencies, had a simple antenna system, a puny 3.5 kW transmitter, and a staff consisting entirely of technicians ill-prepared to compete with the barrage of professionally prepared propaganda oratory being sent out by the Italian station. Moreover, the Ital-

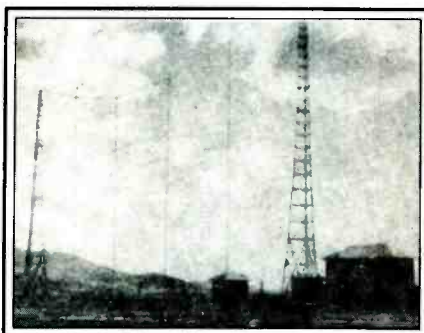
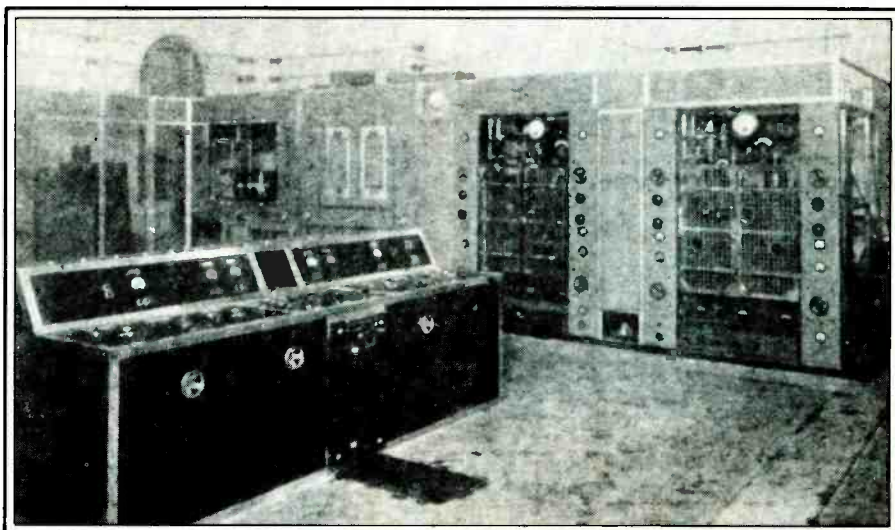


I2RO's original card (this one is dated 1933). Looking plain and written in the Italian language, it was so hard to obtain that listeners eventually boycotted the station.

I2RO's powerful shortwave transmitters in Rome were used to explain Italy's questionable military incursion into Ethiopia.



The strikingly beautiful English language QSL which was enthusiastically sent out by I2RO when they realized that the station had an enormous propaganda potential. This card is dated less than three months after Italy annexed Ethiopia. (Courtesy Miss Eileen C. Hofmaster.)



The Imperial Ethiopian Radio Station achieved instant popularity within DX circles, but never could draw the focus of world attention and sympathy for the plight of the small nation. This humble antenna system didn't help much.

ians were monitoring the Ethiopian stations and, while they permitted the war dispatches to go through, many of the appeals for aid were zapped by the Italians in one of the earliest instances of deliberate broadcast jamming. And, perhaps, in the final analysis, the world itself (only 15 years after the "war to end all wars" and coping with the worldwide financial panic and economic depression that began in 1929) simply wasn't very interested in the plight of a remote

African kingdom whose existence or non-existence made little difference.

Fact was that, if anything, Ethiopia—with its funny little emperor and ragtag army—was a laughing stock to much of the world. Newspapers were filled with facetious Haile Selasse caricatures and he was mentioned in several novelty songs (for instance, "A Shanty In Old Shanty Town").

It wasn't until July of 1940 when, backed by the British (who had given him political refuge), Selasse was able to begin to assemble a patriot force for the purpose of ousting the Italians. Eventually, the Italians surrendered and Selasse was restored to his throne.

As insignificant a thread as the Italo-Ethiopian war seems now, in the complex fabric of world events woven since the mid-1930's, it was this incident that gave two-way radio communications its first real proving ground in war. Furthermore, this war (and the Spanish Civil War that began in 1936) blazed the way for the use of international broadcasting as a powerful tool for the dissemination of propaganda, persuasion, politics, and psychological warfare—an intense war of words between the world's nations. It's a war that, once begun, has never ended. You can turn on your receiver right this minute and listen to echoes and reverberations of the day that Italy discovered that more frequencies, more power, a better antenna sys-

<h1>ETB</h1>			VERIFICATION OF RECEPTION	
IMPERIAL ETHIOPIAN RADIO STATION			This is to confirm your reception for our	
TELEGRAPH TELEPHONE TRANSMITTER			Broadcast to	
AKAKI 8 km south Addis-Abeba			Columbia B.S.	
Call sign Frequency Wavelength			on <i>Nov 27th</i> 19 <i>35</i>	
ETA	18.270	16.42	<i>2125</i>	to <i>2220</i> C M T
ETB	11.955	25.04	With many thanks for your kind report	
ETD	7.620	39.37	THE ENGINEER IN CHARGE	
ETG	5.880	51.02	<i>Thoré Bostrom</i>	
Antennae Power max. 3.5 KW. No directional antennas. Broadcasts only on special occasions.			Addis-Abeba <i>Jan 9th</i> 19 <i>36</i>	

A very rare QSL (dated 27 November 1935, at the height of the war) from the Imperial Ethiopian Radio Station. It confirmed reception of a point-to-point transmission to CBS from a war correspondent. These stations, after all, weren't actual broadcast facilities even though, in desperation, they were also used in that manner.

tem, and an unending stream of words can mask a multitude of sins and, in any event, is more effective than the other guy's flea power station.

Epilogue

Ethiopia's recent history has been far from tranquil. While Haile Selassie was on a tour of South America in 1960, rebels seized the government. Four days later Selassie had regained his throne. But a series of droughts that began in 1972 took hundreds of thou-

sands of lives. Strikes, army unrest, as well as student demonstrations led to Selassie's final ousting in 1974.

Selassie was replaced by a ruling junta representing a revolutionary socialist state with close ties to the USSR and Cuba. Since this government took power there have been violent coups as well as religious and tribal uprisings. In 1978, Soviet and Cuban troops aided the Ethiopians in defeating Somalian rebels and forces. And, presently, yet another devastating drought has brought wide-

spread famine and starvation that has captured world sympathy, attention, and aid.

The government station, known as The Voice of Revolutionary Ethiopia, now using 100 kW transmitters from a location in Gedga, can be heard on 7110, 7165, 9560, and 9595 kHz. This time the world hasn't been able to ignore or laugh at the overwhelming problems of this troubled nation.

According to Gerry Dexter's excellent book, *Clandestine Confidential*, there are dissenting voices also to be heard. Although jammed, The Voice of The Broad Masses of Eritrea cries out for independence for that Ethiopian province, using approximately 3760, 6250, 7450, and 9950 kHz.

The Voice of The Western Somali and Somali Liberation Fronts, as well as the Voice of the Popular Front for the Liberation of Eritria, are all reported on 6095 kHz over the facilities of Radio Mogadishu in Somali.

The Voice of the Tigre Revolution calls out for independence of yet another Ethiopian province. They're on about 7320 and 15450 kHz.

Radio Sudan permits its facilities to be used by the Voice of the Eritrean Liberation Front and also The Voice of Free Ethiopia on 5038 and 6150 kHz.

Iraqi Radio hosts The Voice of the Ethiopian Revolution on 6170 and 7245 kHz.

But then, shortwave radio has been used to parade the affairs of the Ethiopians for 50 years now—longer than any other nation on the face of the earth! PC

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Selected English Language Broadcasts

Summer, 1985

Note: This list of English language broadcasts was accurate at the time of compilation, but stations often make changes in hours and frequencies with little advance warning. Hundreds of broadcasts in the English language are on the air on shortwave every day, many directed to North America. This is a representative sampling and not a complete reference. Some broadcasters air only part of their program in English during a given hour, or may run the English segment into the following hour, and these are not necessarily carried over here. Major broadcasters such as the Voice of America, the BBC, Radio Moscow, and Radio Australia operate virtual 'round the clock services in English, using at least one frequency in each meter band, and are thus not included in this list. Numbers in parenthesis indicate a starting time for English within the hour listed. All times are GMT.

Time	Country	Frequencies
0000	Vatican (0050)	6.015, 9.605, 11.810
	Portugal (0030)	6.095
	Albania	7.065
	Belgium (0030)	5.910, 9.925
	Bulgaria	9.700, 11.870
	Canada	5.960, 9.755
	China	11.650, 15.385, 15.480
	East Germany (0015)	6.080, 9.730
	Greece (0030)	6.205, 9.420, 9.865, 11.645
	Japan	9.645, 11.710
	Spain	9.630, 11.880
0100	Netherlands (0130)	6.020, 9.895
	S. Korea (0145)	11.810, 15.575
	Nicaragua	6.015
	Albania (0130)	7.120
	Cuba	6.140, 11.725
	Czechoslovakia	5.930, 7.345, 9.540, 9.630, 9.740, 11.990
	Ecuador	9.745, 15.155
	W. Germany	6.040, 6.085, 6.145, 9.545, 9.565, 11.785
	E. Germany	6.080, 9.730
	Switzerland (0145)	6.135, 9.725, 9.885, 12.035
	Austria (0130)	5.945, 6.000, 9.770
0200	Egypt	9.475, 9.675
	Netherlands (0230)	6.165, 9.590
	Sweden (0230)	9.695, 11.705
	Belize	3.285
	Brazil	11.745
	Israel	7.412, 9.440, 9.815
	So. Africa	5.980, 6.010, 9.615
	Albania (0230)	7.120
	Argentina	11.710, 15.345
	China	11.650, 15.385
	Ecuador	6.140, 9.745

Time	Country	Frequencies
	Hungary	6.025, 6.110, 9.520, 9.585, 9.835, 12.000
	Poland	6.095, 6.135, 7.145, 7.270, 9.525, 11.815, 15.120
	Romania	5.990, 6.155, 9.510, 9.570, 11.810, 11.830, 11.940
	Taiwan	5.985
0300	New Zealand (0345)	15.150, 17.705
	Sweden (0330)	11.705
	Namibia	3.270, 3.295
	Portugal	6.095
	Albania (0330)	6.200, 7.300
	Cuba	6.140, 11.725
	Czechoslovakia	5.930, 7.345, 9.540, 9.620, 9.740, 11.990
	France (0315, 0345)	6.175, 7.135, 9.545, 9.790, 11.670
	E. Germany (0330)	6.010, 6.080, 9.560
	Greece (0340)	6.205, 9.420, 9.855, 11.620
	Kenya	4.915
	Malawi	3.380
0400	Nicaragua	6.015
	Turkey	9.560
	Zambia	4.910
	Botswana	4.820, 7.255
	Bulgaria	7.115, 11.750
	Canada	5.960, 9.755
	France (0415, 0445)	6.175, 7.135, 9.545, 9.790, 11.670
	Hungary	6.025, 6.110, 9.520, 9.585, 9.835, 12.000
	Ireland	6.910
	Poland	5.990, 6.155, 9.520, 9.570, 11.810, 11.830, 11.940
	Switzerland (0430)	9.725, 12.035
	Uganda	5.026
	Guatemala	3.300
	Transkei, S. Africa	3.930
	Netherlands Antilles	9.535
0500	Netherlands (0530)	6.165, 9.715
	Nigeria	7.255
	Ecuador	6.095, 9.745, 11.910
	Cameroon	4.795, 4.850, 5.010
	W. Germany	5.960, 6.120, 9.545, 9.690, 11.705
	Israel	7.412, 9.440
	Lesotho	4.800
	Spain	6.065, 9.630, 11.880
0600	Ghana	4.915
	Sierra Leone	5.980
	Nigeria	4.770
	Cuba	9.525
	Ecuador	6.095, 9.745, 11.910

Time	Country	Frequencies	Time	Country	Frequencies
	Zambia	4.910		Ecuador	15.115, 17.890
	Swaziland	7.295		Ethiopia	9.560
0700	Alaska	9.540		Finland	15.400
	Liberia	3.255		Seychelles	11.895, 15.325
	Cook Islands	11.760		Yugoslavia (1530)	9.620, 15.240
	Guyana	5.950		Japan	9.505
	Japan	9.505		Greece (1540)	11.645, 17.565
	Switzerland	3.985, 6.165, 9.535	1600	Norway (Sun)	11.860, 15.305
	Liberia	11.830		Pakistan	9.865, 11.670, 15.580, 17.660
	Monaco (0725)	9.495		France	11.705, 15.315, 17.620, 17.795
0800	Belgium	9.880, 21.810		UAE	11.955, 15.300, 15.320
	Solomon Islands	5.020, 9.545		Vietnam	10.040, 12.020
	Alaska	6.170		Tanzania	9.750
	N. Korea	9.765, 11.830	1700	Norway (Sun)	15.305
	Singapore	5.052, 11.940		Japan	9.505, 11.815
	Japan	11.875, 15.235		Nigeria	11.770
0900	Afghanistan	4.450, 15.435		Argentina	15.345
	New Zealand (0930)	9.620, 15.485		Saudi Arabia	11.855
	Falklands	3.958	1800	Ivory Coast	11.920
	Guyana	5.950		Brazil	11.955
	Oman	9.735, 11.890		Kuwait	11.675
	Japan	9.505, 15.195		Libya	15.450
1000	India	15.130, 15.230, 15.320		Saudi Arabia	11.855
	Oman	9.735, 11.890		United Nations	15.120
	Vietnam	9.840, 12.035		Sweden (1830)	11.845
	Ecuador	6.130, 15.485		Bulgaria (1830)	11.735
1100	Pakistan	15.595	1900	Afghanistan	15.077
	China	9.820, 11.650, 15.520		Norway (Sun)	15.170
	N. Korea	9.745, 9.977		Equatorial Guinea	15.106
	Malaysia	4.985, 7.295		Iran (1930)	9.022
	Vietnam	9.840, 12.035		Nigeria	15.120
	Sri Lanka	11.835		Canada	15.260, 17.820
	Japan	9.505		Ethiopia	9.595
	Netherlands Antilles	11.815, 11.875		Belgium (1915)	15.590
	Argentina (1130)	11.710	2000	Syria (2005)	11.685
	Thailand (1130)	9.650, 11.905		Algeria	9.640, 15.215, 17.745
1200	Syria	17.510		Kuwait	11.675
	Cambodia	11.938		Israel	7.412, 9.440
	China	11.650, 15.520		Cuba (2010)	11.850
	Ecuador (1215)	11.740, 15.115, 17.890		Egypt (2030)	15.375
	Finland	15.400, 17.800	2100	United Nations	15.120, 17.730
	Greece (1235)	9.815, 11.645, 15.635		Iraq (2130)	9.610
	Mongolia	12.015, 12.045		Cuba	15.300, 17.750
	Singapore	5.052, 11.940		So. Africa	9.585, 11.900, 15.155
	Uzbek SSR	9.600, 11.785		Ecuador	15.295, 17.790
	Papua New Guinea	4.890		Taiwan	11.825, 15.270, 15.345
1300	India (1330)	9.545, 11.810, 15.335		Switzerland (2145)	9.885, 12.035, 15.570
	Norway (Sun)	15.305	2200	Latvia (2230)	6.100
	Finland	15.400, 17.800		Libya	7.245
	Japan	9.505, 11.815, 11.840		Bulgaria (2230)	9.700, 11.870
	Vietnam (1330)	10.040, 15.010		Japan	11.840, 15.325, 15.350
	UAE (1330)	15.320		Malta (2230)	6.110
	Canada	9.650, 11.855, 15.250, 17.720		Taiwan	11.825, 15.270, 15.345
	S. Korea	6.135		Yugoslavia (2215)	6.100, 7.240, 9.620
	China	11.600, 15.280, 17.700		Italy	11.800
	N. Korea	15.340		Angola (2230)	9.535
	Guam	9.510		Israel (2230)	7.412, 9.425, 9.440, 9.815
1400	S. Korea	9.570, 9.750, 11.810, 15.575	2300	Turkey	9.560
	Norway (Sun)	15.305		Latvia	6.100, 9.685, 9.750, 11.790, 15.100, 15.240
	Sweden	15.345		Canada	9.755, 11.710
	Canada	11.955, 17.720		E. Germany (2315)	6.070, 6.125, 6.185
	Philippines (1430)	11.955, 15.240		N. Korea	9.745, 15.230
	Vatican	11.740		Spain	9.780
	Belgium	17.610		Vietnam (2330)	9.840, 12.035
	Ecuador	11.740, 15.115		Japan	17.755
1500	Guam	9.510			
	Indonesia	11.790, 15.150			

Flashback!

Let's Look Back Into Radio's Early Days!

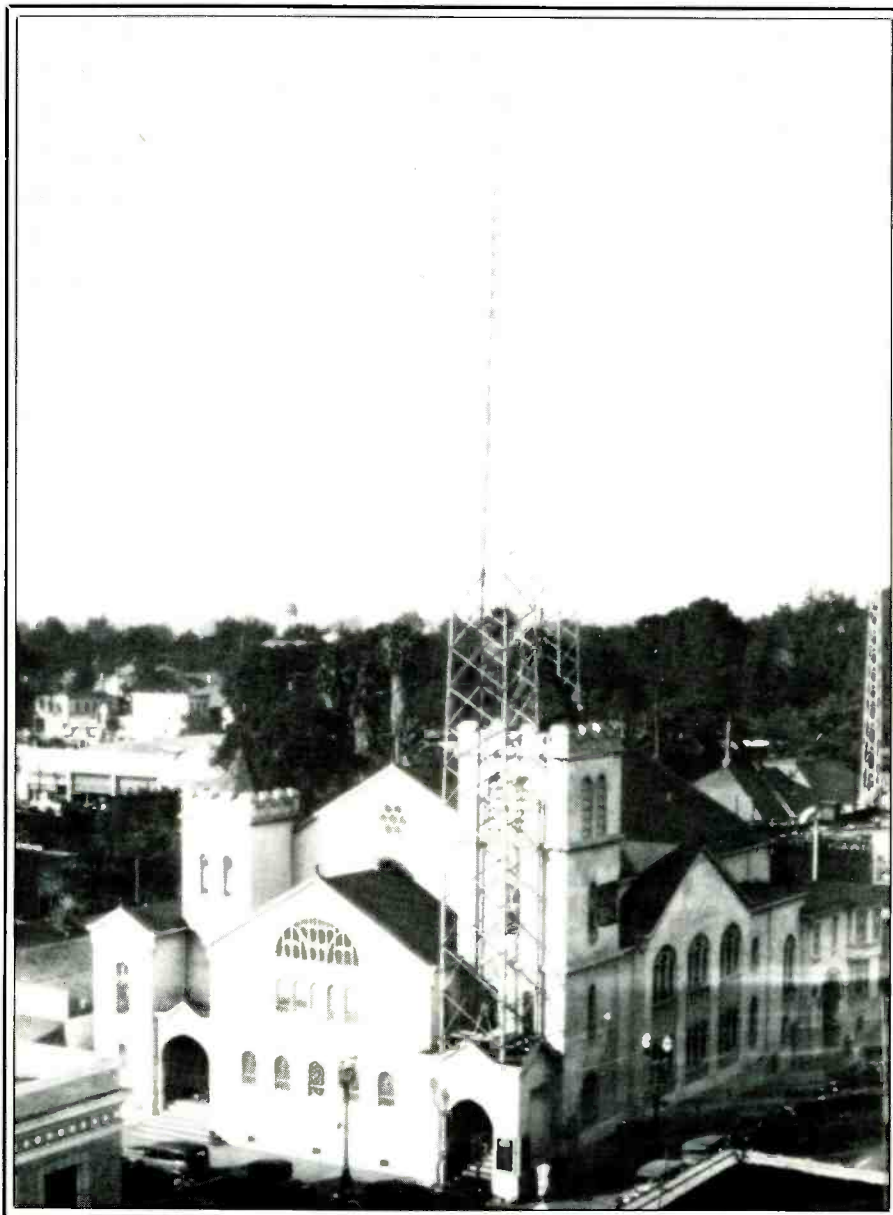
BY ALICE BRANNIGAN

Few radio stations, indeed, have ever proven that they pre-date the broadcasts of Dr. Charles D. Herrold of San Jose, California. In late 1908, Herrold's 15-watt station first appeared. Herrold and his assistant, E. A. Portal, described their first transmitter as "haywire," and consisting of "a few pieces of electrical doo-dads, a piece of stove pipe, an old phonograph turntable and several bales of wire." The station had no broadcasting license (none were to be issued until 1921) but identified as "This Is San Jose Calling."

In 1912, Herrold carried out successful two-way voice tests, and in 1915 his station broadcast music to special receiving booths at the Panama Pacific Exposition in San Francisco. These early tests were on 1249 kHz. When the government began issuing experimental station licenses, Herrold was assigned the call signs 6XE and 6XF, and when broadcasting licenses were authorized in 1921, on December 9 his station was awarded the call KQW. At this time KQW was located at 467 First Avenue and was authorized to operate on 833 kHz, which was the only broadcasting frequency authorized for 1921 broadcasters. Early broadcasters KDKA, in Pittsburgh, Pennsylvania received its broadcasting license on November 7, and WBZ in Springfield, Massachusetts had been licensed since September 15. In any event, KQW always announced itself as "The Pioneer Broadcasting Station of the World," and special annual programs celebrating its anniversary were based upon a 1908 starting date.

In 1924, KQW was running 50 watts on 833 kHz, but a year later it was sold to the First Baptist Church and its power was upped to 500 watts. The station's new owners used the station for religious programming and stated that the call sign stood for the "King's Quickening Word."

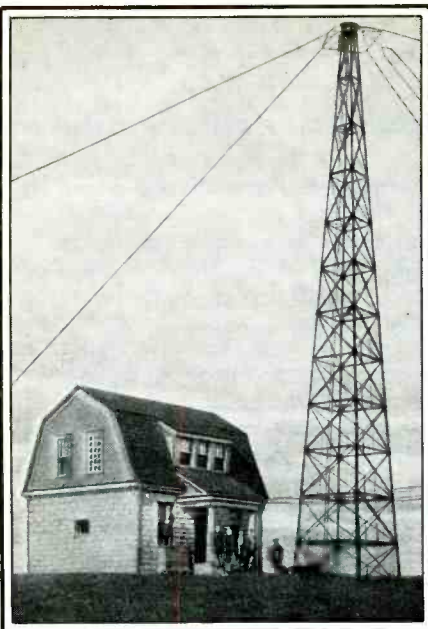
A year later KQW had moved to 1010 kHz and again changed owners. Its new owner was Fred J. Hart (Pacific Agricultural Foundation). Located at 87 East San Antonio Street, KQW became a commercial broadcaster when the Sperry Flower Co. bought a daily 15-minute cooking program. This established KQW's start of an exceptionally prosperous career.



KQW during its 1925 religious period.

Although Herrold hadn't actually sold commercials when he owned KQW, the programming was similar to early commercial broadcasters of the era. Herrold and his assistant, Ray Newby, would read the newspaper over the air and candidly discuss

world and local events; it was a genuine talk radio format—sometimes interspersed with stints of Mrs. Herrold acting as a disc jockey with records from a local record shop. Live music was attempted, too. A woman harpist volunteered to play, but the microphone

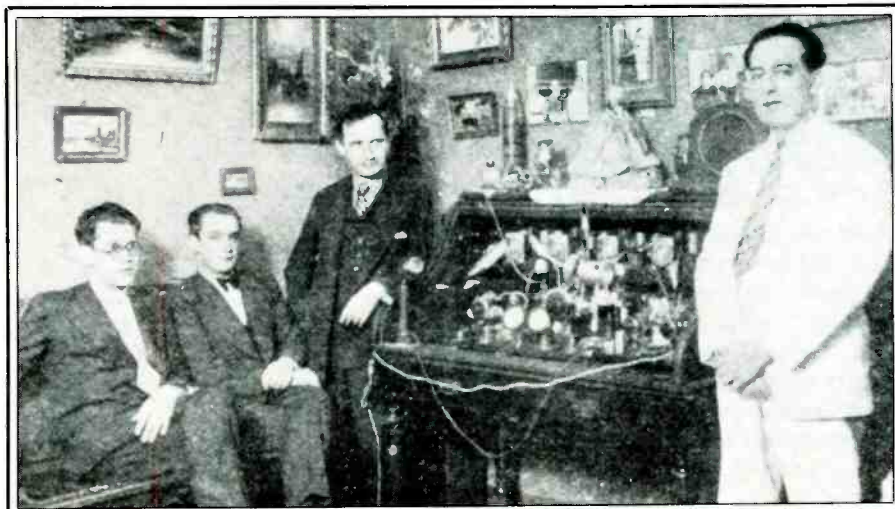


Station WUI at Ft. Riley in Kansas, 1929.

couldn't pick up the sound of the instrument. Herrold kept moving the mike closer and closer. Finally, when the mike was about an inch away from the harp, the good lady panicked and ran out of the studio!

This was hardly the type of operation at KQW by the time it had gone commercial. By 1936, KQW had increased its power to 1 kW and had become a member of the Don Lee-Mutual Network. By about 1940, the station had increased its power to 5 kW (1 kW at night) and switched over to 740 kHz. In 1942, KQW's transmitter was moved 30 miles north to Novato and, simultaneously, the station became a CBS affiliate. The year 1949 saw KQW purchased by CBS and its callsign changed to KCBS. In 1951, CBS increased the station's power to 50 kW. KCBS is, today, a major broadcasting force in northern California and its popular all-news format (started in 1968) makes the station the only continuous source of news in its coverage area.

A flick of the switch could alternate Julio's station between ham and commercial broadcast station. His calls were ZP3AC and ZP10.



Station KUKU was an unusual 1930 addition to the airwaves.

Dr. Herrold passed away in 1948; Lee DeForest once said, "Dr. Herrold's station can rightfully claim to be the oldest broadcasting station in the world." KCBS has never forgotten its beginnings and makes reference to its pioneering roots quite often, also keeping alive the memory of Dr. Charles Herrold, whose contributions and work have not been otherwise remembered in broadcasting history.

Our photo of KQW shows it while located at the First Baptist Church in 1925. Three vertical radiators of different sizes are in use but don't show up very well in the photo, although the largest tower can best be seen mounted atop the church entrance at the right side (facing the camera).

An Army Station

Moving from broadcasting to ute stations, I received a postcard from M.W.G. of Hutchinson, Kansas for use here. This 1929

card shows what is described as the "Wireless tower, Ft. Riley, Kansas."

A 100 ft. tower is standing next to a two story building with stone walls and a barn-style roof. The tower shown in the photo is probably only one of a pair since the antenna wires appear to extend off to the right and most likely are supported at their other end by a matching mast.

I found that, in 1929, the wireless station at Ft. Riley had the callsign WUI and operated on 200, 210, 4430, and 8860 kHz. For some reason, on 200 kHz they could also use the call WYV, although that looks like a short-term arrangement.

Thanks for passing along that card! Readers are more than welcome to submit photos and postcards of old-time radio broadcasters and wireless stations for sharing here with POP'COMM readers.

Okay Wiseguy!

A letter from reader Mike Popkin of Indiana casually asks if we could run some information on station KUKU that was active in the early 1930's. That sent me digging through lots of dusty records. I was somewhat shocked to realize that I couldn't locate any information on KUKU, although I did find a late-1920's KUKU; it was portable set operated by a movie company that went into the Brazilian jungles. That KUKU was in contact with American hams while the film was being made. This was obviously not what Mike was asking about.

When I finally found out what KUKU was, I was pleasantly surprised. Mike, I think you were testing me or trying to make me crazy!

Yes, there indeed was a KUKU, but it had about as much of a chance of showing up in official station records as WKRP (in Cincinnati) had of turning up in *White's Radio Log*. In fact, KUKU was an outrageous mythical station that was part of an NBC (Blue Network) show called *The Cuckoo Hour*.

This was a very early comedy-variety program that first went on the air in 1930, a wild conglomeration of satire and one-liners hosted by KUKU's manager "Ambrose J. Weems" (Raymond Knight). One of the segments of the KUKU program was entitled "Personal Service for Perturbed People," conducted by "Mrs. George T. Pennyfeather." The program went off the air in 1932, but came back on again in 1934 when A. C. Spark Plugs became its sponsor. In its 1930 version (sponsored by Blue Moon Cheese Spread), KUKU introduced its many listeners to the likes of Percival Pother, the Green Monster, Fetlock Soames of Scotland's Back Yard, and the whimsical Sing-Up-A-Tree-O. Station KUKU laughed with and at everything and everybody and appealed to a very large audience. There was a "live" studio audience, but it took ten weeks of waiting to get tickets!

The genius behind KUKU was Raymond Knight. He not only was the star of the program, but also created the idea, wrote the scripts, and directed the program. In later years, Knight became associated with

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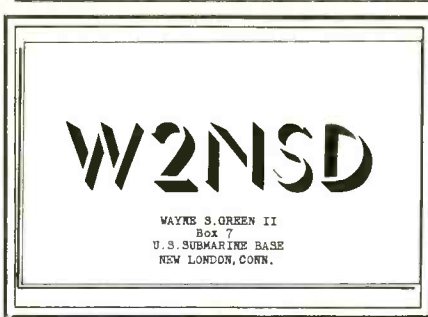
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CIRCLE 16 ON READER SERVICE CARD



Gloryoski! Our file of ancient cards began to rumble and emit smoke the other day. Slowly, and without any help, this card drifted out of the stack and landed on my desk. The card is from the WWII years and, gee, that name and callsign sure look familiar on this homemade QSL. Maybe I'm mistaken, but I think I've heard of this guy! Wonder whatever became of him.

radio's famous Bob and Ray, having a significant effect upon their brand of humor.

Never fear, Brannigan is here—and with a station photo of "Professor Ambrose J. Weems" (alias Raymond Knight), Manager and Chief Announcer at the Blue Network's almost-radio station, KUKU. This photo is from early 1930 and was taken just after KUKU went on the air.

Mr. Popkin, it wasn't very nice of you to try to fool Mother Nature, was it? And it's a good thing I was able to track down this little non-station. Now, Mr. Popkin, if you have

any non-QSL cards from KUKU kicking around, please send us photocopies!

South American Shortwaver

Last month we had a photo of KFJR, a broadcast station that was also a ham station. This interesting arrangement was used by several stations and we came across yet another from 1935. That would be Paraguayan ham ZP3AC, Julio Rodriguez Lequizamón of the city of Asunción. The station looks like little more than a bunch of loose wires, tubes, and meters, but Julio was able to obtain a regular shortwave broadcasting station license for the rig. It operated on 8220 kHz under the callsign ZP10 at times when he wasn't using the same equipment on the ham bands.

Our view of the lavish ZP3AC/ZP10 studios shows ZP3AC/ZP10 standing to the right (in the white suit). His visitors are Elias Nararro (ZP7AB), Gerardo Artaza (broadcaster ZP9), and Federico Donna (ZP4AB).

ZP10 eventually switched to 6666 kHz. Another combo ham and broadcaster in Paraguay at this time was ZP11 in Asunción; that one was on 3800 kHz and didn't even need a new crystal to switch back and forth between ragchewing and rhumba recordings. That's what I call economy!

There is little likelihood that these stations are in any way related to any of the broadcast band stations in Paraguay presently using similar callsigns.

PC

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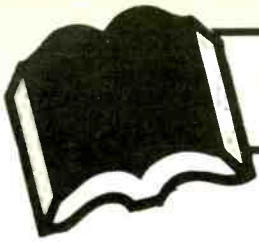
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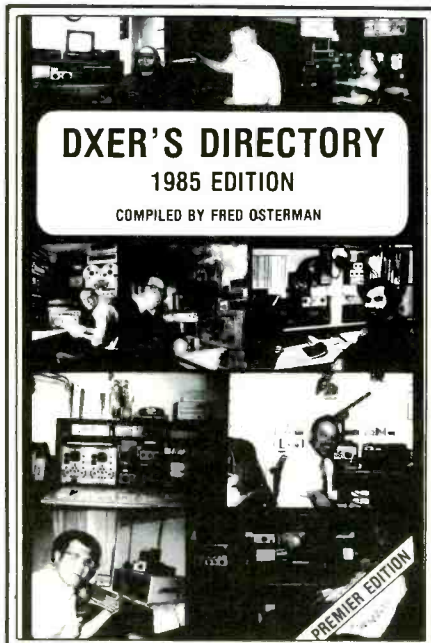
CIRCLE 129 ON READER SERVICE CARD



BOOKS YOU'LL LIKE!

Here's Who

Our friend, Fred Osterman of Universal Shortwave Radio, sent us a copy of his new book, *The DXer's Directory*. This is a nifty guidebook listing almost 1,000 DX enthusiasts, with addresses, 'phone numbers, club affiliations, special radio interests, etc. The book also includes names and addresses of numerous DX clubs (the good, the bad, and the terrible), and also shows a number of listener photos.



There are also forms you can fill out if you wish to be listed in a proposed future edition. This book is a handy reference source for keeping track of the various folks in the monitoring hobby.

The book costs \$4.95 (plus \$1.05 postage) and is available from Universal Shortwave Radio, 1280 Aida Drive, Reynoldsburg, OH 43068.

Tesla's Autobiography


In keeping with the current interest in Nikola Tesla, we have located an interesting autobiography called simply *My Inventions*. It is presented with all 17 original illustrations, plus 6 others added at a later date. This book has long been unavailable in most libraries. It is basic reading for anyone seeking to penetrate Tesla's complex personality and mysterious life.

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(b) AABBD ROTCP RETOA EWATH IOGAR
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643 CPTOR ARTBE EBKIC BBERE ABBBY

(See page 84)

By
M. E. CHAVER

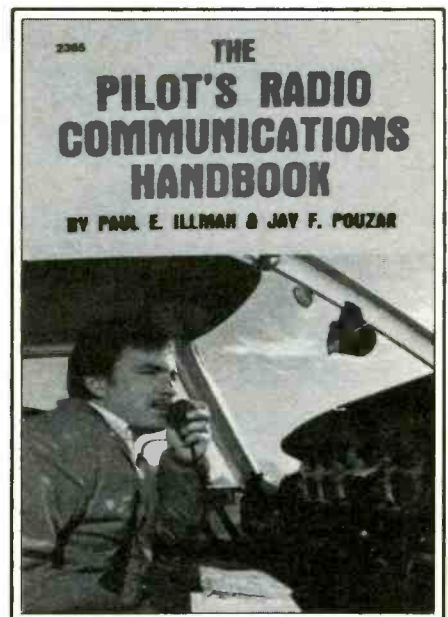
From Aegean Park Press

Code Breaking

M.E. Chaver was a code expert who wrote a series of articles on codebreaking during the years 1924 to 1928 in a publication called *Flynn's Weekly* (later to become *Detective Fiction Weekly*). The 73 columns published between 5 March 1927 and 22 September 1928, which was the very core of his topic, have been collected and published in a 160-page book entitled *Solving Cipher Secrets*.

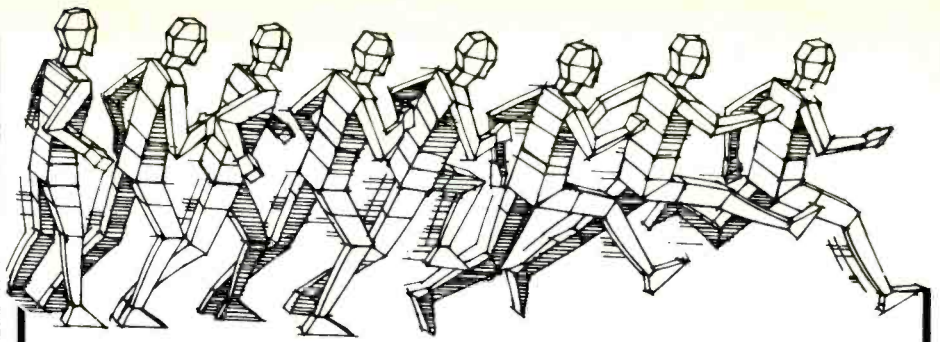
Virtually every classical crypto system is discussed in depth, including some details not discussed elsewhere. Some of the things covered include double transposition ciphers, bifid ciphers, autokey ciphers, playfair ciphers, price mark ciphers, Myszkowski transposition ciphers, Gronsfeld ciphers, Bacon's bilateral cipher, etc.

This book is available from Aegean Park Press, P.O. Box 2837, Laguna Hills, CA 92653. The book is \$18.80 (ppd.). For orders outside the USA, add \$1 (remittance must be in U.S. currency with payment against a U.S. bank).



Aero Info

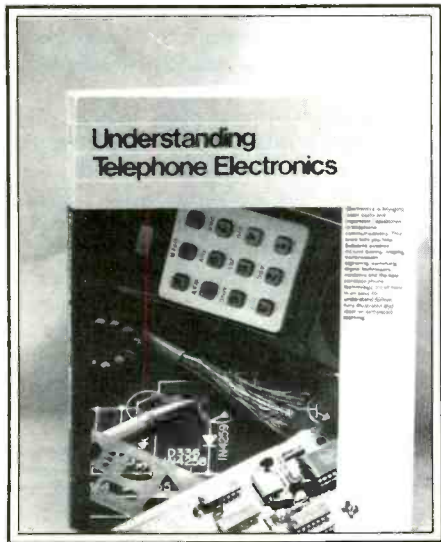
The Pilot's Radio Communications Handbook, by Paul Illman and Jay Pouzar, includes a complete explanation of virtually every type of aeronautical communications facility—control tower, ground control, Unicom, Multicom, approach/departure con-



trol, FSS, ARTCC, radar control, ATIS, and lots more. There is also information on frequency usage, correct radio procedures, and, in general, a first-hand look at the entire spectrum of aviation radio facilities as viewed by experts in air/ground radio.

This new 224-page book contains 57 illustrations and is a perfect companion to the *Air-Scan* frequency guide. It's an absolute must-have for all persons monitoring HF or VHF aero communications. An especially interesting chapter offers the reader a complete transcript of the communications during a cross-country flight as the pilot encounters the various ground station facilities with which he must communicate.

This book is \$11.95 plus \$1 postage/handling to USA/Canada/APO/FPO. Order it from CRB Research, P.O. Box 56, Com-mack, NY 11725.



Landline Communications

Understanding Telephone Electronics, by John L. Fike and George E. Friend, explains how the conventional landline telephone system works and how parts of the system are gradually being replaced by state of the art electronics. Written in an easy-to-read style, this book covers dialing, ringing, transmissions, signaling, switching, digital techniques, modems, and the new cellular telephone technology.

This 288-page fully illustrated book is published by Texas Instruments, Inc., P.O. Box 225474 M/S 8218, Dallas, TX 75265. It costs \$14.95.

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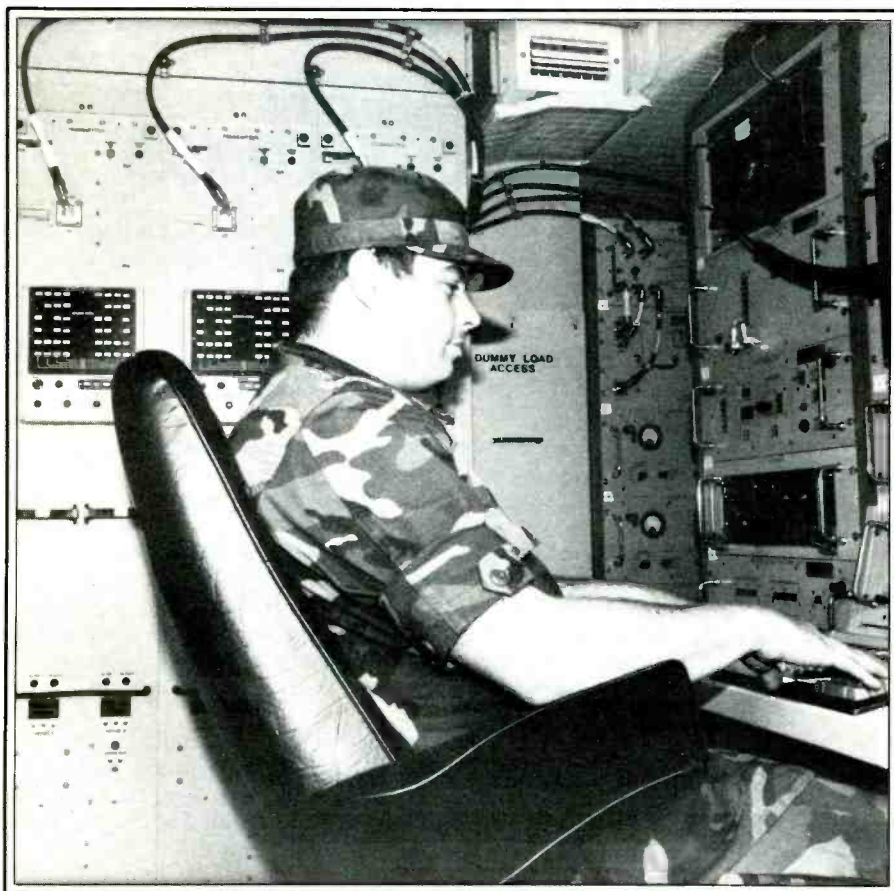
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POP'COMM Visits A Jamming Station

An Inside Look At TACJAM

BY SP4 LESLIE MESSINA, U.S. ARMY



SSgt. Jason W. Frye, 1st Platoon Sgt., Company A, 103rd Military Intelligence Battalion, programs one of the company's TACJAM computers. (U.S. Army photo by Sp4 Leslie Messina)

Impairing the enemy's ability to do battle doesn't always mean a devastating barrage of artillery fire, massive air assaults, or M-16s leveled in taut combat.

"In a real war situation, we can handicap the enemy by using the AM/ML034 Tactical Jammer (TACJAM)," says SSgt. Jason W. Frye, 1st Platoon sergeant, Company A, 3rd Military Intelligence Battalion, 3rd Infantry Division. "This electronic countermeasures set gives our division the capability to tactically jam enemy communications."

According to Frye, his company recently received three of the new TACJAM units, the most sophisticated equipment of its kind in use.

Mounted on a track vehicle that houses its own generator, the highly mobile TACJAM unit has three transmitters and three receivers, its own fail safe system check, and a large antenna that extends automatically with the push of a button, explains Frye. "The system becomes fully operational in 90 seconds."

A crew of three—a driver, guard and electronic warfare voice interceptor-linguist—man each TACJAM system during wartime, according to Frye. "But the system requires only one operator to jam or intercept enemy communication."

"TACJAM operators are linguists who were recently trained by General Telephone

Electronics, creators of the system," explains Frye. "They are taught, among other functions, to program the system's computer with the enemy frequencies it is to jam or voice-intercept."

"Once the frequencies have been plugged into TACJAM, its automatic mode can intercept and jam enemy communications without an operator."

Frye describes how TACJAM would work in a war scenario:

"Each TACJAM system, tasked with certain frequencies it must jam or voice intercept, would go to its designated site."

"Before starting TACJAM operations, a ground rod must be driven into the ground. This is automatically done in a matter of seconds with the flip of a switch. With the former method, the ground rod would have to be driven into the ground manually with a sledge hammer."

"The antenna on top of the vehicle is then automatically raised by pressing a button. There are two control buttons for this, one outside the vehicle and one inside." (Earlier methods of the same operation required the large antenna to be set up manually.)

"Radio power is then switched on inside the vehicle. The vehicle must be running to operate the TACJAM system. Its fail safe automatically shuts the power down if something is wrong with the vehicle. For example, if the vehicle is low on oil, the whole unit will shut down."

"Once entered into the computer, frequencies can be jammed or intercepted using the automatic mode. The linguist stands by to interpret voice intercepts."

"That's all there is to it."

Frye explains that priorities for jamming, which enemy frequencies the TACJAM system jams, and where the systems are positioned are determined by the division and dependent on the battle situation.

"The TACJAM system is meant to jam or voice-intercept higher level communications, such as those from an enemy headquarters site, not small unit communications," Frye further commented.

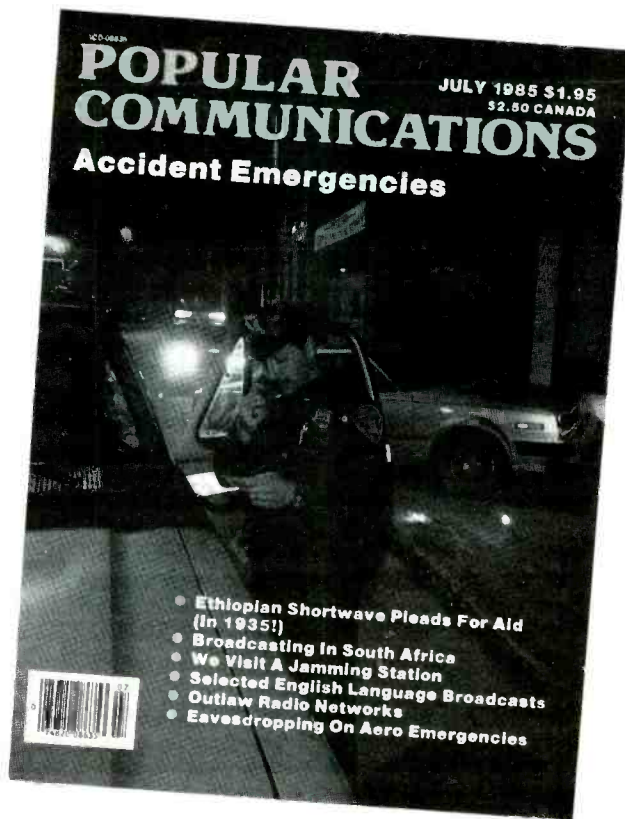
Spec. 4 Christine L. Sherman, a Russian linguist and TACJAM operator, likes working with the new system.

"TACJAM incorporates the many individual systems which were used for the same purpose. TACJAM is the best possible system." **PC**

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Note the 100-watt bootleg linear used to soup up the power of the otherwise legal CB station. Was the FCC's inability to cope with this type of rule violation the early stages of today's problems?



Charlie, of West Germany, is a member of an outlaw group known as "Earth International," which has members throughout the world. On some frequencies he's known as "13-Earth-198," but he's got other calls for various bands.

Outlaw Networks Invade The Ham Bands!

FCC Asks For Help In Getting A Grip On Outbreak Of Ham Band Piracy

BY HARRY CAUL, KIL9XL

Time was when the 75-meter ham band was a great place to go for peace of mind when you needed a respite from the hectic DX bands on 7 and 14 MHz. The band became famous for being a place to hook up with your friends for long "ragchews" and multi-station "roundtable" chats.

The FCC is now beginning to notice a rather bizarre twist to the operations on this band and, indeed, to ham operations in general. Air-piracy is breaking out as outlaw stations set up shop right in the ham bands. What may even be worse, some of the problem stations may not even be true pirates (unlicensed). They're fully licensed!

For many years the ham bands have been generally regarded as a poor place to commence pirate operation, especially in North America where a rather efficient self-policing program has been in operation under the auspices of the American Radio Relay League (ARRL). Even hams who aren't members of the ARRL's self-policing program would usually take action in driving bootleggers off the ham band frequencies.

Persons hoping to get in some bootleg op-



This member of "Earth International" is in the U.S.A. and goes by the identification "13-Earth-1988." Before the Whiskey club got busted by the FCC, he was known as "11-Whiskey-555." That heavy duty linear amplifier on the shelf looks like it could make a big splash on just about any frequency.

eration on the ham bands had to go to so much effort in trying to get away with it that it was easier to obtain a license and go on the air legally. Stations operating with poorly

adjusted equipment, questionable callsigns, unorthodox operating procedures, or who popped up in band segments where they didn't belong became immediately suspect of hanky-panky. While there have been overseas pirates noted (especially aboard vessels in international waters, including some with quasi-official ham licenses from certain nations), North Americans found it easier to set up shop on frequencies above or below the 27 MHz Citizens Band, or on HF frequencies far away from the ham bands. Two frequencies that have been noted with this type of operation from time to time have been 6660 and 13560 kHz.

That seems to be history. Now the bootleggers are turning up in large numbers right in the formerly off-limits ham bands—for instance, 3895 kHz. That frequency has FCC monitoring stations activating their long-range direction finding equipment in an effort to crack a large bootleg network operating rather blatantly in the 75-meter band.

Noting that members of the network use counterfeit ham-like callsigns, the stations appear to be running more power than is



This QSL card from a Peruvian pirate displays a rather unusual callsign that was given him by a local outlaw network. He's used the callsign on many frequencies (including the ham bands) where it always gets a good response. He's an American mining engineer and has been on the air for years.



FCC engineers inspect communications equipment confiscated from members of a network of stations operating on frequencies where they didn't belong. This gear all came from stations in Washington, DC.

permitted to licensed stations, are conducting commercial and business communications (not permitted on ham bands), and seem to be deliberately generating malicious interference to other stations on the band. It is speculation as to the percentage of stations in this network that are licensed hams and how many are totally unlicensed.

FCC monitors have determined that there are members of the 3895 kHz outlaw network in the following cities:

- Georgia: Bowden and Dalton.
- Illinois: Cairo.
- Indiana: Bloomington, Crawfordsville, Indianapolis, and Terre Haute.
- Iowa: Ottumwa and Williamsburg.
- Kentucky: Barboursville and Paducah.
- North Carolina: High Point and Newton.
- Ohio: Madison.
- Tennessee: Knoxville and Sparta.
- Virginia: Chesterfield and Falls Church.
- West Virginia: Clarksburg, Kenova, Paden City and Shady Spring.

There are other locations also, but these were the ones identified at press time.

Nothing New

Outlaw communications networks established for the purposes aren't new—they've been around for more than ten years, although until recently they have kept clear of the ham bands.

It is not easy to get into one of these networks. The usual method of operation often calls for it to be very difficult to gain admittance to an outlaw network. They are quite paranoid about getting infiltrated by FCC "ringers" or people who will expose their various secrets (frequencies, members, and even the address of the headquarters). Gen-

erally speaking, one must know a member who recommends a person's acceptance. At that point, an application must be filed with headquarters. Upon acceptance, the member is furnished with membership credentials and operating instructions as well as a roster of other members. These networks are actually far more structured than they might appear to the casual observer.

Some of the outlaw networks that have been on various frequencies include HF International, April Sidebanders International, Alfa Bravo DX Group, The Transcontinental Network, 11-Michael Group, 11-Mary Club, Earth DX International, and the so-called Whiskey groups.

When the FCC caught up with the HF International and Whiskey groups (both of which were accused of fostering operation on unauthorized frequencies), the leaders and organizers were given harsh treatment. They were charged with participating in an "organized conspiracy" to violate FCC regulations. Individual members were also cited for conspiracy, operating on unauthorized frequencies, running high power, and all sorts of other rule infractions. Even licensed hams were accused by the FCC when the boom fell. In March of 1978, Baltimore ham WA3VWC lost his station license and had his General Class ticket suspended for a year when the FCC charged him with operating in an out-of-band network. Hams such as WD6BHI and Advanced Class WD9FDZ were also charged with operating in out-of-band networks and their ham tickets were suspended. A number of other hams were also charged.

Most ham operator rule infractions seem to be accidents rather than deliberate at-

Two rather paranoid instruction letters to members of different outlaw networks tell members how to avoid problems for themselves and also the group itself.

To all 11-M number holders:

1. All 11-M numbers will be given out by personal contact only. (Mail - Telephone - Eyeball etc.). None over the air.
2. The name and address of each new number holder must be forwarded to the person you received the number from. This is to facilitate the distribution of new call sheets and other pertinent material from time to time.
3. If you do not have the capabilities already installed, you are not eligible for a number, until this is done.
4. Numbers will be given out by 11-M number 1 through 11-M number 10 only. No one else has authority to give numbers.
5. You will make absolutely no reference to these numbers or frequency on any other channel or frequency. You will simply suggest "Joe, let's move to 76". Understand? After you once get up there, be prudent.
6. Each new number holder will be given a frequency sheet. You are expected to respect the division of frequencies as outlined on the freq. sheet. Stay away from 10 meters.
7. Lets each of us police our selves. We don't want the same mess they now have on other frequencies.
8. We are all intelligent people, and a book full of rules are not necessary. Please use your good judgement, and we should have a nice place to talk.
9. In case of impending trouble, please let 11-M-1 or any of the first 10 number holders know, so that the word can be put out to all. We don't want trouble, just satisfaction, and a quite frequency. OK?
10. This system will start on December 3, 1972.
11. Please destroy this letter after reading it. Under no circumstances, let anyone copy any of the three pieces of information that is furnished to you, except to some one whom you know for sure is a member of this group.

To All:
Good modulating on a brand new frequency.

THE TRANSCONTINENTAL NETWORK

JANUARY, 1980

Welcome to 1980, and welcome to all the new members of the Net. We hope that the group has learned something from the past events of 1979. The Network operation was as successful as any radio net anywhere, on any band. The emergency messages were passed in record time and response relayed through various states and countries to the waiting parties. That's the name of the game.

On the other hand, the Network was jammed by an operator whose toes were stepped on. For almost two weeks the Network was brought to almost a complete halt because someone didn't think. REMEMBER, we hold and operate .870 only through the courtesy of every other operator on the band. Only through propriety, courtesy and clean operation will we be able to maintain our Network. A polite request to a station calling a general C.Q. to Q.S.Y. or if there are stations already in Q.S.O. please give them a chance to break or finish before you request Q.S.Y. In all instances, explain the Net operation then don't just sit and ratchet jaw, request units on frequency to check in or for Q.S.P. for your area. make it sound like a net operation (even if you have to fake the responses): After one or two minutes most units will move elsewhere with no hard feelings.

When moving to an Alt. Freq. or any other freq. DO NOT ID. WITH T.C.N. OR ZONE. In this way, if you have inadvertently interfered with another Q.S.O. or group, retribution will not be forthcoming on .870.

With no thanks to the U.S. Postal service and other Postal services around the world, we have managed to get about 75% of the necessary paperwork where it was supposed to go. If there is anyone who did not receive his or her mail don't request it on the air. Our memory is worse than the mail. Please rewrite the request. We will do our best to see that everyone gets everything.

The Net is filling rapidly and the coverage is broadening. We now cover 47 of the 50 United States and 26 areas outside the U.S. There is just about no place on earth outside the reach of T.C.N. and quite a few operators are coming to us from other bands to get their messages through. Take pride in the fact that YOU ARE GETTING IT DONE.

Nothing left to say now except for a few quickies.
Watch the quick key.

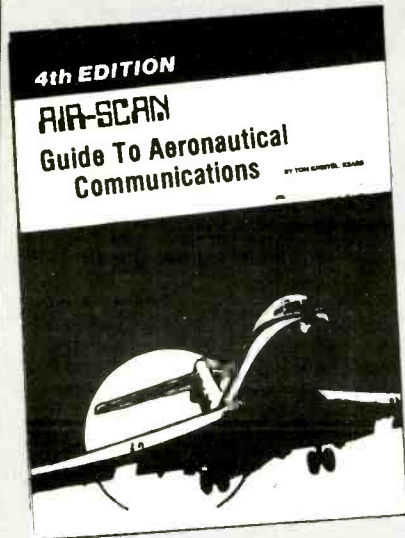
Avoid 890, that group does not appreciate T.C.N. using their Freq. as an alternate.

The New York P.O. Box can be used as an internet Q.S.L. bureau. Enclose Q.S.L. in a stamped envelope within another envelope addressed to the appropriate unit c/o the N.Y. Box. The Net will forward.

In closing, the T.C.N. wants to say to all members "Congratulations on a successful operation."

THE TRANSCONTINENTAL NETWORK
"All Indians, No Chiefs."

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Roster Update

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26	Emmett	California	6	568	Dennis	Washington	7
27	Fritz	New Jersey	2	569	Pete	Florida	4
33	Max	Texas	5	570	Gene	Louisiana	5
107	Mel	California	6	571	Jack	New York	2
108	Sherry	California	6	572 Intl.	Bill	Mexico	17
116 Intl.	Bert	Mexico	17	573	Ed.	New York	2
117	Dick	Texas	5	574	Louis	New York	2
158	Carl	Kansas	7	575	Dan	California	6
166	Joe	Arkansas	5	576	Ray	New York	2
186	Scotty	New York	2	577	Richard	Penn.	3
194 Intl.	Eduardo	Colombia	16	578 Intl.	Tony	Australia	20
219	Ray	Georgia	4	579	Larry	N. Hampshire	1
220	Clare	Washington	7	580	Len	California	6
233	Molly T	Florida	4	581	Larry	Idaho	7
234	Tommy T	Florida	4	582	Ray	Wisconsin	9
298	Julie	New York	2	583	Charlie	Texas	5
300 Intl.	Peter	Ireland	22	584	Roger	California	6
395	Henry	Nevada	7	585	Frank	Florida	4
413 Intl.	Rick Sr.	Canada	14	586	John	Tennessee	1
496 Intl.	Maureen	Canada	14	587	Jack	New Jersey	2
552 Intl.	John	Canada	14	588	Gayle	California	6
553	Jim	Conn.	1	589	Stan	New York	2
554	John	Penn.	3	590	Alan	Minnesota	9
555	Grant	California	6	591			
556 Intl.	Walt	Virgin Islands	11	592			
557 Intl.	Dave	Virgin Islands	11	593	Stan	Illinois	9
558	Gary	Wyoming	10	594	Al	Florida	4
559	Billy	New York	2	595	John	Penn.	3
560	Frank	California	6	596 Intl.	Bill	Canada	14
561 Intl.	Brian	Trinidad W.I.	11	597	Mickey	Indiana	8
562	Tony	New Jersey	2	598	Joe	Maryland	3
563	Richard	Conn.	1	599			
564	Dave	Indiana	8	600 (alias TCN 2)	Ray	New Mexico	5
565	Betty	Maine	1	100 Intl.	Stanley	Ireland	22
566	Gene	N. Hampshire	1	104	Ron	California	6
567	Ed	Georgia	4				

PLEASE NOTE THE FOLLOWING CORRECTIONS IN YOUR MAIN ROSTER

TCN 260 — correct name is Jerry
 TCN 370 - now located in Zone 4 Florida
 TCN 420 - zone was left blank, location is zone 11
 TCN 530 - correct zone is 10
 TCN 7 Fla. - change to TCN 17 still in zone 4 Florida
 TCN 467 - change location from Oregon zone 7 to Colorado zone 10
 TCN 200 - delete from roster
 TCN 391 - now in Missouri zone 9
 TCN 11 - change from zone 11 to Venezuela zone 16

Zone Change
 Zone 12 will cover European Continent

ZONE ADDITIONS	Zone 22	Zone 23	Zone 24
Zone 21	Ireland	Far East	South Africa
Middle East	Scotland		
	England		

Membership roster from an outlaw network.

tempts at breaking or even bending the FCC's regulations. In such cases, the FCC does display an understanding of the situation and will issue no more than a warning. On the other hand, some rule infractions may be difficult to explain away as a simple slip of the fingers on a station control knob. That's when the FCC reacts in a most negative manner.

Case in point—Jerry R. Dyke of Spring, Texas, licensee of ham station WD8LEU. FCC regulations permit hams to run a maximum power of 1,500 watts. In February of this year the FCC came to feel that Dyke's station was more than slightly overpowered. That is to say that they claimed that he was "found operating with more than 20,000 watts of power."

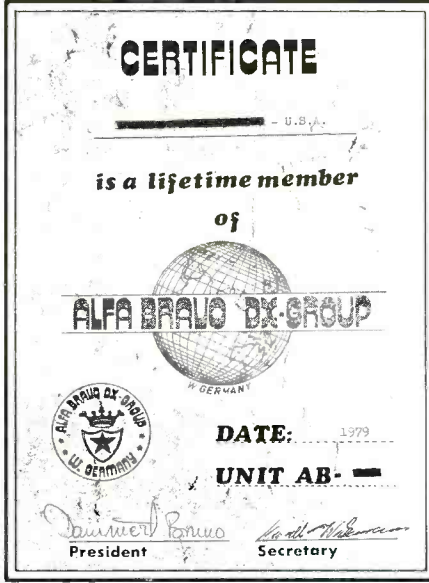
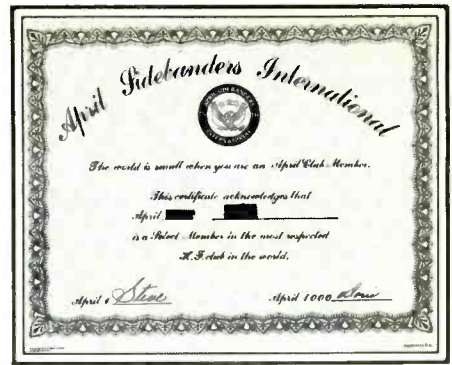
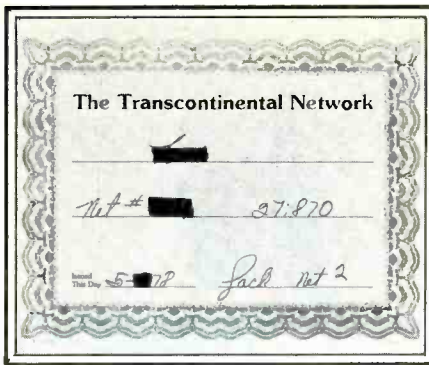
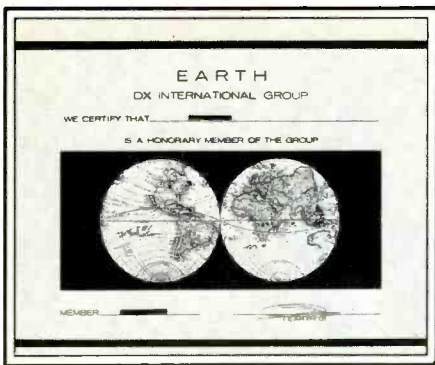
In another recent case, fines of \$2,000 each were issued to Harris E. Maulden and Arthur A. Partain, both of Pearland, Texas for unlicensed operation on ham frequencies. They established a 2-meter band VHF repeater system that was interconnected to telephone lines. The operation was dressed up with counterfeit ham-type call signs. The

FCC claimed that even if this station had been duly licensed in the Amateur Radio Service, it would have still been illegal since business and commercial communications were taking place.

Opinion

One can only wonder how and why such blatant abuse of the Amateur Radio Service has started to appear. It's difficult not to see certain throwbacks to the rampant abuse of the CB radio service. Stations in that service were prone to using far more power than the rules permitted. While the legal CB power limit was less than 5 watts, countless stations were using 1,000 watts at a time when a 250 watt SSB transceiver was regarded as little more than "an average rig" for a DX fan.

Furthermore, stations spilled over the band edges and into channels reserved for industrial, broadcast auxiliary, and federal operations. This type of operation became routine, and while the understaffed FCC did complain about the abuses, and did catch a small percentage of the operators, for the most part it was a matter of the operators do-



Outlaw networks are far more formalized than the casual observer might imagine. Here is an assortment of membership certificates bestowing affiliation in several.

ing whatever they wanted with little fear of getting caught. Indeed, unless someone actually filed a complaint against a specific station causing interference, the FCC seemed little able (or inclined) to take action.

Could it be that all of this has finally caught up with ham radio frequencies? Or is it more than that? Is it a reflection of a general disdain for laws and regulations that some persons see manifesting itself on many levels of society?

For whatever reason or reasons, those readers who like to tune in on the operations of unlicensed stations may well be standing on the threshold of a new group of stations to monitor. It isn't a violation of any laws (yet) to just listen to these stations—as long as you don't join the transmitting activities.

In the meantime, the FCC hopes that persons with information on 3895 kHz operations will contact: Engineer in Charge, FCC, P.O. Box 1588, Grand Island, NE 68801.

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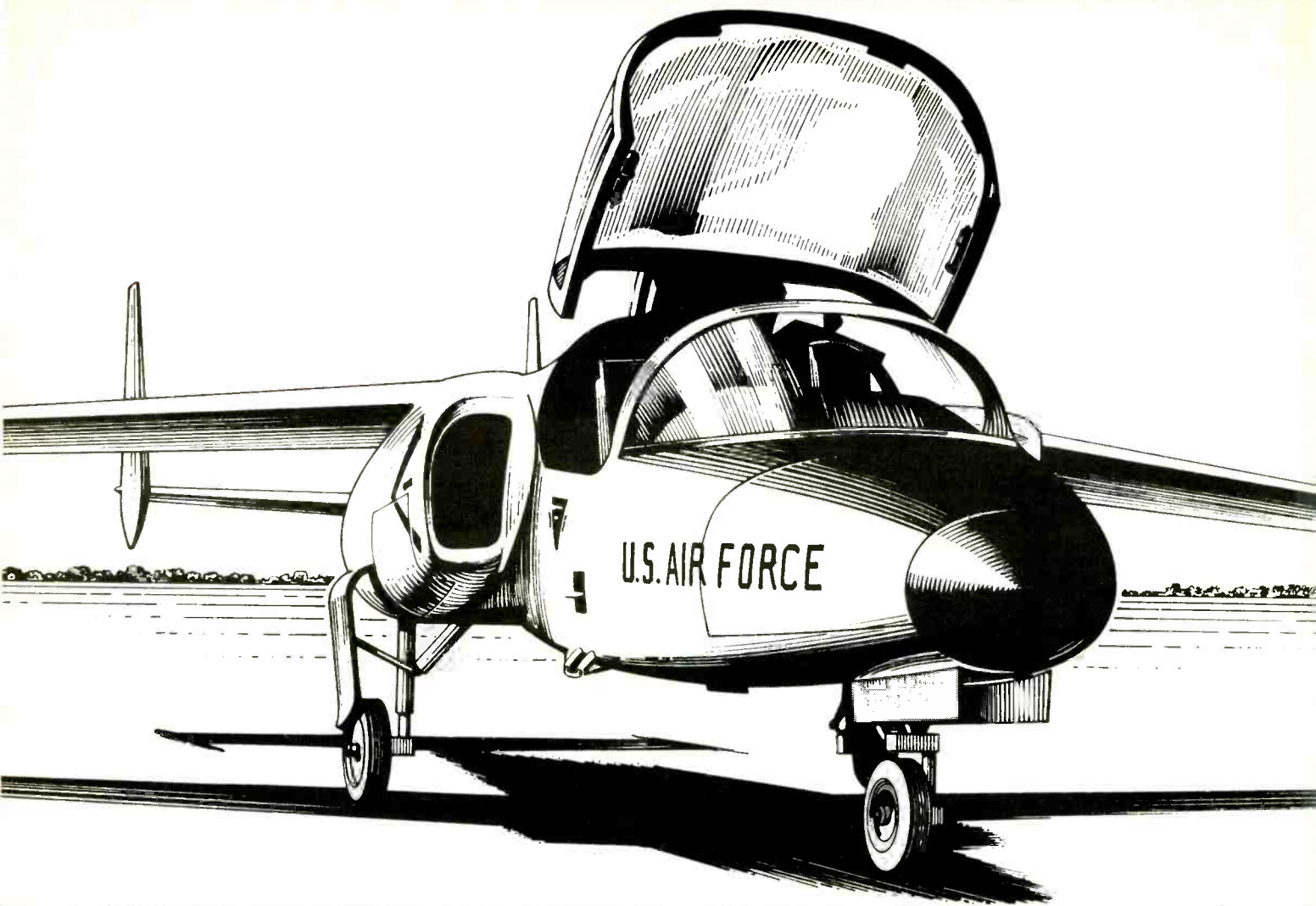
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***Skyjacking? Mechanical Problems? These Are
The Frequencies Upon Which You'll Hear
Them Being Talked About!***

BY JONATHAN FUERST, KIN9GJ

The passenger nervously stood up in the aisle, hesitated, and then took a pint bottle from the inside pocket of his jacket. He stood there without saying anything for a few seconds, as if he expected some sort of recognition from passengers or crew. Finally, he screamed something in Spanish; that got him instant recognition.

While many of the people aboard the airliner could understand what he said, many

of us didn't have an instant translation of the words. No difference. Everybody knew that the aircraft was being skyjacked ("diverted" is the polite term). As the little drama played itself out, I sat back and tried to do some diversionary magic of my own—attempting to stop thinking about what this nut had in the bottle that he had begun holding over his head as if he was going to hurl it. I started forcing myself to think about other things—

the new tires my car needed, and that great fish I caught the year before at Lake Sunapee. I reviewed the careers of every outstanding (good or bad) baseball player from the '49 Yankees to the '62 Mets.

As we began making our "final" (approach) to the airport in Havana, my thoughts suddenly shifted to communications. Had the pilot told everybody we were being skyjacked? Who did he tell? What did

he say? My imagination was racing and I decided that when this event was over I would try to find out about monitoring the communications frequencies used by aircraft having problems of one sort or another—skyjackings, mechanical malfunctions, and the like.

I kept my promise to myself and, along the way, I put together some interesting information I'd like to share with you.

Code 7500

If you've ever monitored aircraft communications frequencies, you've heard the pilots make reference to a "squawk." This is their terminology for the radar transponder carried aboard many aircraft. The transponder can be adjusted so that when the radar image appears on an Air Traffic Controller's scope, the image shows up displaying a distinctive identification number to aid in sorting out one aircraft from another. On a flight under IFR (Instrument Flight Rules) conditions, the Air Traffic Controller will assign a specific squawk (4-digit transponder code number) to an aircraft for that purpose—although the number may well change as the aircraft moves from one control zone to another.

Small aircraft flying under Visual Flight Rules (VFR) will normally set their squawk to read "1200," and that is a prearranged code that advises Air Traffic Controllers of the status of the aircraft. Aircraft experiencing a radio failure run the code "7700" for one minute and then switch over to "7600;" ground stations know what that code means. Also, they know that any time they come across an aircraft flashing a "7700" squawk they have an emergency condition to follow.

What is especially interesting is the squawk

which reads "7500," for that means only one thing—the aircraft is being skyjacked! Ground controllers know it immediately!

In the event it isn't possible for the pilot to adjust the radar transponder to show "7500," the pilot need only radio the words "Squawk 7500" and that alerts all ground stations to what's taking place.

Ground stations seeing a 7500 squawk on their radar scopes, or hearing it mentioned on the radio, are instructed to radio the pilot that the information has been received and ask if it has been intentionally sent. If the pilot confirms the signal, or doesn't respond, then the ground station operator notifies appropriate authorities. Communications then continue normally so as not to tip off the skyjacker(s) that the 7500-code has been sent and the authorities are aware of what's taking place.

The authorities may then take action to safeguard the skyjacked aircraft by providing escort aircraft (which fly behind the skyjacked plane to remain unseen) or to ready search-and-rescue facilities, or communicate with the proposed landing area.

The place you'd want to monitor to hear this original 7500 signal would be the frequencies used (in the U.S.A.) by the FAA's Air Route Traffic Control Centers, either VHF or HF.

It is often the case that it isn't necessary to delude the skyjacker into thinking that ground stations don't know what's going on. The skyjacker may well be demanding that the pilot announce it to the whole world over his radio. In that case, the pilot will probably conduct skyjack-related communications over frequencies set aside for purposes other than air traffic control. These are the

LDOC (Long Distance Operational Control) channels. Regulations say that these frequencies are to be used "for the exercise of authority over the initiation, continuation, diversion or termination of a flight affecting the safety of the aircraft and the regularity and efficiency of a flight." That's what it says in FCC Regulation 87.301.

While LDOC ground facilities are used for a variety of purposes, skyjackings are included in those operations. The LDOC frequencies used by North American ground stations are: Houston, TX: 3494, 5529, 10075, 13330, 17925, 21964 kHz; New York, NY: 3494, 5538, 8933, 13330, 17925, 21964 kHz; San Francisco, CA: 3013, 6640, 11348, 13348, 17925, 21964 kHz; Toronto, ONT: 3007, 6646, 10027, 13339, 17919, 21985 kHz; Vancouver, BC: 3007, 5544, 8927, 13339, 17934, 21985 kHz.

In the Caribbean area, which is where most North American skyjackings go, the following frequencies are in use: Havana, Cuba: 3007, 5544, 8927, 13339, 17934, 21985 kHz; San Juan, PR: 3494, 6640, 11342, 13330, 17925, 21964 kHz.

The Miami-to-Havana skyjack route is, in fact, so busy at times that special VHF Air Traffic Control frequencies have been established. Since there aren't any scheduled flights between Miami and Havana, one would assume that such frequencies are used by skyjacked aircraft! These frequencies are 128.75, 132.7, and 134.8 MHz.

Sometimes skyjacked aircraft never make it to their overseas destinations and eventually land at an American airport. When this happens, federal authorities surround the aircraft and establish a communications





having an emergency switch over to the UHF aero frequency of 311.0 MHz and send out a call to "SKY BIRD." That tactical identifier is a general call to all SAC ground stations, and any station within range will immediately respond and offer assistance. The ground station can phone patch calls through from the aircraft's home base, destination, unit Command Post, or even the aircraft's manufacturer.

Similarly, aircraft of the USAF's Tactical Air Command are instructed to call "GOLDEN" on 381.3 MHz when faced with an emergency situation. Or, they can call on HF/SSB through any ground station of the USAF's Global Command and Control System (GCCS). These are the HF military frequencies popularly monitored by many listeners, such as 5703, 6727, 9011, 9014, 11176, 11182, 13201, 13244, 15015, 18002 kHz (etc.).

TAC aircraft with problems can also send out a call to "ABNORMAL ONE ZERO" (Vandenberg AFB, CA) or "ABNORMAL TWO ZERO" (Wheeler AFB, HI) on 5700 or 13218 kHz (secondary frequencies are 9029 and 17428 kHz).

Air National Guard aircraft with problems send out a call to "MINUTEMAN" on frequencies of the USAF's GCCS (some are listed above). A phone patch can then be put through to the Air National Guard Operations Center.

Flying is safe, but now and again there are problems. These are the frequencies on which you'll hear them discussed. **PC**

link with those in charge inside the aircraft, be it the Captain (pilot) or the skyjacker(s). These communications usually take place on VHF aero frequencies set aside for airport ground control. These are in the band 121.6 through 121.925 MHz. In general, the ground control frequency assigned to the specific airport where the aircraft is located is used for this purpose.

Other Than Skyjackings

This isn't to say that a skyjacking is the only problem an aircraft can encounter, and most everybody knows that 121.5 and 243 MHz are the frequencies set aside for aircraft

emergency communications. And yet, it's more than that.

Airliners run into mechanical problems and sometimes the pilots will discuss these matters and get advice from maintenance personnel on the ground. These communications take place on frequencies between 128.825 and 132 MHz. Certain specific frequencies stand out, such as 129.85 MHz (American Airlines), 130.25 MHz (Pan American), and 131.05 MHz (TWA).

But airliners aren't the only craft in the skies. Sometimes an aircraft of the USAF's Strategic Air Command has a technical problem and needs assistance. SAC aircraft

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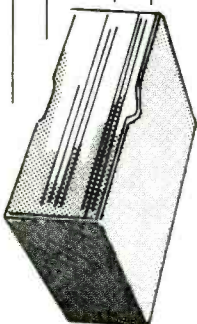
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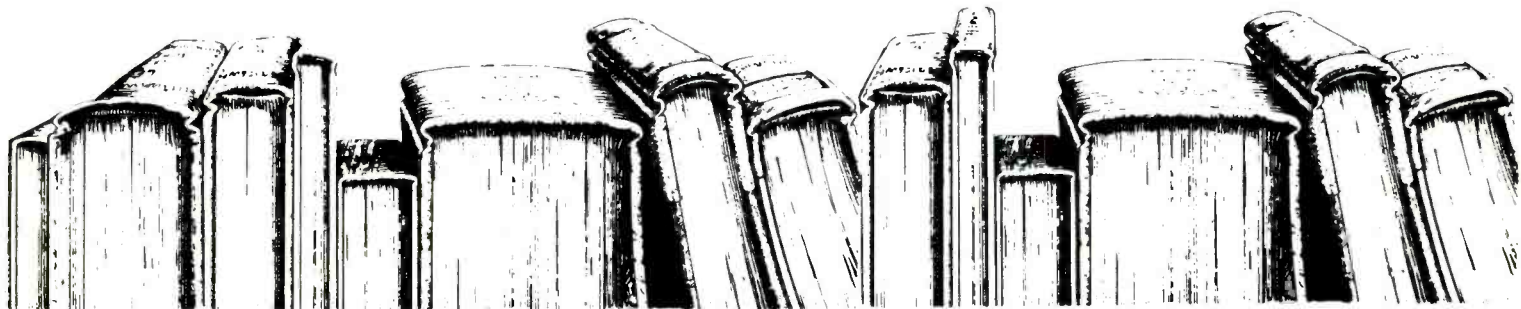
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THE EXCITING WORLD OF RADIOTELETYPE MONITORING

A few months ago, we mentioned two forms of RTTY codes—SITOR and FEC—designed to minimize the errors or “hits” on digital transmissions. FEC is an acronym and means Forward Error Correction, and SITOR is Teletype Over Radio. Both of these codes are quite different than Baudot or the standard (on HF) 5 bit codes. AMTOR or Amateur Teletype Over Radio is a derivative of the SITOR code used continuously in ship-to-shore communications. The American Standard Code for Information Interchange (ASCII), while common in computer-to-computer communications, is rarely found on shortwave. In fact, the only regular ASCII shortwave RTTY transmission is the ARRL station WIAW. In order to monitor WIAW, try setting your demodulator to 170 Hz shift (45 Baudot first transmission, then 110 baud ASCII) on: 3625 kHz, 7095 kHz, 14095 kHz, 21095 kHz and 28095 kHz. Times to listen: 1500 GMT, 2200 GMT, 0100 GMT, and 0400 GMT.

Don't let the multitude of codes confuse you. Each unique code is nothing more than a mutual agreement as to the serial bit sequence. Starting out with a five level Baudot code, RTTY has progressed to coding schemes which minimize errors and insure copy through interfering signals and poor propagation conditions.

Dealing with noise is a primary concern today. Once noise occurs in an HF propagation path, the original data signal has the voice signal added to it. The receiving equipment receives the sum of the data and the noise signals from the transmission medium. If the noise signal does not have much power compared with the power of the data signal, then the noise will not affect the data too much and the receiving equipment can correctly interpret the received RTTY signal into the original data. When the noise signal becomes very strong, it completely changes the data signal so that it

becomes impossible to detect what the original data was.

Shannon was the pioneer who established the relationship between bandwidth and digital data. A “quieter” channel (a larger signal-to-noise) can transmit RTTY faster. In speech communications, the noise may drown out part of the conversation, but the brain is an excellent signal processor (audio) and the brain can interpret out of audible context and correct the missing parts of speech.

In RTTY communications, the sending and receiving equipment does not “know” what the data means, only that it is a sequence of bits. Of course the receiver cannot tell which bits are corrupted due to noise because it also does not understand the message. The questions that should be answered would include how we do identify the bogus data and how do we correct this data. There are two methods of error control commonly used in RTTY today: 1. Forward Error Correction (FEC); 2. Automatic Repeat Request (ARQ).

Each method relies on using an extra amount of channel capacity in order for redundant data to be attached to the basic code. This redundant information is used to enable the receiver to detect errors but also reduces the channel efficiency. Usually, reducing errors is well worth the reduced channel efficiency price. Hamming carried out much of the original work in error control. Hamming realized that a simple single bit change is dangerous in a noisy channel. For example, if A=01000001 and C=01000011, a noise pulse can easily change an A into a bogus C character. Ideally, several bits would change from character to character and a much longer noise pulse is needed to damage the character. SITOR uses a longer (than Baudot) 7 bit code for each character or letter. A character contains a constant 3 bits on and 4 bits off.

The decoder continuously checks all received data for this proper ratio. Having the capability to detect errors, one can also increase the data rate. AMTOR commonly uses 100 baud. This 3 out of 7 code is also known as a constant ratio code and will detect an odd number of single bit errors. It will also detect an even number of single bit errors as long as the number of ones changed to zeros is different from the number of zeros changed to ones by the channel disturbance. IBM uses a 4 out of 8 constant ratio code in some of its computer communication. However, I have noted the 4 out of 8 code on shortwave.

Regardless of which code is used to detect errors, several variations of the basic detection retransmission (ARQ) scheme exists. A reverse channel must always exist for the ARQ control signaling. The simplest type of ARQ scheme involves transmission of one block at a time, while waiting for the receiver to check and respond with an acknowledgement. An ACK or NAK code is sent over the reverse channel. If an NAK or negative acknowledgement is received, the transmitter retransmits a “block” of information. A chirping sound is heard from the speaker as one hears ARQ RTTY.

Forward error correction techniques involve the use of redundant information to detect and correct errors without the reverse channel. Advantages include not having to transmit back but rather correct received data only. FEC requires more redundant bits over the ARQ methods. A classic example of a forward error correcting block code is the Hamming code, which detects all single and double errors within a block. ARQ schemes are more capable of protecting against burst errors than is FEC in most designs. A variable return time delay also complicates ARQ, since delays are inevitable over an HF propagation path. ARQ is the most widely used technique in error con-

Figure 1: WCC SITOR, 13033.5 kHz.

```

BERGA NAVAL BASE, SWEDEN (AF) AA A ON SUBMARINE IS STILL
TRAPPED IN THE STOCKHOLM ARCHIPELAGO AFTER FAILING TO BREAK THROUGH
THE HEAVY STEEL CABLES OF ANTI-SUBMARINE NET, THE SWEDISH NAVY
REPORTED FRIDAY. THE TAN ESTIMATED 40 SURFACE SHIPS AND 10
HELICOPTERS ENTERED ITS SECOND WEEK, AND THE NAVY DROPPED MORE
DEPTH CHARGES BEFORE DAWN. SSWE ARE MOVING AS TOUGH AS WE CAN
NOW, SAID LT. COL. EVERT DAHLEN OF THE DEFENSE STAFF. SWE GIVE
NO WARNING NHOTS ND ARE BOMB CLOSER TO THE SUB THAN
PREVIOUSLY. SSWE WILL, BY ALL POSSIBLE MEANS, REACT AGAINST
VIOLATIONS OF OUR TERRITORY, SAID PRIME MINISTER OLOF PALME, WH
TOOK OFIE THURAY
LONDON (AF) AA LORD NOEL-BAKER, AN OLYMPIC ATHLETE AND LABOR
    
```

HF RADIO-MARINE COMMUNICATIONS SHIP TO SHORE

CALL RCA STATIONS ON	SERIES	LISTEN FOR RCA ON:
WCC/CHATHAMRADIO	3,5,6	WCC: 436, 500, 4238, *4331, 6333.5, *6376, *8586, 8630, 12925.5, *13033.5, 16933.2, 16972, 22518 khz TRAFFIC LISTS 10 MINUTES PRIOR EVERY EVEN HOUR EXCEPT 0250 & 0650 GMT. *PRESS BROADCAST 0300GMT DAILY AND SPORTS FINAL 0830 GMT SITOR PRESS 2400 GMT DAILY.
KPH/SANFRANCISCORADIO	5,8,13	KPH: 426, 500, 4247, 6477.5, 8618, 8642, 12808.5, 13002, 17016.5, 17088.8, 22479, 22557 khz. TRAFFIC LISTS ON EVERY ODD HOUR GMT. SITOR PRESS AVAILABLE.
WOE/LANTANRADIO	3,5,6	WOE: 472, 500, 6411.35, 8486, 12970.5, 17160.3, 22503 khz. TRAFFIC LISTS 5 MINUTES PAST EVERY EVEN HOUR GMT.
WPA/PORTARTHURRADIO	5,6,9	WPA: 416, 500, 4322, 6435.5, 8550, 12839.5, 16918.8, 22318.5 khz TRAFFIC LISTS 18 MINUTES PAST EVERY EVEN HOUR GMT. EXCEPT 0818 & 1018 GMT.
WMH/BALTIMORERADIO (RCA AFFILIATE)	3,5,6	WMH: 428, 500, 2063, 4346, 6351.5, 8610, 8686, 12952.9, 17093.6 khz TRAFFIC LISTS 30 MINUTES PAST EVERY ODD HOUR GMT.
WPD/TAMPARADIO (RCA AFFILIATE)	5,6,9	WPD: 420, 500, 4274, 6446, 8473, 8615.5, 13051.5, 17170.4 khz OPEN DAILY 8AM to 8PM EST. TRAFFIC LISTS 20 MINUTES PAST EVERY ODD HOUR GMT.

WCC ID #1.01092
CHATHAMRADIO, MASS.
PAIRED FREQUENCIES

WCC	SHIP
4356.5 Khz	4177 Khz
6504.5	6266.5
8715	8354
13081.5	12501.5
17207.5	16670.5
22571.5	22202.5

KPH ID #1.01091
SANFRANCISCORADIO, CALIF.
PAIRED FREQUENCIES

KPH	SHIP
4356 Khz	4176.5 Khz
6500.5	6262.5
8711	8350
13077.5	12497.5
17203.5	16666.5
22567.5	22198.5

Table 1

trol as found on shortwave.

Received the new Kantronics catalog the other day and found many of their most recent terminal units give the hobbyist either a basic terminal unit (simple tone demodulator) or an advanced terminal unit with firmware on board. The Universal Terminal unit fits in the latter category. Firmware, or internal programming, allows reception and transmission of Morse code, Baudot, ASCII, and AMTOR. A RS232 serial port allows the multitude of possible input serial codes to be converted to ASCII out. A ten segment LED bar graph is used for tuning and individual LEDs show lock and valid status during AMTOR reception.

If one would prefer to use a personal computer, Kantronics has the basic Challenger terminal unit. External software is required in order to use the Challenger as a complete RTTY station.

Send for the complete Kantronics catalog by writing to Kantronics, 1202 E. 23rd Street, Lawrence, KS 66044, (913) 842-7745. A nice product matrix can be found by turning to the center of the catalog—a column of Kantronics software against rows of popular microcomputers. Most of the software allows reception of several modes of AMTOR. One word of caution, however. The usual personal computer can create radiated noise of its own. A dedicated terminal unit such as the Universal M600A is more expensive over the personal computer/external software, but quieter for reception of AMTOR/SITOR and Baudot RTTY.

SITOR Loggings (Time Irregular)

7401.1 kHz Interpol Paris, France
8715.0 kHz WCC Chatham Radio, USA
10386.6 kHz JXA Oslo, Norway
10538.6 kHz Interpol Rome, Italy
12504.5 kHz NMN USCG, VA
13084.5 kHz WMN USCG, VA
14657.5 kHz MFA Rome, Italy
17024.0 kHz Goeteborg, Sweden
17203.0 kHz NMA USCG, VA
17210.5 kHz NMN USCG, VA

Kantronics has a super RTTY newsletter, *Computers and Amateur Radio*, for \$6.00 per year. Send for information to the address previously given. **PC**

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Z-MEXICO (PESO)	MPQQQ
SWITZERLAND (RANC)	MYT
W. GERMANY (MAMARK4)	MEOYT

Figure 2: WCC SITOR, 6376.0 kHz.

LTE PRICES A AT NEW YRK AN ANFANRANCISCO ANED BY BANK AMERICA, NEW YORK. Y-OFFICIAL RATE; Z-FLOATING RATE.

PRODUCTS

REVIEW OF NEW AND INTERESTING PRODUCTS



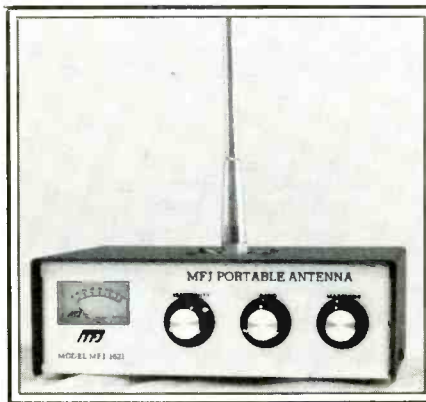
Antenna Rotor

The AR-200XL shown above operates from 115 VAC and provides 220 lb/in of motor torque to turn an antenna array or surveillance camera. Full 360 degree rotation is achieved in 60 seconds. Motor voltages are held below 18 VAC for safety and only 3 conductors are required between the control unit and rotor. This keeps the system very economical through simplified design and ease of installation. The control unit incorporates a demand heading control and a present heading indicator presented concentrically on a compass rose. The new rotor, designed for medium duty, will support a vertical load of up to 100 pounds with a wind loading of 5 sq. ft.

For further information, contact CMC Communications, Inc., 5479 Jetport Industrial Blvd., Tampa, Florida 33614.

MFJ-1621 Portable Antenna

MFJ introduces the MFJ-1621 Portable Antenna. This new product allows the ham operator to operate in almost any electrically free area, whether it be in an apartment, at a campsite, a resort hotel, or even at the beach. The portable antenna lets you operate 40, 30, 20, 15, 10, 6, and 2 meters by using a telescoping whip antenna that extends to 54 inches. The antenna is mounted on a self-standing 6" x 3" x 6" durable aluminum cabinet. The portable antenna features a built-in antenna tuner, field strength meter, and 50 feet of RG-58 coax cable.



To use, simply place the antenna in an electrically clear location, set the bandwidth, tune the capacitor for maximum field strength, and operate.

The MFJ-1621 is the complete portable antenna system that can be used almost anywhere. When ordered from MFJ, the MFJ-1621 comes with a one year unconditional warranty and a 30-day money back guarantee. If you are not completely satisfied with the Portable Antenna, just return it within 30 days for a complete refund (less shipping).

To order your MFJ-1621 Portable Antenna, send a check or money order for \$79.95 plus \$4.00 shipping to: MFJ Enterprises, Inc., P.O. Box 494, Mississippi State, MS 39762. You can also use their toll free number 800-647-1800 and charge to your VISA or Master Card.



Hand-Held All-Channel Scanning VHF-FM Marine Radiotelephone

Apelco Marine Electronics has introduced a new low-cost, advanced design, hand-held VHF-FM marine radiotelephone that scans all channels and can be programmed via keypad entry to select any combination of preferred channels. Fully synthesized, the Clipper Jr. has 4 watts of power. It operates on a rechargeable NiCad battery.

The Clipper Jr. has an LCD channel indicator. Dual monitoring lets the operator keep watch on Channel 16 and one other channel. It receives the new weather channels—all nine—in addition to all U.S. and international channels.

"The Clipper Jr. provides many conve-

nient performance features—it's like having a large 'built-in' system in the palm of your hand," said Apelco's John Vourloumis, Marketing Manager. "The Clipper Jr. is ideal for boats with no power source and as a versatile back-up VHF for any boat."

Apelco offers a two-year limited warranty on the Clipper Jr. Manufacturer's list price is \$499, battery and AC charger included.

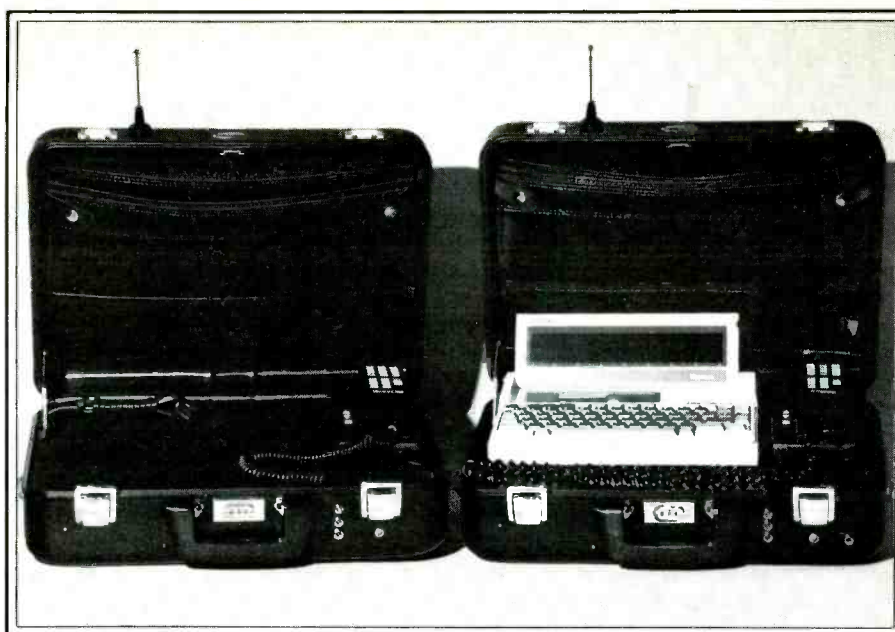
For more information about the Apelco Clipper Jr. Hand-held VHF-FM Marine Radiotelephone, contact: Apelco Marine Electronics, 1107 N. Ward Street, Tampa, FL 33607.

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Now . . . you can take it with you! The first fully portable, integrated data terminal and cellular telephone, "The Portable Office," is here. Enclosed in a 6" x 13" x 18" Zero-Halliburton briefcase is a Motorola cellular telephone, Epson "Geneva" computer with flip-up 80-column screen, Motorola "Data-link" cellular modem, AC & DC rechargeable three-way power system and software for data communication, word processing, electronic spreadsheet, and more.

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ished with black felt lining and leather-like file pockets; the exterior is a baked black finish on the solid aluminum case. Options include an external ring-alert for use in noisy areas, high-gain antennas, and dual batteries for up to 16 hours between charges.

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NEW AND EXCITING TELEPHONE TECHNOLOGY

The Unsecurity Of Calling Home

Users of uncorded phones are just beginning to find out that their conversations are *anything* but private. Take the cordless telephone users of Woonsocket, Rhode Island, who were routinely ordering up illegal drugs and arranging for drug buys, all from a cordless phone set-up.

Their phone problems began when the next door neighbor was casually tuning across the AM broadcast band and came to the very end of the tuning dial where the dial pointer wouldn't go any higher (around 1750 kHz). She thought that she had tuned into an exciting soap opera. Two hours later, she discovered the soap opera was actually taking place next door—she had inadvertently tuned in the AM cordless phone channel just above the AM broadcast band and intercepted a drug deal!

The Chief of Police of Woonsocket, Joe Baillargeon, began monitoring these conversations, and checked with local authorities to find out whether or not a wiretap authorization was required. It was determined that no wire tap order was required because the conversation was coming over the regular AM radio airwaves.

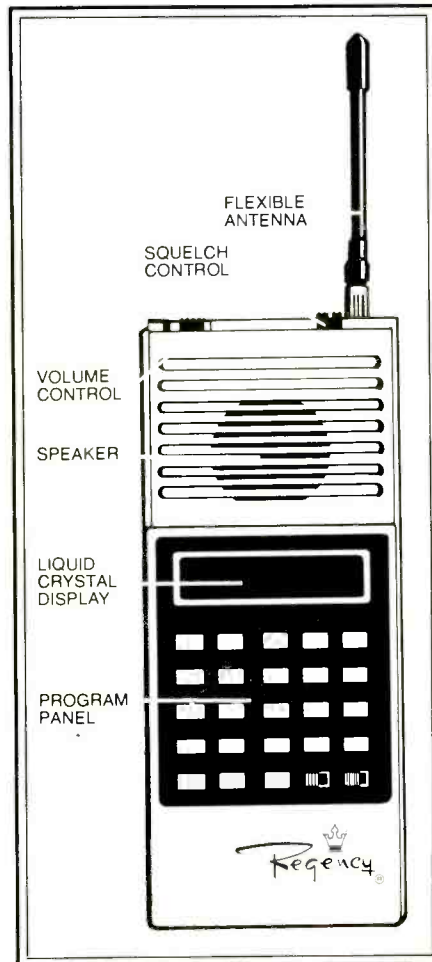
To make a long story short, several weeks later they conducted a raid from the information they learned on the cordless phone, and came up with about twenty arrestees.

While uncorded telephone calling can certainly cut the wires that might keep you chained down to your desk, it is very important to remember that these conversations are out on the airwaves and can easily be intercepted.

The modern cordless telephone manufactured to new frequency specifications is easily intercepted using a programmable scanner that has low-band capabilities (30 MHz-50 MHz). The full duplex conversations are easily overheard at 46 and 49 MHz (see Table 1). The range of this new type of equipment may be up to a block away for the base transponder, and at least a half a block away from the less-powered, portable telephone handset. Although two channels are used for full duplex, both sides of the conversation may be picked up on the 46 MHz talk-out channel.

Now let's go to a mobile phone setup. The cellular telephone service can also provide hundreds of fascinating hours to the scanner listener. Despite what cellular salespeople may say, when it comes to confidentiality of the cellular conversations, it's no problem at all to pick up a mobile telephone call on the 800 MHz cellular channels.

The sales of programmable scanners that



The Regency HX2000 hand-held scanner.

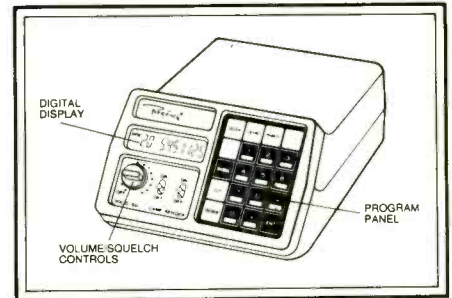
tune in the cellular telephone 800 MHz channels are booming.

"Everyone wants to tune in to the cellular phone channels," comments Norm Dougherty, Sales Manager of Communications Center, an Anaheim, California scanner specialty store that features one of the nation's largest "all live" scanner showrooms.

"... And what our customers are telling us, some of those 800 MHz cordless phone calls are pretty interesting—the people using the phones don't realize that these frequencies can be monitored just like the old ones," adds Dougherty.

This raises a good point. The 800 MHz cellular phone system has sometimes been oversold as to its privacy.

Regency Electronics, 7707 Records Street, Indianapolis, Indiana 46226-9989, was the first manufacturer to offer programmable scanners that tune all of the new cellular 800 MHz channels. Yaesu and the JIL



The Regency MX7000 scanner.



Cellular telephones open up a new world of communications.

Corporation quickly followed with activity in this market.

Cellular channels are spaced every 30 kHz—some scanners only program every 25 kHz. Be sure to check this out before purchasing a scanner for cellular telephone eavesdropping.

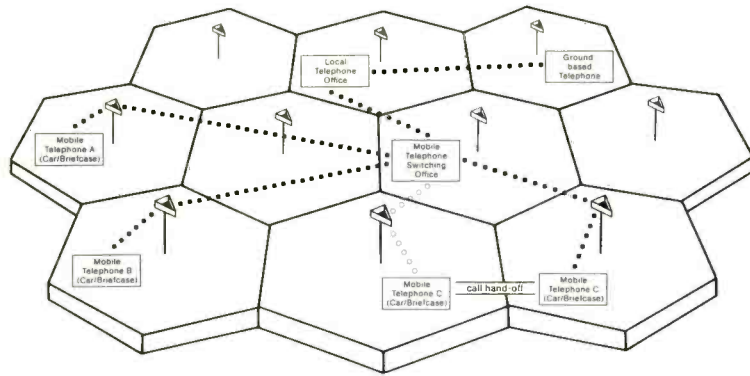
The Regency HX2000 is a portable scanner that sells for \$500 and tunes in some of the new cellular phone channels.

For base or mobile use, the Regency MX4000 also covers some of the 800 MHz cellular phone channels. The MX7000 reaches all of the channels on 800 MHz, plus a host of other 800 MHz services that thought they had escaped the casual scanner listener.

The Regency MX7000 scans in 7 kHz steps. The Regency MX4000 and HX2000 scan in 25 kHz steps, so these won't cover all 30 kHz frequencies.

Yaesu has a brand new scanner that can monitor cellular mobile telephones. The FRG-9600 covers 60-905 MHz, to give a great deal of coverage.

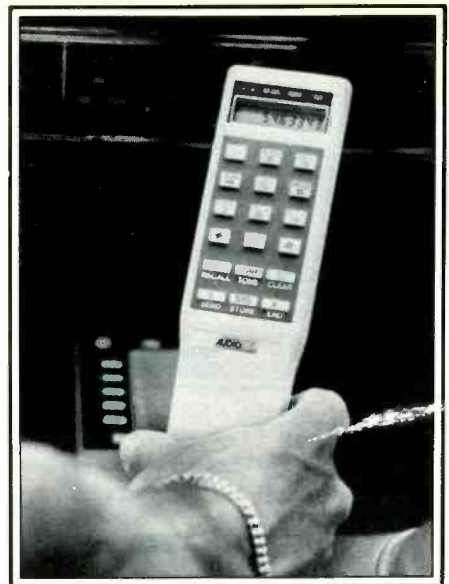
Most cellular phone channels are easily discovered by putting your scanner in the search mode and searching up from 800 MHz. Like the cordless telephone, most cellular channels will give you both sides of the conversation, loud and clear.



Cellular Mobile Telephone System

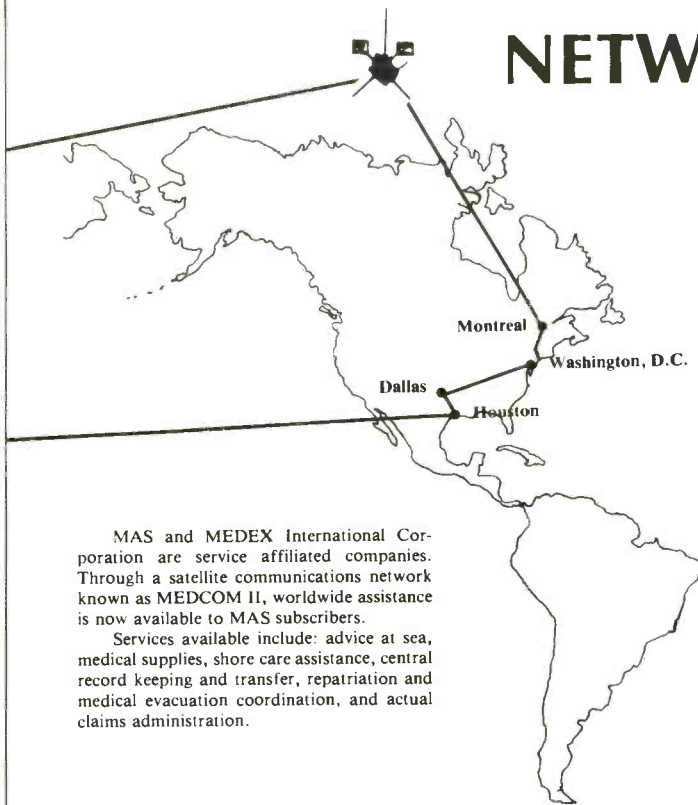
Mobile Telephone cell site
 Mobile Telephone A calling Mobile Telephone B or vice versa
 Mobile Telephone C calling Ground-based Telephone or vice versa
 Mobile Telephone C calling Ground-based Telephone or vice versa prior to call hand-off

Cellular mobile telephone system.



Who's listening to you?

INTERNATIONAL NETWORK



MAS and MEDEX International Corporation are service affiliated companies. Through a satellite communications network known as MEDCOM II, worldwide assistance is now available to MAS subscribers.

Services available include: advice at sea, medical supplies, shore care assistance, central record keeping and transfer, repatriation and medical evacuation coordination, and actual claims administration.

The MEDCOM II network.

When a mobile unit reaches the end of usable cellular range to a particular cell site, the signal will automatically be switched to another cell site and the conversation will jump to another unused channel. Scanner listeners that live near multiple cell sites may need to do a lot of channel hopping to stay

tuned into one particular phone call. However, since cell sites are normally more than five miles away from each other, chances are you'll hear most of the conversation that usually remains on the same channel during the phone call.

So far, cellular car phone scramblers

haven't appeared on the scene—but they are certainly lurking on the horizon. A Scottish-based company called Cairntech Limited will soon introduce in the United States a speech scrambler system that will be compatible with cellular and other radio/telephone products, and it will sell for below \$800. Their unit is called the Cypehermate, and it uses a speech scrambler system utilizing microprocessor-based time division incryption similar to military systems.

With this type of incryption system, each half-second of speech is split into 16 small segments and digitized with only a half-second transmission delay, according to the manufacturer.

"It seems to us that the security question of cellular phones is an area which would deter commercial users or government agencies from using this type of equipment on sensitive conversations," comments Ian Chisholm, Managing Director of Cairntech.

"With manufacturers of scanner receivers soon to produce equipment on cellular phone channels, I feel our system may be an affordable answer to businessmen wanting to make completely confidential calls," adds Chisholm. He's a bit late. Regency scanners are tuning in these calls, loud and clear.

The aeronautical radio service is also fair game for eavesdroppers to telephone conversations. The following aeronautical telephone channels are bustling with activity:

Channel	Frequency
Calling	454.675
6	454.700
7	454.725
5	454.750
8	454.775
4	454.800
9	454.825
3	454.850
10	454.875
2	454.900
11	454.925
1	454.950
12	454.975



Now type approved by INMARSAT, the Magnavox MX 211A Ship Earth Station with its distinctive new small antenna as installed on the MV Duchess Diane.



A marine SATCOM antenna system.

The aircraft transmits 5 MHz higher; so if you're not close to an aeronautical telephone base station, try the aircraft downlink channel. The transmission type is common frequency modulation (FM), so any programmable scanner with UHF, can tune in these aircraft telephone conversations.

Mariners and commercial passenger boats have long been aware of eavesdropping on the regular high frequency single sideband and VHF marine channels. The boys on the water have developed some

New Cordless Channels

Channel	Base Frequency	Handset Frequency
Channel 1	46.61 MHz	49.67 MHz
Channel 2	46.63 MHz	49.845 MHz
Channel 3	46.67 MHz	49.86 MHz
Channel 4	46.71 MHz	49.77 MHz
Channel 5	46.73 MHz	49.875 MHz
Channel 6	46.77 MHz	49.83 MHz
Channel 7	46.83 MHz	49.89 MHz
Channel 8	46.87 MHz	49.93 MHz
Channel 9	46.93 MHz	49.99 MHz
Channel 10	46.97 MHz	49.97 MHz

Table 1

schemes of their own to keep listening ears from detecting their conversations.

Recent FCC rules allow mariners to use computerized keyboards to generate digital Telex format messages that are sent over the high frequency spectrum. They might also use high speed keyboard-entered CW transmissions to camouflage confidential messages. All of this will add some degree of security to the telephone conversations to shoreside stations.

However, most hobby computer enthusiasts have radio teleprinter decoders that can decode digital transmissions, such as RTTY, ASCII, packet, high speed CW, and other forms of digital encoding.

While most of the communications sent via Telex, RTTY, or CW may be routine of nature, occasionally a juicy piece may appear on the screen before the inquisitive shortwave listener with a computer.

Mariners and commercial passenger ships will also take advantage of the Inmarsat communication system. This requires a gyro-stabilized, 6-foot dish antenna that points

toward a geostationary satellite for marine, telephone, and commercial communications. This type of system is impossible for the casual shortwave listener to intercept, so going through the microwaves is one way to escape prying ears.

One of the latest tricks to fool the eavesdropper is to purchase cordless telephone export equipment and use it on frequencies outside of normal 46/49 MHz cordless channels. There are hundreds of wholesale electronic marketing outlets that sell export cordless phone equipment. Here are some of the more popular frequency pairs where this export equipment operate: 35 MHz/72 MHz, 450 MHz/475 MHz, 130 MHz/160 MHz, 410 MHz/465 MHz.

All of this equipment is illegal to sell in the United States as well as illegal to operate in the United States. Nonetheless, sales are brisk, and the illegal users indicate that they encounter few interference problems when operating this equipment "just south of the border." The FCC penalties for both the selling of export cordless phone equipment as well as operating it within the United States are severe, so don't be tempted to buy one of those export sets and try to run it locally.

Just the other day I received a letter from a reader who bought this export type of equipment from a friend, ran it for three weeks, and was then quickly shut down by the FCC office. The telephone side of the transmitter was broadcast in the 165 MHz government band, smack dab on a CIA input repeater frequency. It didn't take long for the boys to track down this operator!

Even your office intercom can be intercepted. Most intercoms use sub-carrier frequencies that are using the AC power lines as a common antenna. These frequencies are easily intercepted with similar-type tunable intercom receivers, and it's quite possible to tune into inter-office conferences with an intercom receiver three doors away. So just when you think you have complete security with a hardline connection, you find out that someone else might be tapped in.

This article should point out the vulnerability of anything electronic when it comes to radio eavesdroppers and snoopers. Unless you can whisper in someone's ear a confidential message, keep it off the airwaves!



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PIRATES DEN

BY DARREN LENO, WDØEWJ

FOCUS ON FREE RADIO BROADCASTING

Six London-based pirate radio stations were closed within 72 hours recently as the British Trade Department engineered a series of police raids in that city to combat the growing number of illegal broadcasters.

Among the half dozen casualties was Britain's oldest pirate station, Radio Jackie. Jackie had been on the air for 15 years, and claims a quarter million listeners tuned in each day.

Police confiscated much of Jackie's equipment during the raid, but enough had been overlooked so that the station could make a brief comeback the following day. Jackie was immediately closed again, and has not been heard from since.

Radio Jackie has been closed at least a half-dozen times during its 15 year history, and has always managed to stage a comeback. Will London's veteran pirate return this time? A Trade Department spokesman said, "I don't know if they will try to start broadcasting again. If they do, we will raid them again."

The other pirate stations closed during the police raids included Ace Radio, Venus Radio, London Greek Radio, Solo Radio, and Asian People's Radio.

Meanwhile, the two off-shore pirate radio stations, Laser and Caroline, continue to broadcast from the legal sanctuary of their ships. Both are anchored just outside British territorial waters in the North Sea and cannot legally be removed by the British government. But despite the apparent safety of being outside Britain, these two pirates still have plenty to worry about. Threats of physical violence from frustrated government and radio industry officials desperate to halt the flow of advertising dollars to the pirate stations have been leaked to the press, and seem to hint that a hit-squad may attack the floating radio stations at any time (probably without British government "knowing" anything about it). It is just a matter of time now before a band of mercenaries attack the ships and tow them into port?

Gateway Pirate Radio

KGPR, Gateway Pirate Radio, has sent out press releases heralding their arrival on the airwaves. This pirate claims it will broadcast to North America from St. Louis, Missouri, the home of the Gateway Arch.

Both medium wave and shortwave frequencies will be used. Listen for KGPR at 0630 GMT local Sunday evening on 1635 kHz and 7460 kHz.

Across The Dial . . .

A pirate calling itself **Clandestine Radio** (not the same as Radio Clandestine) was



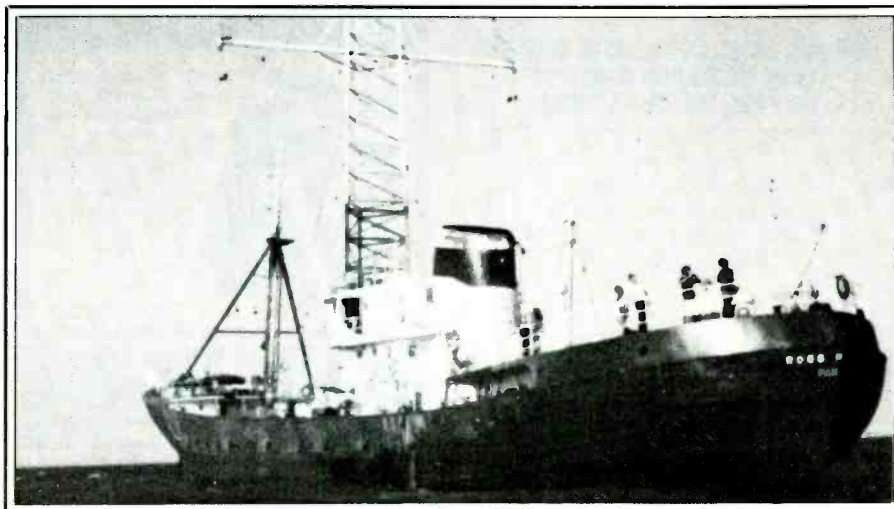
Crystal Radio is a popular Dutch medium wave pirate.

heard on 435 kHz after 2320 GMT by John Block in Wisconsin. The signal was quite weak, and no address was heard.

Humpty Dumpty Broadcasting Company: This new pirate certainly chose an interesting name for itself. Keith Hill in New York heard HDBC on 7435 kHz at 2350 GMT with a fair audio signal. Two days later, Grant Lochmiller discovered them on 7431 kHz after 0020 GMT. Grant says the announcer claimed responsibility for putting another pirate, Reggae Radio, on the air.

KNBS: This pirate seems to be relaying other pirate stations. Kirk Allen in Oklahoma heard KNBS broadcast taped programs for Tangerine Radio and KQSB on 7420 kHz at 0300 until 0445 GMT.

The MV Communicator, Laser 558's floating studio, as it is anchored just outside of British waters—and British law.



The MV Ross Revenge, Radio Caroline's pirate ship, afloat just a short distance from Laser's communicator.

KRZY: This pirate continues to be a regular find on the shortwave dial. Frank Cathell in California heard KRZY "Crazy Radio" playing country music on 7430 kHz at 0225 GMT. In Kentucky, KRZY was the first pirate Ron Grossl has heard. Ron tuned in on 7435 kHz at 0305 GMT. He reports a mailing address of PO Box 982, Battle Creek, MI 49016.

Pirate Broadcasting Corporation: Artie Bigley in Texas heard PBC on 7430 kHz at 0010 GMT. Artie says they announced that they would be relaying other pirates in the future, including some from Europe.

Radio Clandestine: This pirate pops up in the strangest places. Artie Bigley found them on 11881 kHz at 2145 GMT. Pro-

RADIO USA

INFO-3
#1

Thank you very much for your letter to Radio USA. In an effort to provide you with regularly up-to-date information and also to save our mailing expenses, we have produced this newsletter. Information will be sent you by the "phone".

MEMBERSHIP: The R.O. organization was formed in late 1981 after emigrating from Michigan and reading the book "How To Tune The Secret Shortwave Spectrum." During the next several months we worked very hard on learning English, buying a transmitter and getting a ship. By late 1982, we had received the first use, not all of us had for it as a ship was no old boat. In fact, Radio USA exists, no blue or red flag, we just have to make do. (and on that note, we refer you to the Radio USA website at www.radiousa.com) (insert several letters), and of course, the crew of the "Radio USA" (insert several letters) on the faithful date of Feb 26, 1983; a date that proved to be one of the greatest in our lives and perhaps in the history. From that date until Sept. 1983, we were nearly every Saturday night for one hour on 731, 535 kHz.

EXACTER & BETTER: In an effort to present better quality programming and to fix our heavy backlog, we decided upon a more precise schedule until Feb. 01 when another ship-out transmitter name exists. A few our stable, 22 transmitter that was heard in 15 states and provinces throughout the US & Canada area, we returned to the mainland to completely improve the station and especially, SEARCH FOR ANOTHER "TRANSMITTER!" In July 1984, we found such a transmitter, except that it is an AM transmitter. In fact, Radio USA will also begin activity of a secondary station, WDR-97.0 and AM before the year is out. WDR will feature the very same R.O. staff that you've come to know and love! Except on 97.0 kHz, instead of the 433 channel ever heard!

COMING: In the past, R.O. was active only from 13:00-14:00 hrs and 14:00-15:00 hrs. In the future, look for us on nearly any channel from 8,400-11,700 kHz at nearly any time. Some schedule, right?

WEL: R. has always been noted for using a wide variety of QSL's to cater to the shortwave listener. In addition to our "Radio USA" QSL's, we also have letters, "no action" QSL's, "Radio USA" QSL's, and of course, special event QSL's. We also have audio quality recordings available to the general public. You can receive a audio quality recording of or by radio the following: send us a reception report that contains a tape of the signal as you heard it, insert the date, time, stamp or send a report. Insert (5) 2¢ non-USA and we'll send you a tape of our recording.

STAFF: All members of the R.O. staff are the original, none are artificial.

MEMBER: R.O. is the station owner/manager/correspondent director. We have been a radio (free) for several years and more diversely, a look all our life. R.O. is the light receiver and is usually on the ship on 97.0.

WEL: R.O. is "Cheap Skate and also our seasonal director."

Thank you very much for your interest and support of Radio USA. Feel free to write us anytime in the future. As a little thank you, we offer the coast of North America and for QSL's: a look, this is an active ship working on 731 and 97.0 FOR KEEP RADIO!!!

2130 GMT. Reception reports go to RNCI, c/o PO Box 245, Moorhead, MN 56560.

Radio Sound Wave: This pirate continues to be active near 7425 kHz. George Zeller in Ohio caught up with them at 0018 GMT. The program included rock music and the syndicated radio show "Verbal Assault."

Tangerine Radio: This rather radical pirate calls itself the "Voice of Revolutionary Anarchism in North America." A commentary opposing work was heard by Paul Walkendorf in Michigan, as well as gag ads, a telethon, and a request for donations.

"UNID": Not an unidentified pirate, but one that identifies itself with the call letters UNID. George Zeller heard a news bulletin on nuclear disarmament, and QSL information that became intentionally garbled and unintelligible just as the address was going to be announced. Keep an eye on 7391 kHz after 2100 GMT.

Union City Radio: Kirk Allen caught this one on 7435 kHz at 0145 GMT. Rock music by Styx and Elton John was played, and some country music was also heard. Kirk says that an RTTY station on the same frequency seemed to be intentionally jamming UCR.

Voice of Laryngitis: Artie Bigley heard excerpts of older programs being played on 6248 kHz at 0030 GMT. One new program was heard; "Funny Noises of the Body."

Voice of Venus: Ralph Martinez in Illinois

heard this station on 7400 kHz with a very strong signal. DJ Scott Wild announced that the "Voice of Venus is back!" This pirate has been off and on for the last six or seven years, and is probably being relayed. Reception reports go to the VOV, c/o PO Box 452, Moorhead, MN 56560.

WTVI: Jeff Leach in Nebraska caught WTVI on 7425 kHz at 2305 GMT. Perhaps this pirate was testing a transmitter. Jeff describes hearing rock music on a carrier that went on and off in short bursts. No address yet.

WHMR: Heavy Metal Radio was logged by George Zeller on 7400 kHz at 2100 GMT. George says the station left the air at 2109 GMT after an ominous electrical sound interrupted a song.

Zeppelin Radio World Wide: This is another overactive pirate that listeners are logging everywhere between 7400 and 7426 kHz. The best time to listen for this one is between 2130 and 0000. Several listeners have noted that this station frequently signs on after Radio North Coast International.

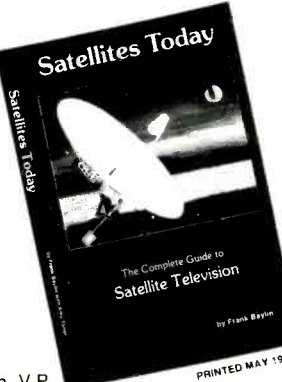
I've noticed that many pirates seem to be signing on the air much earlier than usual the last several months. Look at the times mentioned for the majority of stations listed here. Local late afternoon and early evening hours (from 2100-0100 GMT) seem predominant. Is this the result of some organized effort, or just an interesting coincidence?

gramming consisted of rock music by ZZ Top and Elvis, as well as a generous dose of satire.

Radio North Coast Int'l: There have been several pirates that have been quite active lately. RNCI is one of them. Ken Suess in Wisconsin heard them on 7426 kHz at

FREE FROM SPACE

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In Conclusion . . .

If you own a Sony ICF 6800W shortwave receiver, you're eligible for membership in a newly formed user group of SWLs and DXers just for this product. Contact Doug Hopkinson, Suite 1012, 1360 York Mills Rd., Don Mills, Ontario, Canada M3A 2A2, or call (416) 447-9522 for more information.

The Association of Clandestine radio Enthusiasts is an organization dedicated to covering all aspects of pirate, clandestine, and spy numbers broadcasting. For additional information, send a First Class stamp to A*C*E, Dept. PC-6, PO Box 452, Moorhead, MN 56560.

The A*C*E RBBS is up and running for underground broadcast monitors who have a computer and a modem to connect it to the telephone line. It runs 24 hours a day at 300/1200 baud. Call (913) 677-1288.

The DX Newline is a very useful tool for pirate DXers. The Newline allows callers to enter and retrieve voice messages left by other DXers. On weekends, most of the messages are about pirates, some of which may still be on the air when you hear the message. Dial (301) 953-0777 and leave your name and address for membership information. Tell them Pirates Den sent you.

Readers are invited to participate in Pirates Den. Please send your loggings, copies of QSL cards or pennants, news clippings, or any other item you think readers would be interested in to Pirates Den, c/o Popular Communications, 76 North Broadway, Hicksville, NY 11801.

Happy Listening!

ESTABLISHING SURVIVALIST COMMUNICATIONS SYSTEMS

It's No Accident

As seen on our cover this month, a vehicular accident generates, at the very least, a certain amount of police communications. Scanner owners who follow public safety frequency action know this, and may even recall that interest in monitoring such communications first sparked their interest in scanners.

It's no accident that these communications enthusiasts have found that the highly charged emotions and aura of immediacy surrounding street and highway accidents is unique. In 1983, more than 1,500,000 Americans received disabling injuries as a result of motor vehicle accidents; approximately 45,000 people lost their lives. California, Texas, Florida, and New York have been the real problem states, with Illinois, Pennsylvania, Michigan, North Carolina, and Georgia also contributing alarmingly to the statistics.

Scanner owners should keep in mind that, in addition to the flurry of police communications triggered by motor vehicle accidents, a number of secondary communications are also brought into play. If personal injury is involved, obviously ambulance, hospital, and paramedic channels will immediately activate. Automobile emergency service frequencies (such as used by tow trucks) will undoubtedly go into action. And don't forget fire agency channels, especially those used for rescue and emergency squads.

Other emergency services that can also be called into action in response to vehicular accidents include street and highway departments, power utilities (gas, electric, water) operated by public and private sources, and telephone repair crews.

News media frequencies could also activate as newspaper, radio, and TV station reporters cover the events. In all, accidents involving cars, trucks, motorcycles, or buses could trigger high tension activity on a dozen or more communications frequencies.

This time of the year there are many vacationers on the roads, folks who are unfamiliar with out-of-state traffic laws and perhaps unsure of where to make their turns. As a result, these drivers may drive too slowly to keep up with the flow of traffic, or too fast as they try to arrive at a wanted destination "on time." They may make last minute or erratic maneuvers, perhaps without signaling their intentions. Sometimes these drivers are flustered, overtired, confused, or even under the influence of drugs or alcohol. Each of these conditions increases the pro-



Motor vehicle accidents cause a number of scanner frequencies to activate.



In addition to actual emergency service frequencies that come into use, the highway department may be called in to aid in the removal of spillage.

babilities of something going awry; the possibilities of an accident.

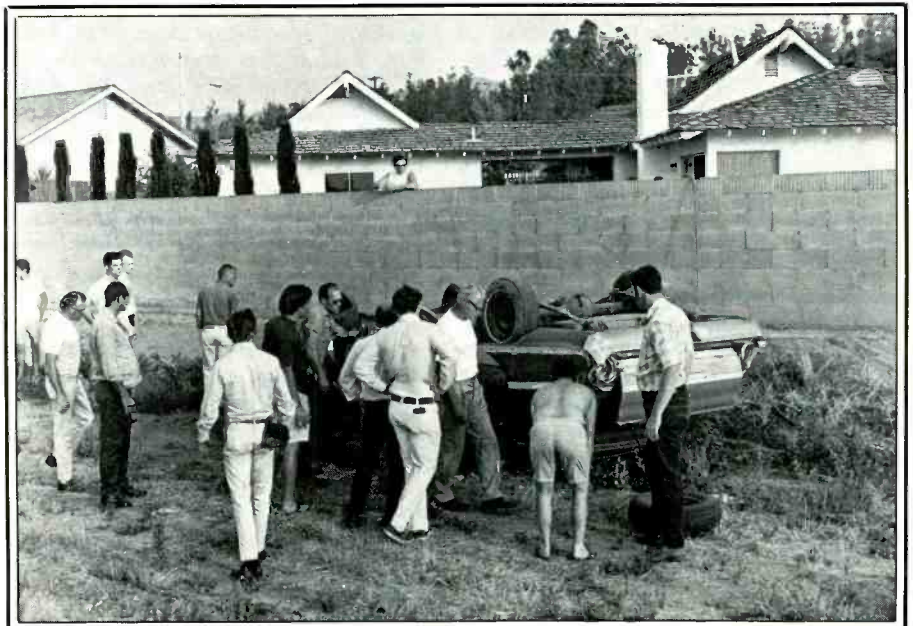
The scanner channels carry the messages as the statistics mount. You can monitor it from your home, and if you are yourself on the move, you may be able to pick up on your hand-held scanner.

We want to remind our public-safety monitoring readers not to show up at the accident sites to personally witness the activities of emergency personnel. These people

work best without an audience and usually find that curious onlookers tend to get underfoot and interfere with their work and the free movement of their emergency vehicles.

Also, we would like to take this opportunity to point out to our readers that there is an underlying message to all of this—that is to have a great and *safe* vacation. Don't mix driving with alcohol or drugs. We want our readers to become scanner monitors, not scanner messages! **PC**

Curious onlookers are definitely not needed.



LISTENING POST

BY GERRY L. DEXTER

WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

There is a strong likelihood that Radio Earth will have moved from Radio Clarin in the Dominican Republic by the time you read this. We can't tell you where Radio Earth will make its next stop, as details weren't firm at deadline. But even that move will likely be only temporary. Radio Earth has announced that plans are going ahead to build a station of its own on Curacao in the Netherlands Antilles. The station also plans to offer shares to listeners. We hope to have more details on all of this in a month or two.

Radio Netherlands has added a new transmission for North America at 0130 on 6.020 and 9.895. That one joins the usual North American broadcasts at 0230 on 6.165 and 9.590 and 0530 on 6.165 and 9.715.

Radio Canada International has two new services: to Latin America in French at 0030 and English at 0100 on 9.535, 11.940, and 15.190; and in Spanish to the Caribbean at 0000 on 11.940 and 15.190.

The popular *International Listening Guide*, published in West Germany, is no longer represented in the U.S. by Rob Harrington. Subscriptions (\$8.00) and requests for sample copies should go directly to Bernd Friedewald, Merianstrasse 2, D-3588 Homburg, Federal Republic of Germany.

More local groups: If you listen to shortwave from Tennessee, contact Larry Beaty II, P.O. Box 479, Jamestown, TN 38556. In Iowa, Mike Martin would like to hear from SWL's to exchange information and perhaps start a group. Contact Mike at P.O. Box 376, Monroe, Iowa 50170.

It's time to begin showing your Editor a little mercy! Each month brings a larger number of logging reports and, while we love hearing from each of you, we are going to have to try and install a little order. In the future, please type or print your items plainly and leave a couple of lines between each so they can be cut and sorted. Place your last name and state abbreviation after each item and use only one side of the paper. List the country first (transmitter site as opposed to studio site when known) and remember to check that times and frequencies are included. Use GMT and include the language of the broadcast if known. Reports on pirate, utility, and medium wave stations go to the editors of those *POP'COMM* columns. Please don't ask us to forward them. Limit your reports to a couple of dozen, maximum, from the month preceeding the date of your letter. We are having to simply toss out more and more reports because they are incomplete, unreadable or too cumbersome to work with. Thanks for your cooperation.

Mailbag

Let's look at letters. Chris Moreau of



Mailbag shows and POP'COMM helped get some DX'ers from Georgia together. We have to log them as unidentified as we don't know who's who in this photo.

Portsmouth, Virginia has a common problem—life in an apartment house with no outside antenna. Chris wants to upgrade his equipment and add an RTTY capability and needs an antenna to bring in the signals. We can't suggest specific types or brands, but one of the indoor active antennas might work fairly well. Check the *POP'COMM* advertisers, write for their catalogs, and go from there.

Gary L. Cooper in Boise, Idaho specializes in award hunting and he has done very well, as you can see in one of our featured photos this month. Gary is a ham too, holding call letters KA7UIK.

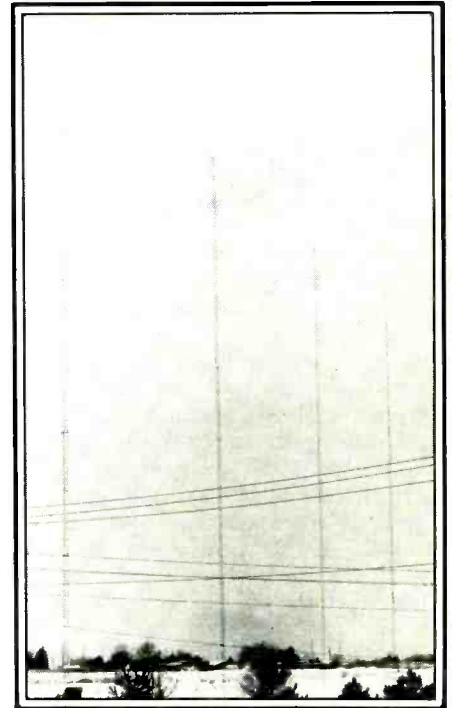
Stewart MacKenzie of the American Shortwave Listener's Club notes that the Southern California Area DX'ers (SCADS) will hold a meeting this coming October. The location is the Village View School, 5361 Sisson Drive, Huntington Beach, CA, from 9 a.m. til 4 p.m. For more information, write SCADS, with an SASE enclosed, at 3809 Rose Ave., Long Beach, CA 90807-4334.

George Green in Warner Robins, Georgia wants to know the identity of the Arabic speaker on 3.200. It's Libya.

Pat McDonough in Pittsburgh wonders about a Latin American station he heard on 4.850 and thinks it might have been Radio Capital, Venezuela. That's the most likely one, Pat.

Larry R. Fravel in Tennessee has been doing missionary work for the hobby and has interested a friend in shortwave. Larry says they now both DX til all hours and exchange information via CB radio.

How do you convert GMT to local time or local to GMT, wonders Mark Petrone of Southington, Connecticut. Seven p.m. EST (Daylight Savings) equals 0000 GMT in your area, Mark, so you just add on from that starting point. Gilfer Associates, P.O. Box 239, Park Ridge, New Jersey sells a



The directional shortwave antenna array at KRSP in Salt Lake City, due on the air in the coming months. (Photo: Bruce Chorn, via Jon S. Van Allen, WB7OWL)

nice GMT conversion gadget for only a buck that'll give you GMT vs. local time anywhere in the world.

Mark Northrup of Milwaukee, Wisconsin began listening in 1963 but, like so many, put monitoring aside when college and jobs came along. Now he is back and still using the old Silvertone of earlier days.

Another vintage radio, a 1936 Philco console, is used by Harry Werbayne Taylor, retired professor emeritus of English at Andrews University, Berrien Springs, MI.

Another who has had his ears on shortwave for many a moon is Marvin P. Seidman of Beverly Hills, California who's been at it since at least 1937 and mentions some interesting old time shortwave stations in his letter, including COCQ, Havana, Radio Tokyo in April, 1941 and several others.

This is what you'd call getting in touch the hard way. Wain Buckley in Thomasville, Georgia heard the name of John Miller of Thomasville mentioned on Radio Netherlands. Wain didn't know John and tried to look him up in the phone book, but there were too many "J. Millers" listed. A week later, Radio RSA read a letter from Wain on the air and John Miller heard that broadcast, and called Wain. Chapter Three took place when Michael Holland in Hephzibah, Georgia needed an address for Radio Belize, checked *POP'COMM*, saw John



Gary L. Cooper in Idaho, a ham and SWL who, as you can see, is big on awards.

mentioned, and gave him a call. So now it is a threesome, two of whom are in one of this month's featured photos.

Several readers have requested station addresses. Here are a couple: CHU, National Research Council, Ottawa, Ontario, Canada, K1A 0R6; Radio Damascus, Place des Ommayades, Damascus, Syria; YVTO, Observatorio Naval Cagical, Apartado 6745, Marina 69-DHN, Caracas 103, Venezuela.

Mike Miller in McHenry, Illinois asks if there's a book that lists station addresses. What an opening! The fourth edition of *ye Editor's QSL Address Book* has been newly revised. It includes hundreds of changes and the name of the person to write to at most of the world's shortwave stations. You can get a copy for \$7.95 from Gilfer Associates, P.O. Box 239, Park Ridge, NJ 07656.

John Shonder of Champaign, Illinois wonders how important it is to be able to quote the exact frequency in a reception report. Pretty important, John. But if you can't, then at least make as close an approximation as you can specify it as such in your report.

Let's hear from you next month. Your loggings, questions, general shortwave news, clippings, shack photos, good, high contrast copies of QSLs, program schedules, and such are always welcome. Sometimes we can't use everything, but we appreciate all letters just the same.

Listening Report

Here's what's on. All times are GMT.

Albania Radio Tirana, 9.760 at 0000 with news, commentary. (Hinton, TX) 9.480 and 7.065 in English to Europe at 2200. (Pastrick, PA) 9.480 at 2215 with features and music. (Hunt, NC) 7.300 at 0338 with anti-U.S. tirades. (Martin, IA) 0342 with literary program in English. (Meyers, MO)

Algeria Radio Algiers, 9.510 at 2000 with English news, sports, music. (Miller, GA) 17.745 with home service in French at 1639 in French. (McDonough, PA) At 2000 in English. (Paszkiwicz, WI)

Angola Emissor Regional do Huambo, 5.060 in Portuguese at 0620. Music to 0630, man and woman announcers, more music. Emissor Regional do Zaire, 4.885 at 0605 all talk in local language with chanting in background. (Fravel, WV)

Antigua Deutsche Welle relay, 9.545 at 0517 with news, "Germany Today." (Goetsch, OH) 0530 with mailbag. (Meyers, MO) 0500 news and mailbag. (McDonough, PA) 6040 arts program at 0130, into German 0150. (Meyers, MO) 0140 talk on sports. (Hunt, NC)

Argentina Radio Nacional, 6.060 at 0740 with quiet music. ID and time announcements. (Fravel, WV)

RAE on 11.710 at 1120 with sign on in English. (Martin, IA) 0215 in English. (Hunt, NC) Under VOA at 2320. (Moran, IL) 1145 in English. (McDonough, PA) 15.345 at 0200. Schedule is 0130 to the Far East on 11.710, to Europe and North America at 0200 on 11.710 and 15.345 and 1700 to Europe and Africa on 15.345. (McDonough, PA)

LOI, time station, 10.000 in Spanish during WWV break at 2348. (Moran, IL)

Ascension Island BBC relay with world service 11.820 at 1800. (MacKenzie, CA) 15.260 at 2005, 15.390 at 2130, 15.400 at 1941. (Gray, MI)

Australia Radio Australia, 15.395 at 2100 in English, sign on with world news. (Gray, MI) News in English 0109. (Arbetman, IL) 2350 with news. (MacKenzie, CA) 15.320 with classical music 2230-2300, QRM from France. (Moran, IL) 17.795 at 2330, parallel 15.395 and 15.320 with news. (MacKenzie, CA) 9.580 at 0800 sign on to Asia and Pacific, also 9.770 and announced 5.945. (Buckley, GA) 2020 with report from Asia. (Hunt, NC) 1130 with Australian news. (McDonough, PA) 0830 with news. (Hinton, TX) From 0730 to at least 1400, also announcing 9.770, 11.895, and 17.780. (Batman, LA)

Austria ORF, 6.000 at 0330 and 0430 with English to North America. Also announces 5.945. Half hour of German precedes English. Saturday program begins at 0305. (Buckley, GA) 12.015 at 1500 with news and commentary. (Hinton, TX) 5.945 at 2135 with commentary on classical music. (Gray, MI)

Belgium BRT on 5.910 at 0123 with frequency information in English. (Shute, FL) 0145 news, science, and music. (Hinton, TX) 17.610 at 1300-1355. Also scheduled 0800-0855 on 9.880. (Buckley, GA)

Belize Radio Belize, 3.285 at 1105 with music, English. (Martin, IA) Poor with music and announcements at 0245. (Brussel, WI) 0447 with pop music to 0509 with national anthem at sign off. (Fravel, WV)

Benin RTVB Parakou, 7.265 in French at 0503. (Fravel, WV)

Botswana Radio Botswana, 7.255 at 0345 with barnyard interval signal. (Hunt, NC) ID and anthem "Oh God Our Help" at 0354. (Gray, MI) 4.820 at 0347 sign on. (Fravel, WV)

Brazil Radio Nacional Amazonia, 11.780 in Portuguese at 0800 with sign on, ID. (Martin, IA) At 1908. (Salmi, MA) 2155 with Brazilian news, ID. (Hunt, NC) 0156-0202 sign off. (Fravel, WV)

Radio Bras, 15.270 at 2155 with Latin music. ID and sign off 2200. (Hunt, NC) 15.290 at 0209 in English. (Hinton, TX) 11.745 in English 0220-0258. (Salmi, MA) 0214-0230 in English. (Fravel, WV)

Radio Cultura do Para, 5.045 at 0232 with ads, Brazilian pops. (Green, GA)

Radio Brazil Central, 4.985 at 0556 in Portuguese. IDs at 0600 and 0615. (Fravel, WV) Tentative at 0450. (Martin, IA) 0553 with Brazilian songs. (Salmi, MA)

Radio Bare, 4.895 at 0447 in Portuguese, Brazilian songs and station IDs. (Salmi, MA)

Radio Globo, 11.805 at 0148 in Portuguese with Brazilian songs, phone calls from listeners. (Salmi, MA)

Radio Bandeirantes, 11.925 at 2205-2258. (Salmi, MA)

Radio Borborema, 5.025 at 0205-0300 sign off. (Salmi, MA)

Voice of America, via Radiobras, 17.710 with news, VOA Jazz Hour. (Moran, IL)

Radio Caiari, Porto Velho, 4.785 at 0541, frequent IDs. (Shute, FL)

Radio Clube de Goiania, 11.735, excited sports at 0230. (Brossell, WI)

Bulgaria Radio Sofia, English to Europe on 9.665 at 2130. (Pastrick, PA) 9.700 at 2318 in English. (Arbetman, IL) 9.665 at 2140. (Hunt, NC) 9.700 at 2300. (Hinton, TX) 7.115 at 0400, English to North America. (Batman, LA)

Cameroon Radio Bertoua, tentative, 4.750 at 0530 with English news, ID as "National service of Radio Cameroon." (Miller, GA) Tentative at 0633 in French. (Shute, FL)

Radio Garoua, 5.010 at 0628 in what seemed English, very weak. (Fravel, WV)

Radio Douala, 4.795 in French at 2210. (Gray, MI)

Radio Yaounde, 9.745 in English and French at 2110. (Gray, MI)

Canada CFRX, 6.070 at 0600, news, weather, hockey scores. (Miller, GA)

CHU time station, 7.335 at 0850, English and French announcements each minute. (Hinton, TX) 7.335 at 0225. (Meyers, MO)

CBC Northern Quebec Service, 6.195 at 0505. (Meyers, MO)

RCI, English to North America on 5.960 and 9.755 at 0410, music from the Montreal Symphony. (Pastrick, PA) 5.960 at 0240. (McDonough, PA) 0250. (Meyers, MO) 17.820 with "Sunday Morning" at 1400-1700. Also 15.325 at 1645 and 1900-2000 on 17.875. German daily to Europe on 15.325 at 1730. (Buckley, GA) 11.955 and 17.820 in English to U.S., Mexico, Caribbean with "Sunday Morning." Program address is CBC, P.O. Box 500, Station A, Toronto, Ont M5W 1E6. (Szalony, CA)

Chad N'djamena, 4.904 at 0549 with music program in French. (Fravel, WV)

Chile Radio Nacional, 15.140 at 0027 with easy listening music, all Spanish. (Fravel, WV) 2150 with mix of rock and Latin tunes. (Hunt, NC) 1915 with ID in Spanish. (Morgan, ME) 2220. (Moran, IL) 9.550 in Spanish at 1032. (Martin, IA)

China Radio Beijing, 15.520 at 0100 in English with news, music, "Scrapbook," sports. (Hinton, TX) 15.165 at 1454 in English, monitored in South Korea. 17.855 at 0100 and 15.195 at 1017 heard in Hong Kong. (Arbetman, IL) 11.880 at 0003 with news. (Miller, GA)

Fujian Front station in Chinese on 5.770 at 1127. (Martin, IA)

Clandestine "Radio Iran" on 7.425 in possible Farsi at 0231. (Shute, FL)

Unidentified on 7.430 at 0225 with siren-like jammer, presumably from Iran or Iraq. (Shute, FL)

Radio Farabundo Marti, 6.600 at 0032 in Spanish, music and ID at 0033. (Shute, FL)

Voice of the Libyan People, 11.640 in Arabic at 1905 with Arabic music in background. Jammed at times. (MacKenzie, CA)

La Voz del CID, 6.305 at 0324 in Spanish with comedy program. (Paszkiwicz, WI) 0230 with Spanish commentary. (Meyers, MO)

Radio Venceremos, 6.545 at 0206 in Spanish, martial music, IDs, mentions of Farabundo Marti, ballads. Jumped to 6553 at 0235. (Paszkiwicz, WI)

Radio Monimbo (anti-Nicaraguan, Editor) 6.230 at 0239 in Spanish, talk by woman, Latin music, utility QRM. (Paszkiwicz, WI)

Colombia Radio Sur Colombiana, 5.010 at 0250-0257 sign off. All Spanish, music. (Fravel, WV)

Radio Sutatenza, 5.095 at 1112 with talk show in Spanish. (Martin, IA) 0351 music program in Spanish. (Fravel, WV) 0030 in Spanish with pop music. (Moran, IL)

Caracol Radio 4.945 in Spanish at 0550. (Salmi, MA) Radio Nacional, 9.635 at 2340, popular and folk music, ID. (Moran, IL)

Congo RTC Brazzaville, tentative on 15.190 at 1904 in French, Afro chanting. Poor. (Gray, MI)

Costa Rica Radio Reloj, 4.832 at 0619 in Spanish. IDs as "Radio Reloj, numero uno en Costa Rica." (Green, GA) 0909 in Spanish. (Martin, IA) 0541 music, ID, address. (Fravel, WV)

Radio Impacto, 6.150 at 0229 with news in Spanish. (Meyers, MO) 0330 with pop music. (Hunt, NC)

Cuba Radio Havana, 11.760 with news in English at 0500. (Hinton, TX) 6090 at 0330 world news and sports in English. (Zalewski, NJ) 9.525 at 0713 with music in Spanish. (Arbetman, IL) 6.140 with news in English at 0330. (Meyers, MO)

Radio Rebelde, 5.025 at 2128 in Spanish, pop music. (Shute, FL) 0256 with ID at 0258. (Fravel, WV)

Radio Moscow, via Havana, 6.115 at 0042 in English. Excellent level. (Goetsch, OH)

Dominican Republic Radio Clarin, with Radio Earth programs at 1950 but poorly heard. (Gray, MI)

Ecuador HIZIOA time station, 3.810 at 0640 with Spanish time announcements. (Salmi, MA) 7.600 at 0310. (McDonough, PA)

Radio Quito, 4.920 at 0016 in Spanish with Andean-type music, ID, time checks. (Salmi, MA) 0150 with ID 0204, news 0206. (Fravel, WV) 0030 in Spanish, melo-music, IDs. (Green, GA)

HCJB 9.745 at 0300 with religious program in English. (McDonough, PA) 15.295 at 2140 with DX Party Line. (Hunt, NC) 6.095 and 9.735 at 0400 in English. (Zalewski, NJ) 9.745 at 0040 and 0230, 15.115 at 1315, also 17.890. (Northrup, WV) 9.745 at 0637-0659 sign off in English. (Fravel, WV) 0257 with DX Party Line. (Meyers, MO) 6.095 at 0639. (Goetsch, OH) 15.295 at 1907 in English. (Fravel, WV) In European languages as early as 0230 on 9.870. Also 6.205 in European languages before 0700. (Buckley, GA) 9.745 at 1824 in English. (Arbetman, IL)

Radio Popular, 4.800 at 0557 in Spanish, Ecuadorian music, IDs, time checks. (Salmi, MA)

Radio Catolica Nacional, 5.055, 0258 to 0309 sign off in Spanish, closing with prayer and national anthem. (Fravel, WV)

Ondas Orenses, Bolivar, 4.895 at 0207-0224 with variety show in Spanish. (Fravel, WV) Don't think this has ever been reported. (Editor)

Emisora Gran Colombia, 4.915 at 0453 in Spanish with music program. (Fravel, WV) 4.911 at 0103, ID in Spanish, ads, local pops. (Green, GA)

La Voz del Napo, Tena, tentative on 3.280 in Spanish, mentions of Quito. (Martin, IA) Time? (Editor) 0206 in Spanish. (Fravel, WV)

La Voz del Triunfo, Santo Domingo de los Colorados, 3.253 at 0455 with music program. (Fravel, WV)

Egypt Radio Cairo, 9.475 at 0200-0330 daily. Also announced 9.657. Heard 0215 going from music into ID and "Spotlight on the Middle East." (Buckley, GA) 0245-0319 variety show in English. (Fravel, WV) 0300 with news events of the week. (Miller, GA) 0222 in English. Woman announcer reads too fast. (McDonough, PA)

England BBC at 1200 on 11.775 with Radio News-reel, also 5.965. (McDonough, PA) 6.175 at 0230 in English. (Meyers, MO) 3.975 European service in Polish at 0600. (Salmi, MA) 9.915 at 2355 in English. (Hunt, NC) 3.975 at 0632 in Hungarian. English at 0645. (Fravel, WV) 11.750 at 1514, 3.915 at 1608, 9.590 at 2316. (Arbetman, IL) 9.640 at 0600 in Asian service. 15.260 good at 1515-1745. (Buckley, GA)

Equatorial Guinea Radio Bata, 15.106 at 2013 with syndicated English religious show. (Gray, MI)

Finland Radio Finland International, 15.400 at 1407, news in English. (Shute, FL) 1420 in English. (Arbetman, IL) 17.800 at 1347 in English, also on 15.400. (Salmi, MA)

France Radio France International, 17.620 in slavic language at 2200. Also on 17.800. (Moran, IL) 9.790 at 0451 with news in English. (Martin, IA) 15.435 and 17.860 signing on at 1325. (Batman, LA) 9.790 at 0300 with news. (Hinton, TX) Some of these are undoubtedly via French Guiana relay. (Editor)

Gabon Africa Number One, 4.810 at 0530 with

music, French announcements, ID 0535. (Fravel, WV) 2246 talk program in French. Also 0610 with ads, various music types. (Green, GA) 0500 sign on in French on 4.810. (Fravel, WV) 2246 and 0602. (Green, GA) 11.940 in French at 1850. (Gray, MI) 15.200 in French at 1718. (Shute, FL) 1600, music and discussion in French. (McDonough, PA)

Ghana GBC with English news, groups songs at 0500-0530 on 4.915. (Brossell, WI)

Greece Voice of Greece, 15.630 at 1530 in English. (McDonough, PA)

VOA Kavala, 0218 with "Focus" on 9.680. (Fravel, WV)

Guatemala TGNC 3.300 at 0413 with religious program in English. (Fravel, WV) 0145-0215 ID, classical music. (Brossell, WI) 0303 religious program in English. (Goetsch, OH)

La Voz de Nahuala, 3.360 at 0218, discussion in Spanish. (Fravel, WV)

Haiti 4VEH, 4.930 excellent in French and Creole 0250. (Brossell, WI)

Hawaii WWVH time station, 0333 on 5.000 and 10.000, faint under WWV. (Meyers, MO)

Honduras Radio Luz y Vida, 3.250 at 0301 with ID and religious program in Spanish. (Green, GA) 0241 Spanish with talk, vocals, ID, possible mailbag, harmonica music. (Paszkievicz, WI)

Hungary Radio Budapest, 6.025 at 0205 in English with news. (Hunt, NC) 0218 in English, DX magazine. (Salmi, MA)

Iran VOIRI, 9.026 English with ID, anthem, gave frequency, music, talk on Iran/Iraq. (Miller, GA) Time? (Editor)

Iraq Radio Baghdad, 9.610 at 2113 in German to 2125, open carrier, English at 2127. (Fravel, WV) 2117 with ID in Arabic, English from 2130. (Green, GA) 2146 with Arabic music, talk in English. (Hunt, NC)

Israel Voice of Israel, 7.412 with English to North America at 0014. (Pastrick, PA) 0158 with tuning signal, ID, into news in English. "Calling All Listeners" at 0212. (Goetsch, OH) 9.440 at 2000 in English. (Hunt, NC) 7.412 at 0100 with news. (Arbetman, IL) 9.815 at 0000 with news and "Spotlight." Also at 2230 on 9.440. (Hinton, TX) 9.440 at 0105 with news, flamenco. (Fravel, WV) 7.412 at 0210. (Myers, MO)

Italy RAI on 15.990 at 2209 in English with news, Italian music. (Paszkievicz, WI)

Japan Radio Japan, 15.195 at 2020 in English. Also 2021 on 17.825 in English to 2100. Also 17.755 in Japanese to 2025 sign off. (Morgan, ME) 9.570 at 0440-0600 in variety of languages to South America. (Batman, LA) 9.595 at 0632 with stock markets, 17.810 at 0700 with news, also on 15.235 and 9.505. (Arbetman, IL)

17.755 in English at 2315, news and commentary. (MacKenzie, CA) 9.645 at 0500 in English. (MacKenzie, CA) 17.750 at 2259 sign on, news in English. (Martin, IA)

Kuwait Radio Kuwait, 11.675 at 1817 in English. (Green, GA) 1445 with pop and Arabic music. (Morgan, ME)

Latvian SSR Radio Vilnius, via Radio Moscow transmitters, 15.100 at 2317 with mailbag. (Martin, IA)

Lebanon Voice of Lebanon, 6.550 at 0440 with Arabic talks, chanting. Weak and QRM from air traffic. (Green, GA)

Lesotho Radio Lesotho in English with news at 0500 on 4.800. Fadeout after 0520. (Brossell, WI)

Liberia VOA relay, 15.600 at 2140 in English. (Gray, MI)

Libya Radio Jamariyah, 11.815, excellent but with transmitter trouble 2235-2245. (Fravel, WV) 2332 with address and music. (Meyer, MO) 0248-0300, weak, Arabic music. (McDonough, PA) 2319 with talk, ID, program and frequency schedule. (Goetsch, OH) At 2250 with "Perspective." (Pastrick, PA) Mailbag at 2300. (Hinton, TX) 15.450 with African service in English. (Shute, FL) Time? (Editor)

Luxembourg Radio Luxembourg, 15.350 at 1830 in French, American, and European Top 40. (Paszkievicz, WI)

Madagascar Radio Netherlands Relay, 11.740 in English and French at 2011. (Gray, MI) 15.560 in English at 2035. (Martin, IA)

Malawi MBC on 3.380 at 0400 in Chichewa with news, ID, music. Also at 0358 with English ID, frequency and into Chichewa. (Paszkievicz, WI)

Malaysia Radio Malaysia, Kuching, Sarawak on 4.950 at 1420 in English with talks. (Varney, CA)

Malta Deutsche Welle relay, 9.545 signing off at 0400 with transmitter site ID. (Batman, LA)



Michael Goetsch in his Ohio listening post.

Mexico La Voz de la America Latina, 15.176 at 1643 in Spanish. (Shute, FL)

Mozambique Radio Mozambique, 9.618 at 0426 with ID in Portuguese, time check, African and American music. (Paszkievicz, WI) 0358 with ID in Portuguese, several mentions of Maputo. (Gray, MI)

Namibia Radio Southwest Africa on 3.295 at 0420 in Afrikaans. (MacKenzie, CA) Parallel 3.270 at 0315, very good with instrumental music. (Brossell, WI) 3.295 at 0345 "You've been listening to the English service of Radio Southwest Africa" and into Afrikaans. (Salmi, MA) 3.270 at 2327 with elevator type western music, parallel 3.295. (Green, GA) Also 0333 on 3.295 with continuous music. (Goetsch, OH) 3.270 and 3.295 at 2325 and 0200 respectively. (Gray, MI)

Netherlands Radio Netherlands 11.740 at 2028 with news after sign on of African service. Weaker on 15.560. Test from Flevo site. (Moran, IL) 11.735 at 1453 in English. (Arbetman, IL) 11.935 at 1338 with "Happy Station." (Pastrick, PA)

Netherlands Antilles Radio Netherlands relay, Bonaire, 6.165 at 0614. (Goetsch, OH) 9.590 at 2045 with "Happy Station." (Hinton, TX) 9.715 with directions on how to QSL their station at 0611. Better on 6.165. (McDonough, PA) 9.630 Pacific service at 0730. (Martin, IA) 6.020 at 0315. (Hunt, NC)

Trans World Radio, Bonaire, 9.535 at 0600 with "Caribbean Nite Call." (Hinton, TX) English to North and Central America at 0422. (Pastrick, PA) 11.815 to 1315 sign off. (Buckley, GA) At 1206, music and children's stories. (Goetsch, OH)

New Zealand Radio New Zealand International, 9.620 at 0920 with music. (Pastrick, PA) 17.705 at 2325 in English, local news and weather. (MacKenzie, CA)

Nicaragua Voice of Nicaragua, 6.015 at 0400 with news and "P.O. Box 248." (Hinton, TX) 0124 in Spanish, QRM or jamming, 0400 in English. (Pastrick, PA and Goetsch, OH) 0325 in Spanish. (Meyers, MO)

Nigeria FRCN Kaduna, 4.770 with news and commentary in English at 0500-0530. (Brossell, WI) 2338 high life music, poor modulation. (Gray, MI)

Voice of Nigeria, 7.255 at 0500-0600 in West African Service in English with "Africa This Week." (Hinton, TX) 11.770 with sign off at 2100. (Martin, IA) News at 0530 in English on 7.255. (Batman, LA) English news 0535. (Meyers, MO)

Northern Marianas KYOI, Saipan 11.900 at 1235, English and Japanese. (Pastrick, PA)

Norway Radio Norway International, 11.870 in English and Norwegian at 1400. (Hinton, TX) 15.310 at 1300-1330. (Brown, PA)

Papua New Guinea Radio Milne Bay, Alotau, 3.360 at 0814 with music and announcer. Weak with utility QRM. (Goetsch, OH)

Radio East New Britain, Rabaul, 3.385 at 0846, music and announcer, lost after 0900. (Goetsch, OH)

Paraguay Radio Nacional, 9.735 at 0900 with sign on in Spanish. (Martin, IA) 0219, sounded like soccer game in Spanish. (Fravel, WV)

Peru Radio Atlantida, 4.790 in Spanish with music, clear ID 0140. (Brossell, WI) 0145 in Spanish. (Fravel, WV) 0330 with 40's and 50's music. (Green, GA)

Radio San Martin, all Spanish, 4.810 at 0230. (Brossell, WI) At 0137 with rock and dance music, ID. (Paszkievicz, WI)

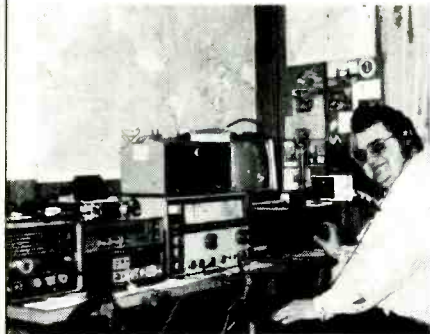
Philippines FEBC, 15.450 at 2345 in English with "Morning Show." (MacKenzie, CA)

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The SWL card of Jim Morgan from Bangor, Maine.

Poland Radio Polonia, 9.675 at 0640-0700 sign off with Polish Top 20, in English. (Buckley, GA)

Portugal Radio Portugal, 0035 on 9.680, world news, Portuguese sports. (Hunt, NC) 0059 in English, WYFR QRM. (Arbetman, IL)

Romania Radio Bucharest, 5.990 with Romanian jazz at 0253. (Shute, FL) 15.250 with English to Europe at 1305, also on 11.940. (Pastrick, PA)

Rwanda Deutsche Welle relay, English to Africa at 1250 on 17.800. Better on 17.765. (Pastrick, PA)

Senegal ORTS on 4.890 at 2311 in vernaculars, CW marker QRM. (Green, GA) 0600 in French, Arabic, and vernaculars. (Salmi, MA)

Seychelles FEBA with test transmission at 0430 on 11.810. English IDs. (Miller, GA) 11.855 at 0230 with music. (Hunt, NC)

Singapore Singapore Broadcasting Corp., Radio One on 5.052 with rock, English talk at 1345. (Varney, CA)

BBC Relay on 15.435 at 0030-0045, English by Radio. (MacKenzie, CA)

South Africa Radio RSA on 7.270 with English 0400-0430, French 0430-0500. (Batman, LA) 9.615 with interval signal 0152, sign on 0200 and "Africa Today" program in English. (Fravel, WV) 15.155 at 2017 in French. (Shute, FL) 9.585 English to Europe and Africa at 2106. (Pastrick, PA) 7.270 in English at 0340, 4.990 at 0412. (Gray, MI) 3.230 at 0405 with news, ID. (Goetsch, OH) 4.990 at 0418 in English. (Fravel, WV)

SABC on 3.320 at 0359 to 0405 in Afrikaans. (Fravel, WV)

Capital Radio, Transkei, 9.765 at 0538 with pop music, "Captain Clemmons" episode at 0541. (Shute, FL) 3.930 at 0346 with U.S. AM-style format. (Fravel, WV)

South Korea Radio Korea, 15.575 at 2215 in English with news about Asia, classical and Korean music. (Paszkievicz, WI)

Spain Radio Exterior de Espana, 9.630 at 0125 in English. (Hunt, NC) 0550 in English. (MacKenzie, CA) 0000 in English. (Hinton, TX) 2013 in English. (Shute, FL) 9.360 in Spanish at 0100, possible news. (Fravel, WV) 11.880 at 0508 in English. (Pastrick, PA) 0011 in English. (Martin, IA) 0100-0200 in English. (Batman, LA) 6.125 with press review at 0515. (Meyers, MO)

Sri Lanka SLBC on 9.720 at 1715 with Indian music. (MacKenzie, CA)

Sudan Omdurman, 0410 in Arabic with Koran, talk. No ID, so is tentative. (Paszkievicz, WI)

Swaziland Trans World Radio, 4.760 at 0256 with interval signal, man in African language with ID, religious program. (Salmi, MA)

Sweden Radio Sweden International, English at 1406 on 15.345 with talk on icebreaker ships. (Shute,

FL) 11.785 at 1200 in Swedish to ID and interval signal at 1230 sign off. (Morgan, ME)

Switzerland Swiss Radio International, 17.785 from 1315-1345 with "Dateline." (credit misplaced) This service may have been dropped by now. (Editor) 9.885 at 0145-0215, parallel 9.725 and 6.135. (Buckley, GA) 9.885 with Swiss Shortwave Merry-go-Round at 0145. (Hinton, TX) 6.135 at 0150 with "Dateline." (Hunt, NC) 17.765 at 1319 in English with world news. (Pastrick, PA) 3.985 at 0658, ID and news. (Goetsch, OH) 9.560 at 0705 in English. (Shute, FL)

Syria SABS, Damascus on 11.685 at 1500 with news, press review to 1600. (Morgan, ME)

Tahiti Radio Tahiti, from 0300 with music on 15.170 and 11.825, the latter stronger after 0315. (Batman, LA)

Taiwan Voice of Free China, 6.065 with English at 0200. (Hunt, NC) 17.870 at 2200 in English, parallel to 15.270. (MacKenzie, CA) 5.985 and 6.065 via WYFR with educational program 0317. (Meyers, MO)

Togo Lome on 5.047 at 0630 in French. ID, news, music. (Green, GA)

Turkey Voice of Turkey, 9.560 in external service for Turks abroad. (Fravel, WV) News in English at 2300. (Knowlson, PA) At 0400. (Buckley, GA) 2305 with English to Europe and America. (Pastrick, PA)

Ukraine SSR Radio Kiev, 7.205 at 1935. (GMT? Editor) Mailbag show. (Morgan, ME) 7.195 signing off in English at 0330. (Batman, LA)

United Arab Emirates UAE Radio, Dubai, new 7.310, also announcing 9.695 and 11.730. Arabic music at 0300, news in Arabic 0315, in English 0330-0400. (Romig, PA) 11.955 in English at 1622. (Arbetman, IL) 11.730 at 0330 with news. (Miller, GA) 7.310 at 0330 with news in English, features, music. (Paszkievicz, WI) 15.300 at 0900 in English and Arabic. (Morgan, ME)

United States Voice of America, 11.965 with English lesson 1345. DX program on 15.425 at 1438. (Arbetman, IL) 6.035 at 0330 with news and commentary. (Zalewski, NJ) 0710. (Arbetman, IL)

WRNO at 0255 on 7.355 with rock and commercials to 0300 when switched to 6.185. (McDonough, PA) 11.965 at 1403 with DX program. (Pastrick, PA)

KGEI 15.280 at 2225 in Spanish with religious program, ID. (Moran, IL) 2145 in Spanish to South America. (Pastrick, PA)

AFRTS on 15.355 at 0104 with AP News. (Arbetman, IL)

WWV, 5.000, time signals, propagation report at 0216. (Meyers, MO)

WYFR on 15.130 in English at 2140. (Hunt, NC)

United Nations Radio, 15.120 at 2130 with "Caribbean Magazine." (Hunt, NC) 9.505 ending "UN Calling Africa" at 1028. (Batman, LA)

USSR Radio Moscow, North American service on 6.115 (via Havana, Editor) at 0330 with news. (Meyer, MO) World Service on 15.455 at 1636. (McDonough, PA)

Radio Peace and Progress, English to Asia at 1334 on 11.800. (Pastrick, PA) 11.800 in English. (Shute, FL)

Vatican Vatican Radio, 6.250 at 0620 with Latin Mass, ID 0700, news in Italian. (Green, GA)

Venezuela Radio Capital, 4.850 at 0457-0525 in Spanish with Latin and English pops. (Fravel, WV) 0627. (Salmi, MA)

Radio Rumbos, 4.970 at 0426, easy listening music. Spanish ID 0432. (Fravel, WV) 9.660 at 0200 with Latin American music, ID. (Hunt, NC) 4.970 and 9.660 at 0200. (Meyers, MO) 0345 on 9.660. (McDonough, PA) 9.660 at 0230, easy listening music. (Fravel, WV)

Radio Novocientos Ochenta (Radio 980) at 0657 on 3.255 in Spanish. Weak. (Salmi, MA) 0508 with frequent IDs. (Fravel, WV)

YVTO time station, 6.100, Spanish time announcements at 1142. (Martin, IA) 0111. (Meyers, MO)

Radio Occidente, 3.225 at 0125 in Spanish. (Green, GA)

Radio Tachira, 4.830 at 0318, ID in Spanish, ads, Latin pops. (Green, GA) 0250 music, lottery results, IDs, jingles. (Brumm, IL)

Ecos del Torbes, 4.980, 0333 in Spanish "Radio Ecos" IDs, commercials, Spanish language vocals, some hymns to 0359 sign off. (Brumm, IL) 0245. (McDonough, PA)

Radio Maturin, 5.040 at 2355 in Spanish, Latin pops, IDs. (Green, GA) 0237 with announcements after each song. (Fravel, WV)

Radio Universo, 4.880 at 0320, music program in Spanish. (Fravel, WV)

La Voz de la Fe, 3.375 at 0520, music program, announcer with echo effects. (Fravel, WV)

Radio Iris, 3.380 at 0215. All Spanish. (Brossell, WI)

Vietnam Voice of Vietnam, tentative, 10.060 in Vietnamese at 1015. (Martin, IA)

West Germany Radio Free Europe, under Radio Moscow on 7.165 with interval signal at 0608. (Shute, FL)

Deutsche Welle, 3.950 with mailbag and "Say It In German" to sign off at 0550. (Fravel, WV)

Yugoslavia Radio Yugoslavia, 6.100 at 2004 in English with news and ID. Barely audible. (Salmi, MA)

Yemen (Arab Republic of) Radio San'a at 2040 in Arabic on 9.780, Arabic and American mood music. (Hunt, NC)

Yemen (People's Democratic Republic) DYBS, Aden, 6.005 in Arabic with news, commentary, singing, and talk till BBC returned at 0354. (Paszkievicz, WI)

Zaire La Voix du Zaire, Kinshaha, 7.255 at 0712 in unidentified language. (Fravel, WV)

Zambia ZBC Lusaka on 4.910 at 0401 with music and long announcements in between. (Fravel, WV)

With thanks to: Michael Goetsch, Berea, OH; James F. Morgan, Bangor, ME; David Salmi, Maynard, MA; Robert Brossell, Pawaukee, WI; Billy Hunt, Durham, NC; Sheryl Paszkiewicz, Manitowoc, WI; Thomas B. Zalewski, Jersey City, NJ; Jerry Brumm, Chicago, IL; Mark A. Northrup, Milwaukee, WI; Larry R. Fravel, Clarksburg, WV; Marty Meyers, Kansas City, MO; Leonard Szalony, Fontana, CA; Robert Pastrick, Conway, PA; Alax Batman, Baton Rouge, LA; John Miller, Thomasville, GA; Jim Varney, San Bernadino, CA; Ted Moran, Chicago, IL; Wain Buckley, Thomasville, GA; Pat McDonough, Pittsburgh, PA; Bob Arbetman, Naperville, IL; George L. Green, Warner Robins, GA; Michelle Shute, Pensacola, FL; Mike Martin, Monroe, IA; Mary M. Knowlson, Beaver Falls, PA; David E. Brown, Lafayette Hill, PA; Jerry Hinton, Sherman, TX; Edward Romig, Allentown, PA; J. Speed Gray III, Grand Rapids, MI.

Til next month, good listening!

PC

SCANNER SCENE

BY CHUCK GYSI, N2DUP

MONITORING THE 30 TO 900 MHz "ACTION" BANDS

If all goes according to schedule, the helmets of some pro football players will be equipped with radios this fall. They won't be listening to 97X, Q100 or any other radio station; they'll be using them to make calls on the field.

The National Football League's competition committee came up with the idea to install radio transmitters in the helmets of players to allow quarterbacks to communicate with wide receivers and running backs. Noisy stadiums have made it difficult for routine calls to be heard and players have expressed concerns over penalties and blown signals because of problems hearing the quarterback.

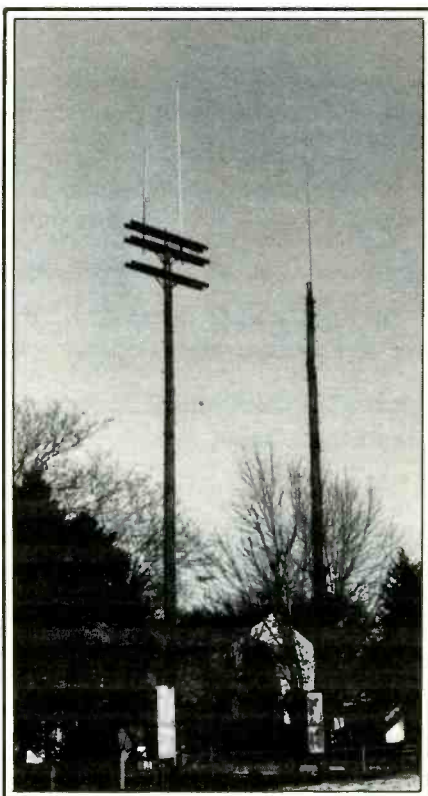
The proposal, which still needs approval of the NFL owners, will allow the San Francisco 49ers and Seattle Seahawks to use the radio-equipped helmets during this fall's exhibition games on an experimental basis. If the trial works, all 28 teams would be equipped for the 1986 season.

Although there has been no public mention of possible frequencies the teams would use for the helmets, it would seem likely that 12.5 kHz "splinter" channels in the UHF business band would be used. It's unlikely that any additional spectrum would be opened up for this project and there would have to be many available channels so that teams wouldn't have to worry about interfering with each other. (If they're smart, however, they will be monitoring the opposition's frequency at gametime.) The VHF high band business band channels also could be a possibility, however, congestion on those channels probably would rule them out. The short-range characteristics of UHF would seem perfect for this setup.

The NFL owners received a demonstration of the radio helmets at their March meeting in Phoenix, Arizona. The recommendation for the radios was the highlight of a package of proposals by the NFL's competition committee designed to speed up NFL games, which lasted an average of three hours and nine minutes in 1984.

The proposal for the radio helmets is not an entirely new idea, however. In the late 1950's, Paul Brown, who was coach of the Cleveland Browns and general manager of the Cincinnati Bengals, experimented using miniature radios to get plays and instructions to his quarterbacks from the sidelines.

"Actually, they never really worked," Brown recently told The Associated Press. "Our quarterback, George Ratterman, kept complaining that when we tried to get the signals to him, he could hear a little talk interrupted by static. We were going to try it for a game with the Giants, and the Giants later



These twin towers atop a hill in Willow Grove, PA, are used by Bell of Pennsylvania for mobile telephone service in the Philadelphia area. The towers are used only for receiving VHF and UHF mobile phone units. Transmitters are located at other key locations. (Photo by Chuck Gysi, N2DUP)

boasted they stole our signals. They didn't. They beat us fair and square."

The latest proposal is the brainchild of Eddie LeBaron, general manager of the Atlanta Falcons and a member of the competition committee. LeBaron wanted to use radio helmets for an exhibition game in the Minnesota Metrodome in 1984, but had to drop the plan when the Vikings objected.

Pay-radio?

The Federal Communications Commission has come up with an idea that could pump millions of dollars into the U.S. Treasury. The chairman of the agency has suggested auctioning off reserve spectrum for the highest possible price.

Although the proposal would not affect frequencies already allocated to various radio services or existing licensees, FCC Chairman Mark S. Fowler said that the gov-

ernment could have made more than \$1 billion if it had auctioned off the cellular mobile telephone frequencies it virtually gave away in the nation's 90 largest metropolitan areas.

Fowler said that the system of selecting cellular licensees by lottery in smaller cities hasn't worked because some applicants will file several applications through family members and friends.

The auction proposal probably would be used only on new higher frequency bands and would assure that the high bidder would put the frequency to the most efficient use, Fowler had said.

Mailbag

Josh Golden of Malibu, California, said he recently got the inside story on what is considered the nation's largest private sector communications system at Mammoth Mountain Ski Area. The system utilizes Motorola equipment, including 200 portables (MX330s, MT500s, HT220s, and submersible Expos), 92 mobiles, and an 800 MHz repeater that uses three satellite receivers in the mountain's fringe areas. A comparator at the base lodge relays the strongest of the three received signals via hardline to the mountaintop repeater. The frequencies used are:

- 151.895 Ski school
- 151.835 F-1-Operations, security
- 151.805 F-2-Snow cats, maintenance
- 851.3875R Ski patrol (input 806.3875)

Josh said he listened to the action on the Regency HX1000 and found that the snow cat frequency is valuable for keeping track of on-mountain snow and weather conditions.

Arnold Uttin of Barton, Vermont, reports hearing a callsign being transmitted in Morse code on 155.205 MHz, a frequency used for ambulance dispatching in most of northern Vermont. He reports that he can hear five dispatch centers and that none of them use the CW IDers for dispatching; they use audible tone and voice alerts. The CW IDer isn't being used for dispatching, Arnold. It's just identifying a particular transmitter on the air. Radio licensees have the option of transmitting their FCC-assigned callsigns either in voice or by automatic Morse code identifiers. In fact, the CW IDer you are hearing could very well be one of the dispatch centers you listen to on a regular basis; they possibly could have just added the CW IDer to make it easier for the dispatcher to have one less thing to worry about. In general, there are a lot more CW IDers on the air in the past few years. Because not everyone can copy Morse code, they even add a little bit of security to a radio system. Some old automatic voice tape IDers on the air announce

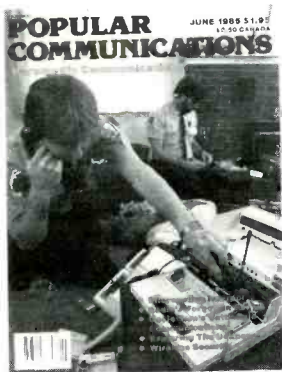
the station's callsign, company name, and transmitter location.

Daryll Symington, N8EBR, has come out with the third edition of his excellent *Scanner Frequency Directory for Northwestern Ohio and Southeast Michigan*. The 84-page guide is a completely revised version and covers a 16-county area with every popular type of service represented, including police, fire, utilities, mobile telephone, marine, local government, aircraft, railroads, federal government, military, security companies, taxis, tow trucks, news media, hospitals, and ambulances. The guide even boasts coverage of all 800 MHz licensees in the region.

The directory is sorted both by licensee name and by frequency for quick reference. In addition, Daryll has taken time to make notations as to whether a particular station has been heard on the air; many listings carry this notation. The back section of the book includes radio codes and unit numbering schemes for public safety agencies. The book is \$7.95 plus \$1 First Class mail shipping from Midwest Software Services, P.O. Box 399, Holland, Ohio 43528.

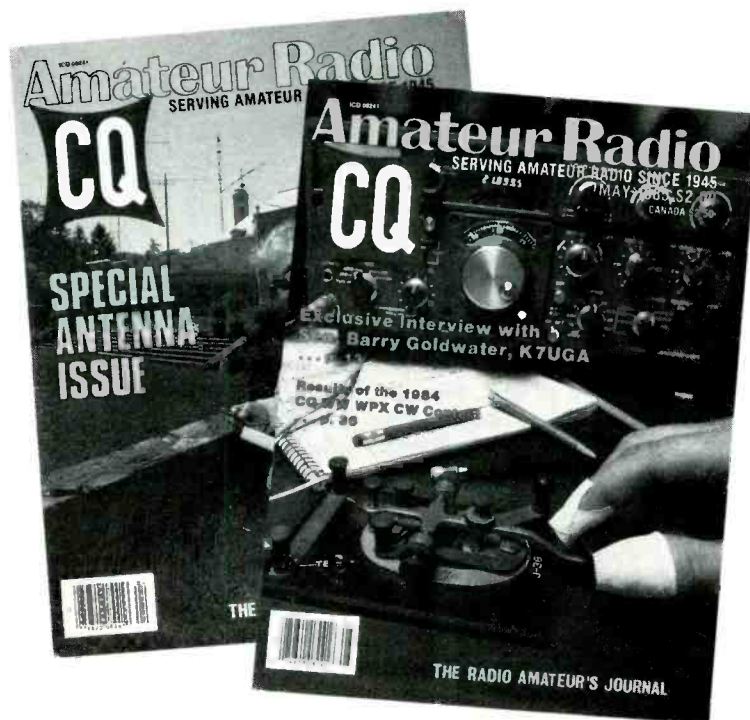
We'd like to hear from you here at POP'COMM. What type of radio gear do you use? What are your favorite frequencies to listen to? What would you like to read about in Scanner Scene? We also welcome photographs of your listening post. Write to: Chuck Gysi, N2DUP, Scanner Scene, Popular Communications, 76 North Broadway, Hicksville, NY 11801-2909. **PC**

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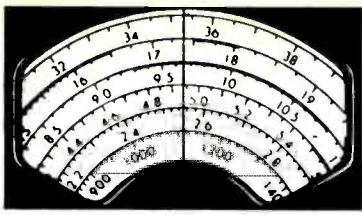
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COMMUNICATIONS CONFIDENTIAL

BY MIKE CHABAK

YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

In the last issue we touched upon various kinds of reference material that utility monitors can avail themselves of. In the same token, both magazines and shortwave hobby club bulletins also supply invaluable information. All together, the utility buff has a variety of data sources to tap, but data by itself isn't worth much. To be of value it must be applied, and you can only do this when you sit down in front of your SW receiver and monitor.

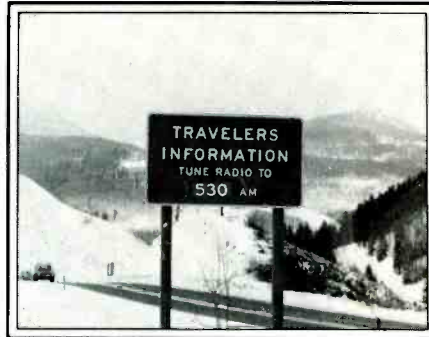
All of us launched ourselves into this hobby in the same basic manner. We bought or were gifted with a shortwave receiver, hooked it up to a piece of wire, then sat down to turn the dials or key punch in the frequencies. At first, much of what we heard was strange or mysterious, especially when we ventured beyond the comforting confines of the international shortwave broadcast bands and blundered into the complex world of the utilities. As there was a good deal to learn and explore, many an SWLer didn't give any thought to the fact that there were ways and means to improve reception.

If you scan the loggings in magazines such as this one and club bulletins, you'll often note some rare or otherwise interesting catches by your fellow buffs. You try for them and you come up empty.

Utility DXing is more than just knowing the frequencies used by stations. Because of the nature of utility communications, many stations are heard by virtue of the fates called luck, patience, and perseverance.

All of us have targeted a specific frequency, then sat there for hours and never heard anything, or the particular stations(s) we hoped to monitor. As such, planning and patience can fail to reap rewards. At other times, you just happened to tune in and caught what you consider to be a good logging. It is not to say that random luck is the key element, for your more proficient utes operate basically out of the planning patience and perseverance concepts, which yields more consistent results than pure blind luck.

Many of those more successful utes use tricks of the trade and electronic black boxes to improve the odds in their favor. It is to be noted that electronic aids were merely that. If your receiver has poor selectivity and sensitivity, outboard electronic devices will not transform it into a class one receiver. But even those good rigs that come from Yaesu, Kenwood, ICOM, JRC, Drake, etc. can benefit from black box assists. Here we will briefly examine this realm.



Here's a TIS station located next to the Gerald Ford Commemorative Park in Vail, Colorado. Located at an elevation of 8,150 feet, the station is especially useful during the winter months when it provides road and skiing conditions. (Photo by P.M. Griffith)

Headphones

The one basic and often critical piece of equipment that some novice SWLers overlook is a good pair of headphones. Most SW rig manufacturers offer headsets that are optimized for voice/CW reception. Hi-fidelity reproduction is not required, so comm headsets have a much narrower frequency response than a good stereo headset. This narrower frequency response is not a liability in shortwave monitoring, for virtually all of the audio you will hear occupies only several thousand cycles per second range. So there

is no need to have a headset capable of covering the full bass to treble range.

What a comm headset does is isolate your ears to outside noises that can distract you or drown out the incoming signal. And if that signal is weak, turning up the speaker audio won't match the capture ability of a snug pair of headphones.

So, by all means, get yourself a headset.

Antennas

The weakest link in radio monitoring is the antenna—not so much a particular receiver. There are some very proficient utes who use either inexpensive receivers or those we now consider antiques, and are able to consistently outclass those with more sophisticated equipment. The antenna is often a major pivotal factor that can work for or against you.

Unfortunately, most of us must use one dictated by our own prevailing situation.

Apartment dwellers often cannot erect any outside wires. Even those who have an outdoor access can be limited by space restrictions. In any event, many of us must work with an antenna setup that is less than ideal.

The random length long wire is most often employed. It is cheap, easy to set up, and when over 25 feet in length, will adequately acquire all types of comms across a broad frequency range. The most-used lengths are between 50 and 150 feet.

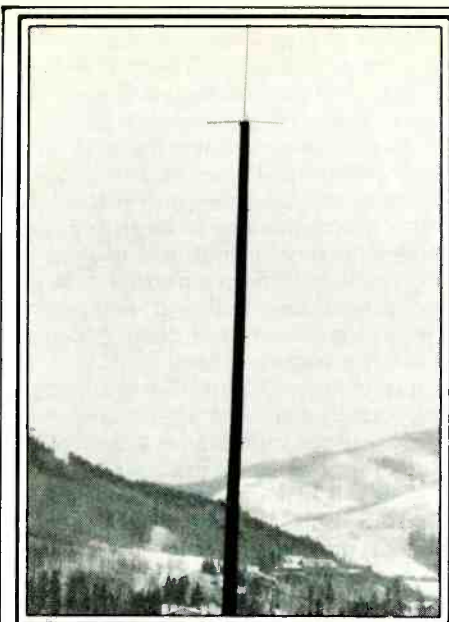
Those of you confined with an indoor antenna setup know full well that 50 feet of wire cannot be stretched out in a straight line, so it ends up running the perimeter of the room (or into another room) in the form of a box, rectangle, L, zig-zag, or what not.

Wire antennas come in two major types—those that are bare metal and those that are insulated. A bare wire antenna must never touch, rub against, or otherwise come in direct contact with anything other than its standoff insulators. If such is indoor and hung from, say, ceiling hooks, make sure to wrap tape around the hook or the portion of the bare metal antenna that comes in contact with the hook.

Outdoors, don't run your bare metal antenna through a tree. Wood is a poor conductor of electricity, but when it rains, antenna contact with a wet branch effectively grounds out your antenna.

Any object that rubs against a bare metal antenna will produce crackling static-like noises. Just rub a screwdriver along your bare metal antenna and you'll know what I

Channel Number	Frequency
01	8360.4
02	8361.2
03	8362.0
04	8362.8
05	8363.6
06	8364.4
07	8365.2
08	8366.0
09	8366.8
10	8367.6
11	8368.4
12	8369.2
13	8370.0
14	8370.8
15	8371.6
16	8372.4
17	8373.2
18	8374.0



Antenna at the Vail TIS station. The basic antenna is a 1/2-inch diameter copper pipe that emerges from the transmitter (at the base of the mast) and extends to 10 feet above the mast. In this photo there is what looks to be a pair of horizontal radials at the top of the mast. These have since been removed and were probably a capacitance "top hat" to aid in resonating the antenna. (Photo by P.M. Griffith)

mean. Indoors this is not really a problem, but outside, when the winds blows, momentary contact can occur; so, keep your outside antenna as far away as possible from any contact sources.

Soldering the antenna to a coax lead-in is a must for any outdoor setup. With anything less, wind induced movement can produce crackling static noises or even temporary loss of signal.

The purpose of an antenna is not unlike a fishing line. Both are used to snag a quarry, and anything that interferes with that quest lessens your chances.

The ideal antenna is one that is levitated in the air, and whose only direct contact is with the antenna terminal on your receiver. Gravity is a reality, so your antenna must have some type of physical support. The support interfaces, namely insulators, act to isolate your antenna towards the levitated ideal.

Insulated (jacketed) wire negates many of the contact problems, and as such is a first choice among many SWLers.

Long wire antennas are ideal for utility DXing. You may roam a frequency spread upwards of 30 MHz, and because of this wide bandspread and locations of stations, an antenna with omni-directional characteristics is preferred. A long wire, operating over a very wide frequency spread, has receptive lobe patterns that are basically omni in nature. Of course its actual length does play a part. Short lengths work higher HF frequencies better than lower HF frequencies, and longer lengths do the opposite. A

wire 50 to 75 feet is a good compromise for all around general frequency monitoring.

Whatever antenna you use, ground your rig; this means to a buried rod in the ground or to the cold water pipe in your house. If to the plumbing, it must be of the metal variety and not PVC plastic. Grounding your rig serves to bleed off any build-up of static electricity. Without grounding, and in low humidity conditions, interference in the form of crackling static will result, not to mention the possibility of you receiving an annoying shock.

Experiment with lengths and layout configurations. This is especially true if you are confined to an indoor set-up, and your antenna cannot be stretched out in a straight line. Whatever your layout, strive to give your antenna the longest straight line lengths as possible. The more free space area your antenna has, the better it captures a signal.

This can be easily demonstrated. Many rigs come factory packed with a 30-foot antenna, usually consisting of thin jacketed wire. Don't laugh at this flimsy antenna, for it does work. Now attach it to your rig, but leave it coiled or folded up as you found it. Tune to WWV and listen to the signal strength. Then stretch it out, and simply lay it on the floor. You can even trail it into another room. Now observe the signal from WWV. It is much improved by virtue of having an antenna with a larger free space signal capture capability. So physical length is not as critical as the free space area your antenna occupies.

Speaking of the factory packed antenna, when I purchased the portable Uniden CR-2021 receiver, it came with this joke of an antenna. I ran an experiment by simply laying it out on the floor and with it I heard McMurdo and South Pole.

Everyone has his or her own unique set of circumstances, so what works for one monitor may not work for another. So, experiment with lengths, wire types, and configurations until you come up with one or more that give you the best possible results.

Antenna Tuner/Preselector

Since we can roam from VLF to 30 MHz, obviously no single antenna will be ideal for working this broad frequency spread. Some receivers have a built-in circuit to aid this. Called an antenna tuner or preselector, it electrically tunes your antenna to match the frequency you are monitoring. A black box aid is also known by the same name. It performs just like your rig's unit (assuming it has one), resonating your antenna to allow it to have an electrical response length equal to the frequency. This means when your antenna is matched to the frequency, you will obtain the maximum signal potential. Without it, depending on your antenna length versus the frequency you are monitoring, the signal may have much lower QSA values along with an increase in interference from unwanted signals. Even though your receiver may have

this built-in feature, an outboard antenna tuner can offer improved results.

Pre-Amplifier

As the name implies, the pre-amp serves to boost the incoming signal before it is fed into your receiver. Your receiver circuitry does greatly amplify the signal itself and may even have a built-in pre-amp, but an additional stage pre-amplification can often work wonders. If the signal is very weak and virtually unreadable, a pre-amp can boost it to weak but readable levels. That could spell the difference between a good DX catch and the one that got away. The only drawback is if the signal is being QRMed or thunderstorm crackle is present, the pre-amp, by itself, also amplifies the interference.

Antenna tuners and pre-amplifiers are offered by various manufacturers. They range in price, but most give you what you pay for. They can be had as individual units, or as a combination. The combo is the best choice for its obvious all-in-one configuration.

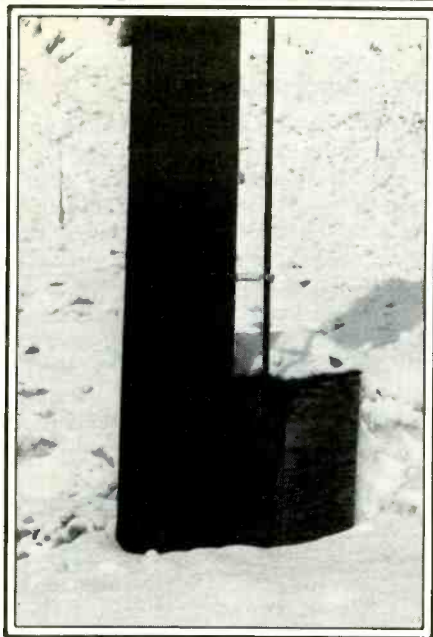
Audio Filters

Another black box is called an audio filter. Anyone whose rig has a slot, notch filter, or pass band tuner will understand how this works. The audio filter consists of several filters that are used to attenuate low and high audio tones, while leaving the mid range

Table 2

Voice Duplex - Ship/Shore

Channel Number	Shore	Ship
801	8718.9	8195.0
802	8722.0	8198.1
803	8725.1	8201.2
804	8728.2	8204.3
805	8731.3	8207.4
806	8734.4	8210.5
807	8737.5	8213.6
808	8740.6	8216.7
809	8743.7	8219.8
810	8746.8	8222.9
811	8749.9	8226.0
812	8753.0	8229.1
813	8756.1	8232.2
814	8759.2	8235.3
815	8762.3	8238.4
816	8765.4	8241.5
817	8768.5	8244.6
818	8771.6	8247.7
819	8774.7	8250.8
820	8777.8	8253.9
821	8780.9	8257.0
822	8784.0	8260.1
823	8787.1	8263.2
824	8790.2	8266.3
825	8793.3	8269.4
826	8796.4	8272.5
827	8799.5	8275.6
828	8802.6	8278.7
829	8805.7	8281.8
830	8808.8	8284.9
831	8811.9	8288.0



The Vail TIS transmitter is in this box at the base of the mast. (Photo by P.M. Griffith)

tones more or less intact. Often you can tune out an annoying hum mingling with the transmission, high pitch squeals, and heterodynes, while shaping up the signal's audio itself. Operating the audio filter does take practice, as it must be tuned to each new station. If the signal is A-OK to start with, then you can select the bypass position, which cuts out the filter and feeds the signal direct to the receiver.

Audio filters aren't for everyone, but when the occasion warrants, it can be a definite plus for your monitoring.

Active Antennas

Active antennas have been advertised as a potential wonder drug for DXing. For those of you who cannot hang up any antenna (indoor or out), the active antenna is the only practical alternative.

What is an active antenna? It is a short whip married to a combination antenna tuner and pre-amplifier. If you already have a decent antenna and pre-amp, an active antenna won't give you any better results. It is mainly for those whose circumstances won't allow any erection of a wire antenna. It does have a unique secondary application. If you go on vacation and drag your rig along, the active antenna provides a quick and effective setup for monitoring in the motel room.

Interference Sources

If you plan to erect an outside antenna, keep it as far away as possible from any above ground electrical transmission lines. Power lines radiate a measure of R-F energy, which the closer your antenna is to it, the more static you will hear. While we're at it, **never but never** run your antenna under or over a power line. If your antenna snaps or the power line cable breaks, the resulting

contact will light up your receiver like a Christmas tree and, if you're in contact with your receiver . . . need I say more?

Likewise, don't use a telephone or electrical transmission line pole as a terminal support for your outdoor antenna. Regardless of the possible voltage surge damage to your receiver, most towns and cities have ordinances forbidding you to attach anything to these poles.

Fluorescent lights cause interference, but they are iffy. Turn one on and you'll hear no perceptible rise in the background static. The next time you turn it on, there is a definite static rise.

Electrical motor driven devices are the granddaddy of interference. Power drills, hair dryers, shavers, blenders, air conditioners, washing machines and the like spell a teeth gritting time for you.

Television sets can produce interference in the form of enhanced background static. Fortunately, most RTTY or computer monitors have interior metal shielding and isolated transformers to eliminate this problem. A recent new interference source is cable TV, courtesy of its channel selector box.

Though most of the household TV layouts don't produce the hair pulling variety of interference that electrical motors do, they can drown out weak signals with their hissing type noise.

AC line filters help out in certain instances. Some of the available types incorporate a voltage surge circuit. Filters help reduce any ambient static in the AC line, but do nothing to combat electric motor-induced noise.

Even with today's solid state receivers, their delicate components will take voltage surges of 500 volts with no damage. (This can occur when a high drain appliance such as an air conditioner shuts off). The surge protector reduces possible component damage, and depending on the model, will do so for everything but a direct lightning strike.

If you are in close proximity to an electrical sub-station or megawatt electrical transmission lines, it is bad news for you. There is virtually no way to eliminate their induced interference.

If you have an outside antenna, and it is not practical to disconnect it every time there could be a possible thunderstorm, then by all means invest in a lightning arrestor circuit and an AC line burst surge protector. With both, your receiver can survive intact or with minimal damage, even with a direct antenna/power line strike. Damage, if any, will depend on the energy potential of the lightning bolt and just how close it comes to your antenna/power line.

For you survivalists, you'll need a dedicated EMP surge protector (millisecond reaction circuit breaker) to prevent solid state circuitry destruction from a high altitude nuclear explosion. Of course, if you live within an area that would be targeted for a nuclear warhead, then there will be no need for you to worry about acquiring an EMP surge protector.

(Woodpecker QRM can be handled with

a black box. I don't have one, but I hear that it does work quite well. It is not cheap, and probably the few times that you'll really need it won't offset the high purchase price.)

As you can see, getting the most out of your receiver first involves a little experimenting with the antenna. If you still feel there's more potential to be tapped, then preselector/pre-amplifier add ons are the next step. Audio filters are an option as well as the Woodpecker blanketer. Active antennas are a last resort item for your shack, or a dandy portable travel item.

Lightning arrestors, AC line voltage surge suppressors and filters are relatively inexpensive insurance measures and should be part of any permanent shack setup.

So don't think that because you can't afford a megabucks rig that you can't compete with the pros. Whatever you have, refine it to glean its peak potential. Antenna experimenting and electronic black boxes can soup up your rig to the point where you will be on equal footing with the pros when it comes down to those humbling levelers called luck, patience, and perseverance.

Maritime Mobile

Many of you are maritime mobile buffs, chasing either the coastal/high seas stations and/or the ships that work them. Those of you who are new to the marine scene may not be aware that the bulk of ship/shore communications is carried out in what is known as the *Duplex Mode*. This is a two frequency setup in which a ship transmits on "A" frequency and receives on "B" frequency. The shore station does the opposite, transmitting on "B" frequency, while receiving on "A" frequency. The paired or duplex mode is a time honored tradition dating back to the early days of wireless communications. During that era, the transmitter and receiver were two separate units and operating on the same frequency was not feasible. Today, transceivers allow for easy *Simplex* mode comms (same frequency used to transmit and receive), but only a handful of marine frequencies in each marine band are allocated for simplex.

Coast stations provide a variety of services. Their prime usage is to act as a switchboard for ship/shore communications. When a shore party wishes to contact a ship, the coast station announces this via traffic list broadcasts. These are transmitted during predetermined time slots.

Another service coast stations provide is to broadcast weather conditions and forecasts. Some even run news broadcasts. All are available to assist any ship that is experiencing an emergency situation.

Most, if not all, coast stations advertise their availability for reception via continually repeated marker transmissions. These are carried out in voice/CW/RTTY modes. Often the neophyte marine buff's first exposure to maritime mobile is via the voice/ CW marker transmissions.

Those coastal stations that handle a good deal of traffic have several frequencies in



Felix Stein of Massachusetts, and friend (Tuffy), shown with the Yaesu FRG-7 and 30-year-old Hallicrafters SX-71. Felix has been a dial-twister since WWII when he was in Europe and it was forbidden to monitor foreign stations. He says that, in those days, the BBC was the only way to find out what was going on in the world.

each marine band. One can be used for the marker and other marine related broadcasts, while the remainder are reserved for actual two-way communications. Smaller stations may have only one frequency per band and will transmit a marker until a ship calls in; then they will switch over to two-way comms. The heavy volume traffic stations are active 24 hours a day, while some of the small coastal stations have scheduled and selective operating time periods.

Ships make another use of coast stations. As a safety measure, ships can participate in the AMVER (Automated Mutual assistance Vessel Rescue system) network. A ship will inform a coast station of its departure and destination points, course, speed, estimated time of arrival, and other particulars. As the ship progresses, it will update this information. Coastal stations send this data to a centralized source (usually the Coast Guard), who loads everything into a computer. Hence, if a particular ship "disappears," search and rescue have some data to work with to conduct a search. In other instances, the AMVER data will allow the Coast Guard to ascertain which ship(s) is nearest to the stricken vessel, and radio them to proceed to her and render assistance . . . and proceed they will, for this is the code of the sea.

Although maritime mobile communications are in several frequency bands ranging from 4 to 25 MHz, the 8 MHz marine band is a very popular hunting ground for marine buffs. Tables 1, 2, and 3 will present the 8 MHz particulars for CW/voice and RTTY.

CW

Ships have a roster of frequencies for use in the Morse code mode. Each frequency within the band has a channel number, and every coast station is assigned to monitor

one or more of these channels. Only the CW ship channel frequencies are shown here, for to list all shore stations and their respective frequencies would require too much space. For this purpose, you should use the Gilfer CFL, Universal KUG, or ITU coast station reference books. Ship name/call letter data is likewise to be found in ITU publications, and most major maritime nations have publications covering their own flag vessels. Another ship ID source is the SW hobby club utility columns.

A pitfall in CW mode ship side monitoring is that they often do not make immediate contact with the coast station.

In the beginning, a ship could send this type of callup: KPH KPH KPH KPH DE WXYZ WXYZ WXYZ WXYZ QTC? QSS 618 K . . . (asking coast station KPH if they are holding traffic for WXYZ, and for KPH to respond on its duplex working frequency of 8618 kHz . . . only the last three digits of the frequency are given).

But if WXYZ doesn't raise KPH, the radio man will often resort to a simple attention getter: KPH KPH KPH KPH KPH KPH KPH KPH KPH KPH. Some novice marine buffs mistake this as an ID marker from KPH. Coast stations do not transmit on the CW ship side frequencies, so if you log coast station call letters by themselves, it is simply a ship R/O attempting to get the attention of a specific coast station.

When KPH at last hears and responds to the callup, if that callup was merely its own call letters, KPH could transmit: DE KPH QRZ? K (asking the ship to identify itself and send its traffic).

All ship/shore CW mode comms utilize the international Q code, plus the common CW shorthand abbreviations. This allows ship and shore to communicate in a common understandable format, even though

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each may not be able to understand each other's respective native language.

The Soviet Union has a vast maritime fleet, and the CW mode has always been a prime method of communications. They are well versed in it and both ship and Soviet shore stations can hammer out CW at very high wpm rates.

Although Soviet ships do use the 8 MHz CW ship channels, they prefer to conduct business in their own portion of the band, which stretches roughly from 8370 to 8405 kHz. Soviet R/Os use both Q codes and CW shorthand, but often other portions of their transmissions are in Russian Cyrillic. Some of the dot/dash Cyrillic combinations do not equate, letter for letter, with international Morse code, and as such, some of the traffic will appear to be utter gibberish.

Ship/Shore Voice Comms

All high seas type voice communications are carried out in the upper sideband mode. As with CW, voice duplex likewise has assigned channel numbers, but each ship frequency is paired to a specific shore channel frequency. The exact shore station using a specific duplex voice channel can be found in the aforementioned publications.

Channel #821 is a worldwide calling frequency. Often the duplex comms on this channel are just to arrange for a working duplex channel between ship and shore.

Eight MHz has two simplex voice frequen-

cies—8291.1 and 8294.2 kHz. By the way, both the duplex and simplex frequencies shown here are the assigned carrier frequency. Many of the current new crop of digital readout receivers show the carrier frequency even when in a sideband mode. If your's does not, you will have to tune your rig to the actual USB frequency, which is 1.4 kHz above the assigned carrier.

The two simplex frequencies can be used either as ship/shore or ship/ship.

Radioteletype

RTTY has the same duplex type setup as voice. Unlike CW and voice, the duplex pairs are referred to by "Series Number."

For RTTY monitoring, you must have a signal translator, called a demodulator, along with either a video monitor or hard copy printer to read out the comms. Although some maritime RTTY comms are conventional RTTY, most utilize a correction/error reduction mode called ARQ and FEC. These can only be demodulated with RTTY signal translators that have ARQ/FEC capabilities. A good deal of RTTY traffic is now telex (telegram type messages).

Duplex Monitoring

Those of you who have receivers with memory capability will find duplex mode monitoring a matter of entering both frequencies, and switching back and forth in

RTTY Duplex - Ship/Shore

Series Number	Shore	Ship
01	8705.0	8344.0
02	8705.5	8344.5
03	8706.0	8345.0
04	8706.5	8345.5
05	8707.0	8346.0
06	8707.5	8346.5
07	8708.0	8347.0
08	8708.5	8347.5
09	8709.0	8348.0
10	8709.5	8348.5
11	8710.0	8349.0
12	8710.5	8349.5
13	8711.0	8350.0
14	8711.5	8350.5
15	8712.0	8351.0
16	8712.5	8351.5
17	8713.0	8352.0
18	8713.5	8352.5
19	8714.0	8353.0
20	8714.5	8353.5
21	8715.0	8354.0
22	8715.5	8354.5
23	8716.0	8355.0
24	8716.5	8355.5
25	8717.0	8356.0
26	8717.5	8356.5
27	8718.0	8357.0

Table 3

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step with the ship/shore communication. Those who do not have receivers with memory capability will have to resort to using two receivers, one on the ship channel, the other on the shore channel. This is, of course, if you are interested in the other side of the communication.

Like any other area of utility monitoring, maritime mobile may or may not be your cup of tea. It is just as boring or exciting as commercial aeronautical or point-to-point radiotelephone. If you're a ship buff or a QSL hound, then the marine bands will be to your liking.

If you are interested in specifics of the other maritime mobile bands, such data can be found in the Gilfer CFL, Universal KUG, Speedx SRGU, and ITU publications.

The marine bands are not without their esoteric type communications. Each contains naval, tactical, and clandestine type stations. So along with a heaping bowl of oatmeal, there are enticing lumps of sugar.

Reader Mail

If you have questions regarding the utilities and cannot find an answer elsewhere, I will do my best to answer it. But please include an SASE or return postage. If your question has what I believe to be widespread interest, I will use it in the column as part of topic discussions (but I will endeavor to answer you directly).

I do not handle loggings, so if you are sending them plus a question or data, please use separate envelopes. Send questions and data to me care of POP'COMM, and

send the loggings to Communications Confidential and indicate on the envelope, Jim Taggart, "Intercepts Editor."

Intercepts

Send all utility station (CW/SSB/AM) intercepts to: Jim Taggart, Intercepts Editor, Popular Communications, 76 North Broadway, Hicksville, NY 11801. Intercepts submitted should be in ascending frequency order and contain as much information as possible, including call sign, location, mode, time (in GMT), type of traffic monitored. Also send in photos of your station, of utility stations, as well as photocopies of any interesting "ute" station QSL's. Now for this month's intercepts:

362: LYL, Lima OH CW beacon at 0418. (Pat McDonough, PA)
416: OGY, beacon—but where? Heard at 0100. (Mark Landers, NY)
2672: Halifax, Nova Scotia, in contact with oil rigs "709" and "710" in SSB at 2215. (Alice Brannigan, MA)
2816: EBA, Spain, with RTTY (850/75R) tape at 0422. (E. R. Howard, NJ)
3120: Anti-drug smuggler operations in the Caribbean, USB at 0730. (Tom Lewandowski, NY)
4343: UNM, Klaipeda USSR, running CW "V" marker at 0316. (Bob Margolis, IL)
4400.8: USCG, Miami, FL at 0529 in USB working Cutter Meqsuite. (Patrick Griffith, CO)
4421.3: Hound Dog 1 in contact with Hound Dog 2, USB at 1905. (Don Biancamano)
4599.5: Magpie 424 with network check-ins, USB at 0235. (Griffith, CO)
4607: 78KLP calling 72HVY in CW at 0205. (Margolis, IL)
4750: Platoon Alpha, Platoon Bravo, and Platoon Charlie in contact with one another in USB at 0125. Rolling code speech inversion also used. (Margolis, IL)
4765: Spynner Alpha calling Nucleus Alpha for a radio check in AM at 0405. These transmissions atop Radio Mayak transmission over facilities of Radio Havana, Cuba. (Margolis, IL)
5565: J3R, unknown location, with "V" marker in CW repeating "QSK 5/11" at 0156. (Margolis, IL)
5597.5: HYAED1, unknown location, RTTY (425/66R) transmission of RY tape at 0133. (Margolis, IL)
5658: Khartoum Air Traffic Control, USB in contact with various aircraft at 0107. (Dennis McEwan, NY)
5692: GG/YL station running unusual 3-digit traffic at 0600, USB. (McEwan, NY)
5960: Delta 9 Echo, Whiskey 9 Mike, November 9 Foxtrot, Papa 8 Juliet at 2210 all contacting one another. Military stuff. (Lee Amoroso, CO)
6100: YVTO, Caracas, Venezuela, with time signals at 1629. (Gilbert Patton, FL)
6522: Boston Rescue in contact with Coast Guard Cutter Alert, USB at 0000 with search for missing crew member. (Randy Rathbun, MO)
6761: Crisp 76 in contact with Tapestry with message to Pekoe Control, USB at 1855. (John Mayfield, CA)
6812: SAM-27000 in USB at 1525. Noted with pilot change and also ID change to Air Force 1. Flying from Andrews AFB to Santa Barbara, CA. (Margolis, IL)
7430: Alpha Foxtrot and other stations regarding air ops, USB at 0450. (Lewandowski, NY)
7439: SS/YL 5-digit station at 0510. (Mike Martin, IA)
8000: JLY, Japan, time signals at 2000. (Patton, FL)
8041: Mike 8 Oscar calling any station for a radio check, USB at 1954. (Ted Moran, IL)
8539: VPS, Hong Kong, with CW marine bulletin at 0850. (Greg Harris, WB9MII/DU2, USN Philippines)
8648: Lots of strange sound effects ranging from static to footsteps and "booms" as well as "beeps." All in an SSB transmission noted at 0345. (Jeanette Johnson, NY)
8828: Honolulu Volmet in USB with aviation weather at 0200 and 0400. (Leonard Szalony, NC6W, CA)
8912: Slingshot, Omaha 52 (a Cessna Citation out of Homestead AFB) and Flint 351, all in USB around 1800 with anti-drug smuggler communications. This frequency is called Yankee Charlie. Said they were all switching to channel Xray Bravo. (Ken Newell, FL)
8993: Raider 13 to Navpost, with request for Customs. In USB at 0123. (Amoroso, CO)

9028: RAF plane 2 Hotel Victor Romeo giving weather data in USB at 0415. (Margolis, IL)
9083: X2P, unknown station, with RTTY (850/100N) foxes at 2255. This was followed by Spanish language military traffic marked "confidential" addressed to R4U, V5F, and M1L. (Margolis, IL)
9224: SS/YL 4-digit station at 0440. (Martin, IA)
9136: TJK, Douala, Cameroon, in RTTY (425/50N) with RY tape at 2137. (Tom Kneitel, NY)
9998.6: LPAZ, unknown station in RTTY (850/50N) with RY tape at 2115. (Kneitel, NY)
10045: Encrypted Spanish message sent to "Willy" via RTTY (425/100N) at 1620. (Margolis, IL)
10075: RAF plane Ascot 5739 contacting Houston LDOC in USB at 1500 while flying over Arkansas. (Margolis, IL)
10790: RKA71, Moscow USSR, Spanish news from TASS via RTTY (425/50N) at 2045. (Brannigan, MA)
11104: Cape Radio, Lovelorn, Silver 19, and Agar 25; NASA stations in USB at 0012. (Lewandowski, NY)
11176: Tambo 04 working Albrook AFB (Canal Zone) advising that aircraft is going to Trujillo the following day. Albrook advises against it, saying "Y-3" mission will be on guard there from 1730 to 1850. Advises aircraft to contact Palmerola on 319.4 MHz to arrange for different arrival. Also mentioned Trujillo Command Post on 340.8 MHz. (McEwan, NY)
11243: Teal 23 asking Talisman for weather report in USB at 2030. (Mayfield, CA)
11246: Gull 19 working MacDill AFB with patch to Miami Monitor with weather information, USB at 1649. (McEwan, NY)
11268: Whiskey O Victor calling Tango O Lima in USB at 2305. (Moran, IL)
11360: EE/YL 4-digit station at 1500. (Jeff Nicklaw, FPO FL)
11531: SS/YL 4-digit station at 2321. (Martin, IA)
11632: 5-letter group CW messages sent at 1808. Each message was prefaced with "9A9AQOWQOW" and GMT time of the message. (Margolis, IL)
11635.5: KRH51, U.S. Embassy, London, England sending RTTY (850/75N) foxes at 2102. (Kneitel, NY)
12240: SS/YL 5-digit station at 0600. (Mary Knowlson, PA)
12326: 5KM, "Cinta de Prueba," with RY/SG tape in RTTY (425/75R) at 1324. (Brannigan, MA)
12720: RMP, Rostov Radio, USSR in CW at 1800 with maritime notices. (Margolis, IL)
12797: UDK2, Murmansk Radio, USSR sending a CW "kriptogramma" at 2127. (Margolis, IL)
12905.5: UMV, Murmansk Radio, USSR with maritime notices in CW at 1919. (Margolis, IL)
12942: UFD9, Archangelsk Radio, USSR with CW maritime notices at 1932. (Margolis, IL)
13009: UQA4, Kiev Radio, Ukrainian SSR, RTTY (170/50N) weather broadcast at 1335. (Kneitel, NY)
13204: Lovejoy, Green Meanie 1, Worship, Bangor and other stations with tactical ID's in USB at 1910. (Lewandowski, NY)
14450: SS/YL 5-digit in AM mode at 1333. (Margolis, IL)
14455: NA4XAR working NA4XAT in USB at 1436. Both were NASA barges located in the Panama Canal. (Margolis, IL)
14460: GYU, Gibraltar Naval Radio, sending RTTY (850/75N) foxes at 1555. (Brannigan, MA)
14507.9: D4B, Sal Aeradio, Cape Verde Islands, in RTTY (850/50N) with RY tape at 1600. (Brannigan, MA)
14556: RIW, Khiva Naval Radio, USSR, coded alphanumeric traffic in CW at 1419. (Margolis, IL)
14619: Y7A53/Y7A59, Nauen GDR in RTTY (425/50N) with RY tape at 1953. (Brannigan, MA)
14686: Atlas, Panther, Flint 453, and others involved in tracking drug smugglers in Caribbean area. Mentioned Rampart and Almighty. In USB at 1442. (McEwan, NY) This is "Papa" channel. (Editor)
14905: Forward working Convention in USB at 0315. (Dave Beck, K4PBN, AL)
14947: GG/YL with numbers, no time given. (Ed Defreitas, W1WEA, CT)
15086: GG/YL similar to 5692 kHz at 1607. (McEwan, NY)
17259: Sidney High Seas Radio, Australia, with ship traffic in USB at 2215. (Jeff C. Hall, WA)
17975: Landscape with Skyking message at 2231 in USB. Military traffic. (Hall, WA)
18047: KVV21, Yugoslav Consulate General, Chicago IL sending telegrams in Serbo-Croat via RTTY (425/100N) at 1611. Messages were marked as being from "G.


Konzulatu SFRJ Chikago." Nice catch! (Margolis, IL)
18111: KM2XDW, KM2XDU, KM2XJM and KM2XQZ working one another in USB at 2000. Each was located in a different part of the U.S. (Margolis, IL)
18351: KWS78, U.S. Embassy, Athens, Greece with CW marker at 1550. (Margolis, IL)
18666: Atlas, Opcon, Shark 399 (USCGC Sagebrush WLB-399, actual call sign is NODR), and others involved in tracking smugglers. USB transmissions but messages were in crypto at 1700 to 1800. Frequency was referred to as "Hotel." (Newell, FL) Note that tactical ID of Shark 399 was made up from the word Shark plus the USCG serial number for the cutter. (Editor)
18707.9: PCW1, The Hague, Netherlands (Dutch Embassy) in TOR/ARQ mode at 1625 with Dutch language telegrams. (Brannigan, MA)
19849.5: WFI77/WFK50/WFL35/WFK39/WFN23, Associated Press NY with CW marker at 2245. (Kneitel, NY)
27530: 200 calling BH54 at 0400. Sounded like a police stake-out. (Beck, AL)

Commencing immediately, please send all intercepts for RTTY, TOR/ARQ and TOR/FEC to the person who will be taking over the operation of the POP'COMM RTTY column starting in the next issue. That will be our own Bob Margolis. Address (only) RTTY, TOR/ARQ and TOR/FEC loggings to him as follows: Bob Margolis, RTTY Editor, Popular Communications magazine, 76 North Broadway, Hicksville, NY 11801. All of the other "ute" intercepts (SSB/CW/AM) come to Communications Confidential's Intercepts Editor, as usual.


A great batch of intercepts this month, gang! Keep sending them!

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CIRCLE 37 ON READER SERVICE CARD

SATELLITE VIEW

BY FRANK BAYLIN

INSIDE THE WORLD OF TVRO EARTH STATIONS

This month we will present a listing of the mailing addresses of the various satellite services. This is in response to the many requests we have received from readers who complain that many (if not most) of these broadcasters are not especially good about letting their audiences know where to write to them with questions and comments about their programming, signal quality, schedules, future plans, etc. You asked for it, so here's the information.

Satellite Services Contact Listing

- AP News Cable, P.O. Box 300, Princeton, NJ 08540
American Christian TV System, 6350 W. Freeway, Ft. Worth, TX 76150
American Movie Classics, Rainbow Programming, 100 Crossways Park W., Woodbury, NY 11797
Arts & Entertainment Network, Hearst/ABC-RCTV, 555 Fifth Ave., New York, NY 10017
BizNet, U.S Chamber of Commerce, 1615 H St., Washington, DC 20062
Black Entertainment Television, 1050 31st St. N.W., Washington, DC 20007
Bravo, Rainbow Programming, 100 Crossways Park W., Woodbury, NY 11797
CBN Cable Network, Virginia Beach, VA 23463
CNN Headline News, 1050 Techwood Dr. N.W., Atlanta, GA 30318
Cable News Network, 1050 Techwood Dr. N.W., Atlanta, GA 30318
Cinemax, Time-Life Bldg., Rockefeller Plaza, New York, NY 10020
Commodity Communications Corp., 420 Eisenhower La. N., Lombard, IL 60148
Country Coast-To-Coast, Satellite Music Network, 12655 N. Centr. Expwy., Dallas, TX 75243
Country Music TV, 30 E. 40 St. (#507), New York, NY 10016
C-Span, 400 N. Capitol St., Washington, DC 20001
The Disney Channel, 4111 West Alameda, Burbank, CA 91505
Dow Jones Cable News, SSS, 8252 S. Harvard, Tulsa, OK 74137
ESPN, 355 Lexington Ave., New York, NY 10017
Electronic Program Guide, United Video, 3801 S. Sheridan Rd., Tulsa, OK 74145
Eternal Word TV Network, 5817 Old Leeds Rd., Birmingham, AL 35210
Family Radio Network, 618 S. Sheridan Rd., Shenandoah, IA 51601
Financial News Network, 2525 Ocean Park, Santa Monica, CA 90405
GalaVision, 460 West 42 St., New York, NY 10036
Genesis Cable Storytime, 1036-167 Lombard Ave., Winnipeg, Man. Canada R3B 0V3
The Greek Network, Eastern Microwave, P.O. Box 4872, Syracuse, NY 13221
Home Box Office (HBO), Time-Life Bldg., Rockefeller Plaza, New York, NY 10020
Home Sports Entertainment, 6465 Jim Miller Rd., Dallas, TX 75228
Home Team Sports, 1111 18th St. N.W. (Suite 200), Washington, DC 20036
Home Theatre Network, 41 Harbor Plaza Dr., Stamford, CT 06904
In Touch, SSS, 8252 S. Harvard, Tulsa, OK 74137
The Italian Network, Eastern Microwave, P.O. Box 4872, Syracuse, NY 13221
KTVT, United Video, 3801 Sheridan Rd., Tulsa, OK 74145
Keyfax National Teletext Magazine, SSS, 3530 Bomar Road, Douglasville, GA 30135
The Learning Channel, 1200 New Hampshire Dr., Suite 240, Washington, DC 20036
Lifetime, Hearst/ABC-Viacom, 1950 Spectrum Cir. #B310, Marietta, GA 30067
Love Sounds, The Music Group, 1331 S. Denver, Tulsa, OK 74119
MSN The Information Channel, 5000 Park St. N., St. Petersburg, FL 33709
MTV, Warner Amex, 75 Rockefeller Plaza, New York, NY 10019
Madison Square Garden, 4 Pennsylvania Plaza, New York, NY 10001
The Meadows Racing Network, 890 Constitution Blvd., New Kensington, PA 15068
Moody Broadcasting Network, 820 N. LaSalle, Chicago, IL 60610
The Movie Channel, 1633 Broadway, New York, NY 10019
The Nashville Network, Group W. Satellite, 41 Harbor Plaza Dr., Stamford, CT 06904
National Christian Network, 1150 W. King St., Cocoa, FL 32922
National Jewish TV, 2621 Palisade Ave., Riverdale, NY 10463
Nationality Broadcasting Network, SSS, 8252 S. Harvard, Tulsa, OK 74137
New England Sports Network, 70 Brookline Ave., Boston, MA 02215
Nikelodeon, Warner Amex, 75 Rockefeller Plaza, New York, NY 10019
Oak Communications, 16935 W. Bernardo, Rancho Bernardo, CA 92127
Odyssey, 1150 W. King St., Cocoa, FL 32922
PTL Satellite, 7224 Park Rd., Charlotte, NC 28279
Pacific Cable Network, 2921 W. Alameda, Los Angeles, CA 91505
The Playboy Channel, Rainbow Programming, 100 Crossways Pk. W., Woodbury, NY 11797
Prime of Life Network, 914 18th Ave. S., Nashville, TN 37212
ProAm Sports, 500 Stephenson Hwy. (#204), Troy, MI 48053
Professional Education Network, 311 W. Superior St. #301, Chicago, IL 60610
Reuter Monitor Services, 2 Wall St., New York, NY 10005
SSS Cable Text, 1825 K St. N.W., Washington, DC 20006
Santa Fe Communications, P.O. Box 3250, Ontario, CA 91761
Satellite Jazz Network, KKG0, 10880 Wilshire Blvd. (#2007), Los Angeles, CA 90024
Satellite Program Network, P.O. Box 702160, Tulsa, OK 74170
Satellite Radio Network, 1 S. Executive Park (#403), Charlotte, NC 28287
Seeburg/Lifestyle Music, 5706 New Chapel Hill Rd., Raleigh, NC 27607
SelecTV, 4755 Alla Rd., Marina del Rey, CA 90252
Sheridan Broadcasting Network, 1811 Blvd. of the Allies, Pittsburgh, PA 15219
Showtime, 1633 Broadway, New York, NY 10019
The Silent Network, P.O. Box 1902, Beverly Hills, CA 90213
Spanish International Network, 460 West 42 St., New York, NY 10036
Sports Time Cable Network, 900 Walnut St., St. Louis, MO 63102
Sportsview, 735 N. Water St. #526, Milwaukee, WI 53202

SportsVision, Rainbow Programming, 1011 E. Toughy Ave. (#105), Des Plaines, IL 60018
 Stardust, Satellite Music Network, 12655 N. Centr. Expwy., Dallas, TX 75243
 StarShip(s), 8252 S. Harvard, Tulsa, OK 74137
 StarStation, Satellite Music Network, 12655 N. Centr. Expwy., Dallas, TX 75243
 Superstation WTBS, 1050 Techwood Dr. N.W., Atlanta, GA 30318
 Trinity Broadcasting Network, P.O. Box A, Santa Ana, CA 92711
 UPI Data Cable, P.O. Box 27960, Denver, CO 80227
 USA Cable Network, 1230 Avenue of the Americas, New York, NY 10020
 The University Network, 1501 S. Glendale Ave., Glendale, CA 91205
 Video Hits One, Warner Amex, 75 Rockefeller Plaza, New York, NY 10019
 WFMT, United Video, 3801 S. Sheridan Rd., Tulsa, OK 74145
 WGN, United Video Inc., 3801 S. Sheridan Rd., Tulsa, OK 74145
 WOR-TV, Eastern Microwave, P.O. Box 4872, Syracuse, NY 13221
 WPIX, United Video, 3801 Sheridan Rd., Tulsa, OK 74145
 The Weather Channel, 2840 Mt. Wilkinson Parkway, Atlanta, GA 30339 **PC**

The Longwave Club of America, 45 Wildflower Rd., Levittown, PA 19057. Here's a club for those rugged enthusiasts interested in knowing what's happening below 540 kHz! Their monthly publication, *The Lowdown*, not only covers listings of stations operating between 10 and 540 kHz, but also has interesting coverage of the 1750 Meter (no license) low power communications band as conducted by Ken Cornell (W2IMB—well known "Lowfer" authority. Membership includes mailing of the publication by First Class Mail and costs \$10 per year (anywhere in the world)

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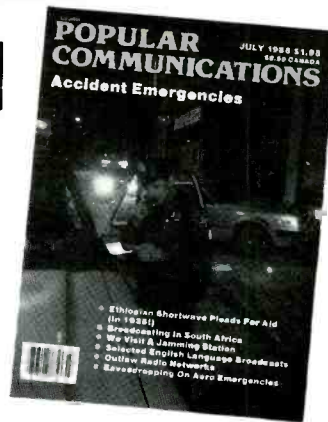
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RADAR REFLECTIONS

RADAR DETECTORS AND THEIR USE

BY JANICE LEE

City's Goof May Mean Traffic "Criminals" Speed Past Fines

If a Downey, California Municipal Court judge honors Norwalk Mayor Cecil Green's request, a total of 506 people ticketed for speeding may soon be off the hook because of the city's failure to complete a state-required traffic survey. Nearly three-quarters of those people may be reimbursed for fines, court costs, and even traffic school fees they have paid as a result of getting the speeding citations.

Green submitted his written request to the court and a decision is expected in the very near future, according to Deputy District Attorney Peter Bozanich.

Cities are required by California state law to conduct traffic and engineering surveys on non-residential streets every five years in an effort to avoid the creation of speed traps. The surveys determine the top speed of most drivers on the street and then the speed limit is set to reflect that speed, with safety factors also weighed in.

If the traffic and engineering surveys have not been completed on a particular non-residential street within the previous five years, Bozanich said, state law prohibits law enforcement officers from using radar on that street as the basis for issuing a speeding citation. Surveys of all of Norwalk's non-residential streets expired September 7, 1984, but apparently no one realized it until December, when a resident noticed the oversight. By then, 505 radar tickets had been issued for travel on non-residential streets, said Carmen Gendusa, traffic engineer for Norwalk.

Gendusa said a week's worth of research and computer work revealed that only 140 of those citations were still pending by the time the City's delinquency was pointed out. The basic evidence in most of those cases was radar, he said, so "we ethically were obligated not to proceed." However, 365 people weren't so lucky because they elected to pay the fine or attend traffic school, Gendusa said. It is legally pragmatic and fair to dismiss those tickets too, Bozanich said, and he will present that motion to the court.

Along with that motion, Green also requested the court to reimburse all fines and court fees paid by those people, including a \$10 court fee required with a request to attend traffic school. The issue of reimbursement, however, is strictly between the city and the presiding judge, Bozanich said.

Willacoochee Loses Right To Use Radar

The Georgia State Patrol has revoked the city of Willacoochee's right to use radar in speed limit enforcement, according to a patrol spokesman.

State Patrol Lt. Ron Angel, who conducted an investigation of the two-member

police force's use of radar, said the revocation was ordered because an unusual number of tickets were issued at the same spot on U.S. 82 and the radar certification of a Willacoochee policeman was questionable.

Night Radar Called "Unsafe," Police Chief Discourages Use

Police Chief Floyd Russell of Marlboro, Massachusetts, told the city council's public safety committee recently that using radar speed traps at night would be unsafe for both his officers and the public.

Due to a clerical error, the issue was not on the committee's posted agenda, so a "workshop" discussion was held, but no vote was taken.

Russell said in the last month he has had three parked cruisers hit at night. The cruisers were responding to calls and had their lights on at the time they were hit.

An order requesting 24-hour radar patrols was filed by Councilor Varoojan Aykanian, who had to leave City Hall before discussion of the issue took place.

Also speaking in opposition to night radar traps was police Sgt. Joseph Barry. Barry said police want to maintain high visibility in the city at night, and therefore encourage officers in cruisers to remain mobile, looking out for any type of violation of the law, including traffic violations. Terming the policy "proactive" law enforcement, Barry said it prevents incidents before they happen.

Councilor J. Michael McGorty asked if speeding is a particular problem at night. Barry replied that speeding at night is less of a problem than drivers operating under the influence of alcohol.

According to Barry, the use of radar in selected trouble spots during daylight hours had reduced speeding in those areas.

New Radar Device Tracks Police Cars Via "Picture Maps"

A vehicle-tracking system that would give police dispatchers a constant picture of patrol car locations has been unveiled by II Morrow Inc., a manufacturer of navigational equipment. Company president Ray Morrow said that when the firm was founded two years ago, it introduced a navigational system for boats. A few months later it came out with one for private planes. Now the basic Loran C system used for the planes and boats has been adapted for vehicle tracking.

"We don't know how big the market is," Morrow said. "There has been lots of interest across the country."

Three Salem, Oregon police cars were fitted with the equipment, and the monitor

was tested at headquarters for several weeks. Initial reaction by some officers was "Big Daddy is watching," Morrow said. Then they realized it's reassuring to know the dispatcher can see the car's location on a map when a crisis occurs, he said. The control operator can easily zero in on a selected portion of the map. A map might normally cover most of a city with only the main arterials shown, but a specific section can be enlarged to show even the alleys.

Theoretically, up to 256 vehicles could be tracked, Morrow said, but a system would normally handle 25-50 cars.

The \$75,000 system could handle a city the size of Spokane, Washington. In larger cities, each precinct would need a system.

The system is built around a Loran C receiver mounted in each vehicle. The receiver is tied into the radio transceiver. The control console receives the signal and feeds it into a color TV monitor, with a screen twice as fine as a regular television.

Each vehicle shows on the screen map as a rectangle with a number inside. In addition, the cars can be listed on a chart with distances east or west, north or south of 20 landmarks.

Maps can be made for a neighborhood or city, a county or an entire state, depending on the need.

For dispatchers, the system would eliminate communications from drivers calling in to report their locations. Signals can be scrambled so outsiders couldn't eavesdrop, Morrow said.

If the vehicle-tracking system proves popular, Morrow said, he expects competitors to jump in. The Salem firm's advantage will be lead time and previous manufacturing experience.

A Little Embarrassing!

U.S. Attorney for Maine Richard Cohen spent several uncomfortable minutes telling Portland police that someone smashed his car window and stole his brand new radar detector. Cohen tried to explain what he was doing with the device in the first place. "Somebody gave it to me a couple of weeks ago. I'm a real gadget person!"

Crackdown Tally In Connecticut: 31,000 Tickets

State police say they have issued more than 31,000 tickets on Connecticut's interstate highways since Gov. William O'Neill ordered a crackdown on speeding and other traffic violations.

Lt. Kenneth H. Kirschner, a state police spokesman, said that 31,637 tickets—27,090 of them for speeding—were issued between October 17, 1984 and January 3, 1985 by a special state police task force us-

ing 40 patrol cars, six unmarked Ford Mustangs, and two airplanes.

The crackdown is producing about 1,000 citations a month more than those issued by routine state police patrols, Kirschner said.

About 10 percent of the violations involved truck drivers, Kirschner said, and most of those were issued to out-of-state drivers. "Connecticut residents seem to be aware of the crackdown," he said. "It's the out-of-staters who are not yet aware of the strict enforcement program going on here."

States Inject Equality Into Traffic Fine Cases

As of January, Ohio and New Mexico will join 30 other states and the District of Columbia in a plan designed to help everyone receiving a speeding ticket out-of-state. Called the Non-Resident Violator Compact, the plan is an agreement to make sure the out-of-state driver cited for a minor traffic offense gets the same treatment as a resident driver.

On the one hand, that means an out-of-state driver who once might have torn up the ticket and suffered no consequences is out of luck, said the American Association of Motor Vehicle Administrators, which seeks to make traffic laws uniform around the country. Under the compact, an offender finds his own state will automatically suspend his license in 30 days if he does not pay the state where he committed the offense.

On the other hand, an out-of-state driver no longer is treated like a criminal who must be watched every minute until he pays his fine. He has the right to post bail and leave the area or send in his payment in the same way a resident driver would.

(A serious violation, such as manslaughter with a vehicle or drunken driving, would not be treated this way, however. Also, the compact doesn't apply to parking tickets.)

Nobody keeps statistics on how well the program works and on how many drivers comply or have their licenses suspended. Glenn Crawford, director of driver and vehicle services for the AAMVA, said he is convinced it is successful but has no figures. One estimate is that states are collecting more than \$1 million in fines and court costs that previously went unpaid.

Speeders Ticketed In Colorado School Zones May Find Themselves Back In Class

It took municipal court judge Dave Palmer just 30 minutes to implement the idea of a Grand Junction principal who suggested that motorists cited for speeding in a school zone should be required to work at that school—stacking books in the library, helping students with their reading, and other tasks.

The idea originated with Tope Elementary Principal Russell Conner, who was looking out the school window one day

watching a policeman operate a radar gun.

"The idea just came to me. I thought the police needed a little reinforcement, so I wrote a letter to Police Chief Gary Leonard. I said I wish the court system could be a little more creative in their fines," Conner said.

Those who speed in school zones simply pay the fines and never seem to appreciate the seriousness of their offenses he said. "They just come and go. I feel if we make the punishment fit the crime it has a more lasting effect," Conner said.

Palmer said he considers the new penalty experimental at this point, and continuing it depends on the participation of local schools. He said he would leave it to the

schools to determine what type of work would be done.

Leonard said the police department intends to discuss the plan with our school principals to get their reactions.

For his part, Conner already has plenty of jobs in mind.

"It would be good for them to help in the library. They could help children find books or return them to the shelves; listen to children react; or work with them on their math," he said.

Or, Connor said, the speeders could assist children at crosswalks. **PC**

Janice Lee is the Editor of Monday, A.M., the newsletter of Electrolert, Inc.



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BROADCAST TOPIK

BY MARK J. MANUCY, W3GMG

DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

By the time you read this, I'll be putting the final touches on my DXing plans for a trip to Florida the first of July. Not only will it be necessary to check on old friends, but I'll also have more new ones to find this year. There continues to be more new stations coming to the airwaves all the time.

When I take a trip, even if it's over a route I've traveled many times, I always check for new stations. There is the possibility that one was missed in updating a list. If you are driving, just make minimum written notes so as not to endanger the passengers. At the top of a small note pad, write the current location (5 mi S of Mytown, MD). Then, if you're using an ETR, write the frequencies in a vertical list. If you hear a call mentioned or other type of ID, write it beside the frequency. Maybe you can ask someone else in the car to do the writing for you. Remember the search buttons on the ETR's are not the way to DX. They will not stop on every station; the weaker ones will never be heard. With the MTR radio, the best thing to do is start at one end of the dial and work your way to the other end.

The approach I take with any radio is to know what stations I want to hear and search them out first (in order from top to bottom or vice-versa). I make a list in order of frequency and check them off as I pick them up.

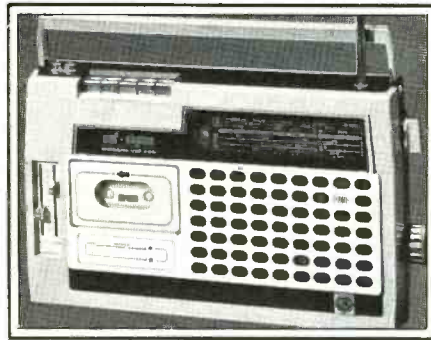
If you want to make programming notes while traveling, please use these hints. If you are driving, either stop the car to have someone else drive. Have someone else take the notes or dictate to them or to a tape recorder. See the July, 1984 column for other details. Don't forget to check for TISs. These procedures apply to AM and FM.

The new terms mentioned in the preceding paragraph should be added to your vocabulary. ETR stands for "Electronically Tuned Radio" (digital) and MTR is the "Manually Tuned Radio."

For a rough guide, plan to hear 1 kilowatt AMers about 20 miles either side of the highway you travel, 5 kW up to about 50 miles, and 50 kW's over 50 miles. For FM, the 3 kW stations are generally good for about 20 miles, 20 kW stations up to 40-50 miles, and 100 kilowatts over 50 miles. However, with the FM stations, their tower height and the terrain affect reception tremendously. The quality of the radio will also determine the distance you will be able to hear a station. If you use an auto radio, any noise from the engine or nearby power lines will also reduce the hearing distance (DX).

Mail Call

The P.O. box overflowed this month—lots of helpful comments for everybody.



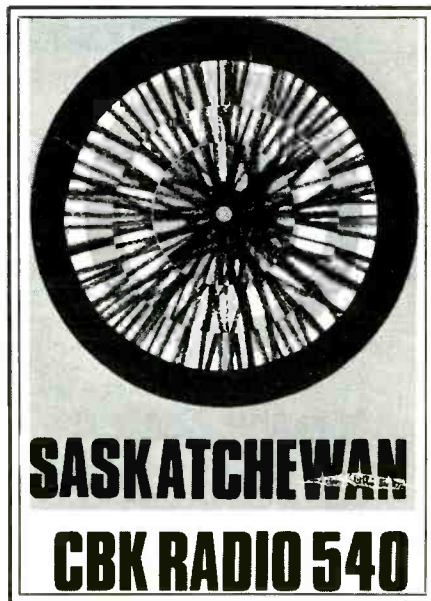
Russian made AM/FM portable with cassette. This rig tunes 150 kHz to 408 kHz. Covers broadcast band in two ranges—the 49, 41, 30, 25, and 19 meter bands and the FM broadcast band. (Courtesy Reijo Siivonen in Rauma, Finland)

First, I mentioned last month about nighttime AM DXing and the antenna patterns of AM stations. Pete Kemp tells me the National Radio Club, P.O. Box 164, Mannsville, NY 13661, publishes a night pattern book of AM stations. They help with broadcast station addresses also, Pete tells me.

Stan Morss mentioned similar information in his letter. He also has a tape of the "Blue Eagle" recently mentioned in *POP'COMM*. How many of you remember the Carl MacIntire stations?

A brochure from Jim Sokol called the 1984 *Rock Radioguide* is published by The Radio Guide People at P.O. Box 219, Ypsilanti, MI 48197. They list stations by interstate highways, showing call letters, fre-

Via Michael Goetsch.



quency (AM & FM), and format. Could be helpful if they publish it each summer. It was sponsored by KDWB-FM and Clairol.

Ron Weiss is also reporting the BCB time signals and DFing them from Indianapolis; they point to Cuba. Word from Steve Biro of WKIS in Orlando says Castro has put virtually the same programming on all their high power outlets. When they are not doing that, they are a Cuban time clock. Maybe Fidel took all watches away! Listen for Steve when you visit Disney World. WKIS is 740 kHz, five days and one night.

Richmond Perry is looking to upgrade his shack with a portable radio. The ones you mentioned, Richmond, have been advertised in the ads in *POP'COMM*. Check the issues dating back to January. Both would be good; the Sony would allow you to hear AM stereo. Be sure to get one that you can use earphones with.

Michael Baranich heard a numbers station on the BCB about 1025 kHz. Michael, I don't know if what you were hearing was for real or some sort of image your GE was picking up from the shortwave bands.

Michael Roberts, on the other side of the globe from me in Guam, is a regular reader and wants to do his own broadcasting. Pick up a copy of *Broadcasting Magazine* from the address I sent you or maybe from a large metro newsstand somewhere, Mike. The same question came from Thomas Walton. I wish you guys the best, but owning radio stations can cause "loss of money!" It's much more fun on this side of the dial!

Michael Goetsch sends a QSL from CBK, shown elsewhere. A letter he encloses from the CBC notes they are happy to QSL. See the letter.

And there is Michael Cutrera, who also has a Hallicrafters SX-62. You see folks, old receivers never die, they just keep logging away! Gary Sanford tells me he had an SX-62 back in the '50's and is glad to see it so well regarded. He liked his also.

David Salmi reports some good DX in his letter. I notice a very good receiver also, the Drake R7. Radio Grenada on 535 kHz, Radio Rumbo (Costa Rica) on 530 kHz, the VOA on 1580 kHz, and of course everyone's #1 channel, 800 kHz and TWR (PJB). All of these were logged in January. Thanks. David points out what you can do with a good receiver.

Sean Goguen notes my request for photos and obliges with a couple of photocopies of photographs of WHEB. I appreciate the copies, Sean, but copies, unless they are exceptional, just won't print well in a magazine. Black and white photos copy the best, color shots and slides look okay but not as sharp in a magazine. Also, to those who

Station Updates



The shack of Ernie Rice.



Here's the way things look at WGLI in Babylon, New York. This station operates on 1290 kHz with 5 kW (1 kW at night). (Photo by Tony Earll)

have sent photos to the New York address and would like to have them returned, send a stamp to me and tell me what the photo was and I'll return it to you. The photo stays in New York until it is printed and then is sent to me.

Ernie Rice sends his shack photo. Ernie heard TWR the other night also. I tell you 800 kHz is the place for DX!

John Morehouse finds DXing east of the great divide is difficult. Any other Californians have any suggestions?

I told you the mail bag was heavy this month! Bob Brossell reports WGNW has gone silent from Milwaukee (1370 kHz).

Bill Loucks writes about his first stereo broadcast. It was an AM/TV broadcast by WFBM in Indianapolis in the 50's.

Leon Kelln, Jr. works for a railroad, so he has time to DX while laying over.

Bob Moro just bought a Sony SRF-A1000 and is pleased with it. What is the best all-time tops radio for DXing? Bob, that question could be the subject of this column for months . . . What do you say readers?

Although I have no listing for XEKX-FM, XEKX is in Carillo Puerto, Q.R.

Mat Ormsby writes of a new station on the air in Massachusetts. Thanks, Matt.

Ralph Miller asks a question about WQXR that I will try to get the answer for before long.

Howard Fricke sent a very interesting letter describing how he got a lot of his education via shortwave radio.

CJSB's address is 1504 Merivale Rd., Ottawa, ON K2E 6Z5, Canada.

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AM Stereo

It seems the Motorola C-Quam AM Stereo system is continuing to gain popu-

Call AM	Location	Freq	Pwr	Ant
WSMJ	Cave City, KY	800	.5/0	O
WPRX	Sabana Grande, PR	880	1/5	O
WQIS	Laurel, MS	890	10/0	O
KLER	Orofino, ID	950	5/1	DA-N
KCGS	Marshall, AR	960	2.5/0	O
KIJN	Farwell, TX	1060	5/25	DA-2
WMSW	Hatillo, PR	1120	5/5	DA-N
WBCE	Wickliffe, KY	1200	1/0	O
WMLI	Brewer, ME	1200	5/5	DA-N
KYOO	Bolivar, MO	1200	50/0	O
WGSF	Arlington, TN	1210	10/.25	O
WKCE	Harriman, TN	1230	1/1	O
WLVC	Ft. Kent, ME	1340	1/1	O
KHUB	Fremont, NE	1340	1/1	O
WSTA	Charlotte Amalie, VI	1340	1/25	O
Woub	Athens, OH	1340	1/1	O
WDNY	Dansville, NY	1400	1/1	O
WELM	Elmira, NY	1410	1/1	DA-N
WKEI	Rockford, IL	1450	1/1	O
WAQX	Syracuse, NY	1490	1/1	O
KXLQ	Indianola, IA	1490	1/5	O
KOKC	Guthrie, OK	1490	1/5	O
WCLE	Cleveland, TN	1570	5/0	O
WCRV	Washington, NJ	1580	2.5/0	DA-D
FM				
KNTU	Denton, TX	88.1	100	402'
WBCX	Gainesville, GA	89.1	.835	544'
WVAS	Montgomery, AL	90.7	25	608'
WNMH	Northfield, MA	91.5	.237	-307'
WBKR	Owensboro, KY	92.5	100	N/C
KJSN	Klamath Falls, OR	92.5	30	2188'
KWFM	Tucson, AZ	92.9	87	2036'
WKJF-FM	Cadillac, MI	92.9	N/C	1020'
KYKR-FM	Port Arthur, TX	93.3	N/C	1089'
WLVE	Miami Beach, FL	93.9	95.5	1006'
KEZZ	Aitkin, MN	94.3	N/C	238'
WQDR	Raleigh, NC	94.7	100	1130'
KPKY	Pocatello, ID	94.9	100	N/C
KWWR-FM	Mexico, MO	95.7	N/C	995'
WSTS	Laurinburg, NC	96.5	100	615'
KWAV	Monterey, CA	96.9	N/C	2450'
KWNZ	Carson City, NV	97.3	87.1	2112'
WRRM	Cincinnati, OH	98.5	17.7	N/C
WCLZ	Brunswick, ME	98.9	50	N/C
KICN	Spokane, WA	98.9	94.2	1614'
KPNW-FM	Eugene, OR	99.1	N/C	1630'
KHLA	Lake Charles, LA	99.5	100	N/C
WOOF-FM	Dothan, AL	99.7	100	984'
KNBZ	Wasilla, AK	99.7	51	-157'
KXLY-FM	Spokane, WA	99.9	36.7	2998'
WKZZ	Lynchburg, VA	100.1	N/C	647'
WGLD-FM	High Point, NC	100.3	N/C	1046'
KZMQ-FM	Greybull, WY	100.3	25	-32'
KIQQ	Los Angeles, CA	100.3	5.6	2829'
KTCN	Eureka Springs, AR	100.9	1	533'
WRR	Dallas, TX	101.1	N/C	1510'
KEZK	St. Louis, MO	102.5	N/C	1009'
KUEZ	Missoula, MT	102.5	N/C	721'
WLFQ	Crawfordsville, IN	103.9	1.35	494'
WPXK-FM	Woodbridge, VA	105.9	17.6	671'
KPLM	Palm Springs, CA	106.1	N/C	392'
KOOZ	Great Falls, MT	106.3	100	275'
KHIT	Bremerton, WA	106.9	100	1494'
WQXM-FM	Gordon, GA	107.1	1	N/C
WDDD-FM	Marion, IL	107.3	50	492'

KEY: D = Daytime N = Nighttime DA = Directional Antenna DA1 = Same Pattern Day & Night DA2 = Different Pattern/Power Day/Night O = Omni Antenna Day And/Or Night

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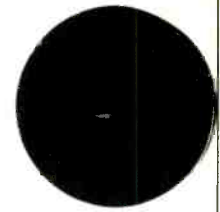
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Broadcasting
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Radio-
Canada



24 January 1985



Dear Sir:

We constantly receive listening reports pertaining to our stations in the Newfoundland Network from locations in North America and Europe.

We wish to thank you for your report. For your information, the following is a list of AM and FM stations in the Newfoundland Network.

STATION	LOCATION	FREQUENCY	POWER
CBN-AM	St. John's	640 KHz	10 KW
CBNM-AM	Marystown	740 KHz	10 KW
CBT-AM	Grand Falls	540 KHz	10 KW
CKZN-AM	St. John's	6160 KHz	1 KW
CBNA-AM	St. Anthony	600 KHz	10 KW
CBGY-AM	Bonavista Bay	750 KHz	10 KW
CBTB-FM	Baie Verte	97.1 MHz	5 KW
CBNM-FM	Marystown	90.3 MHz	20 KW
CBTL-FM	Millertown	90.1 MHz	2.5 KW
CBYM-FM	Mt. St. Margaret	98.7 MHz	4.6 KW
CBAF-FM	Port au Port	94.3 MHz	2 KW
CBYP-FM	Portland Creek	89.5 MHz	1 KW
CBNR-FM	Ramea	95.5 MHz	1 KW
CBTR-FM	Roddickton	92.9 MHz	2.5 KW
CBN-FM	St. John's	106.9 MHz	20 KW
CBAF-20-FM	St. John's	105.9 MHz	10 KW
CBNQ-FM	Trepassey	95.3 MHz	1 KW

You have heard one of the above stations. We are pleased to confirm reception and enclose a QSL Card.

If you hear any of the other stations, we would be pleased to provide you with additional confirmations.

Yours truly,

M. S. Uttaro
D. Uttaro, Manager of Regional Engineering
P.O. Box 12010, Postal Station A
Kermunt Road
St. John's, Newfoundland
A1B 3T8

larity among the receiver manufacturers. Even though Sony has announced a multimode decoder in the form of a pair of IC chips, a survey of receiver companies shows quite a few had not heard about the new Sony chip. Meanwhile, Motorola is maintaining its lead in putting AM Stereo in the marketplace. Panasonic, besides Sony, is the only auto radio manufacturer that has not gone the C-Quam only route. Sansui uses a multimode decoder in its home stereo. Panasonic is the only auto radio manufacturer of any consequence that has not decided to build an AM Stereo radio at this point. They are still "watching the

market." Pioneer and Chrysler have said they will not build multimode auto radios. Delco has said it would take about three years to add the multimode concept to a receiver and Ford has just joined the Motorola only camp.

The most recent additions to the C-Quam only decoder receiver list are American Audio, Audiovox, Becker, Carver Audio, Kraco, Nissan, Sparkomatic, and Volkswagen. Carver will build a home unit; the rest are auto radio builders. This brings the count to 17 for Motorola and 3 for multimode. Panasonic is leaning toward Motorola, but is undecided.

Call Letter Changes

Old	New	Location	Old	New	Location
AM Stations			FM Stations		
new	WQTX	Ft. Deposit, AL	WNCW	WCOZ	Paris, KY
KIEL	KDJC	Jacksonville, AR	new	KPAE	Erwinville, LA
new	KSDG	San Diego, CA	KFRA-FM	KFMV	Franklin, LA
KBBQ	KOGO	Ventura, CA	KVFG	KNSU	Thibodaux, LA
KADE	KBCO	Boulder, CO	WMAR-FM	WMKR	Baltimore, MD
WVFR	WREF	Ridgefield, CT	WKPE	WKPE-FM	Orleans, MA
new	WPSL	Pt. St. Lucie, FL	WITW	WYTW	Cadillac, MI
WRSB	WXZE	Sylvester, GA	WURC	WPCJ	Pittsford, MI
WLPD	WUSA	Mishawaka, IN	WKLH	WKLH-FM	St. Johns, MI
WVLC	WKPE	Orleans, MA	new	WIWF	Kosciusko, MS
WVGO	WKLH	St. Johns, MI	new	WJDQ	Meridian, MS
new	KMGF	La Crescent, MN	new	KXOQ	Poplar Bluff, MO
WJDQ	WYAM	Meridian, MS	KVAD	KTNY	Libby, MT
KGHM	KGNG	Brookfield, MO	new	WBNJ	Cape May Court House, NJ
KORY	KPLY	Sparks, NV	new	WUCI-FM	Binghamton, NY
WKZU	WMRS	Laconia, NH	new	WVOD	Manteo, NC
new	KHBN	Socorro, NM	new	WCVP-FM	Robbinsville, NC
WCOG	WGLD	Greensboro, NC	KYSX	KBYZ	Bismark, ND
WCCS	WADA	Shelby, NC	KYTN	KONX-FM	Grand Forks, ND
WBBO	WHCH	Forest City, NC	WPFB-FM	WPBF-FM	Middletown, OH
WGSW	WQXJ	Greenwood, SC	WYLK	WRXY-FM	Milford, OH
WWEF	WLVS	Memphis, TN	WNNK-FM	WNNK	Harrisburg, PA
new	KLSF	Amarillo, TX	new	WITX	Beaver Falls, PA
KJCH	KLEV	Cleveland, TX	new	WKYN	St. Mary's, PA
KFBA	KKAP	Floydada, TX	WNUF	WWCL	New Kensington, PA
KPMA	KITZ	Tacoma, WA	WGMB	WMXX	Georgetown, SC
KRKO	KBAE	Everett, WA	new	WDXZ	Mt. Pleasant, SC
WLZZ	WZUU	Greenfield, WI	WWBD-FM	WWLT	Bamberg, SC
new	KUYO	Evansville, WY	WLVS	WEZI	Germantown, TN
FM Stations			KXCL	KAND-FM	Corsicana, TX
new	KTIQ	Burney, CA	KZRQ	KYND	Seabrook, TX
new	KSLP	San Luis Obispo, CA	KLLP	KKAP-FM	Floydada, TX
new	KYIA	Goshen, CA	new	KBUS	Paris, TX
KOKQ	KDJK	Oakdale, CA	new	KELG-FM	Bastrop, TX
KCRP	KAVC	Rosamond, CA	new	KXWT	Burkburnett, TX
KBCO	KBCO-FM	Boulder, CO	new	KLTG	Lamesa, TX
new	WYFB	Gainesville, FL	KAUA	KOBR	Freer, TX
new	WLVV	Panama City, FL	KXAS-FM	KILT-FM	Houston, TX
new	WPSM	Ft. Walton Beach, FL	WWLH	WDXC	Pound, VA
new	WMUO	Key West, FL	KRAB-FM	KMGI	Seattle, WA
WZZW	WFXA-FM	Augusta, FL	WATW-FM	WJHJ	Ashland, WI
			new	KWHG	Gillette, WY

As I mentioned recently, Harris has been given the right to build the C-Quam exciter by Motorola. This does not mean that Harris will stop building the Harris type system, but it is a pretty good bet. If Harris was to convert all of its stations to the C-Quam exciter, this would make all but the 7 Magnavox and 75 Kahn stations compatible—a tremendous advantage for Motorola and Harris since together they have about 280 stations on the air as of this writing.

Receivers

Last month we were talking about receiver specifications. Those who may enjoy picking up a used receiver might like to know a few terms that may not be found on the newer models. Let's touch on that also.

BFO: BFO stands for beat frequency oscillator. Some receivers may refer to the BFO as the CWO, as my National does. The

beat oscillator is an oscillator that operates at the IF frequency of the receiver and beats against the incoming signal to make it audible. I'm speaking of the CW signal and, to some extent, the sideband signal—although the product detector replaced the BFO so that sideband would be easier to hear.

The BFO's will adjust to a zero beat (no audio) with an increasing note (tone) to either side of zero beat. For CW, set the BFO (or pitch control) to a pleasing note and then adjust the selectivity to eliminate any interference. For sideband reception, the BFO is set 30 to 45 degrees rotation from zero beat one side or the other depending on the sideband (upper or lower) you want to receive. For both CW and SB, reduce the RF Gain control and turn the AVC switch to off. Some receivers would say MVC for "off," meaning manual volume control—which is what you are doing. Many receivers will

have the AVC "on/off" and BFO "on" all on the same switch, so this would be automatic. The AF Gain control should be increased to almost full and the volume is controlled with the RF Gain.

For SB and CW reception on the modern receivers, things are done a bit differently. For CW, the AGC (AVC) is set to "fast" and the RF Gain or (ATT) may be reduced to help eliminate some background noise. If the RF Gain is reduced too much, the weaker signals (DX) will not be heard. For SB, the AGC is set to "slow," and if the signal is strong, the RF Gain can be reduced to eliminate background noise for "arm chair" copy. Normally USB (upper) is used above 10 MHz and LSB (lower) is used below 10 MHz. Bear in mind there are several relay stations (especially in the 8-10 MHz band) that use both LSB and USB simultaneously.

There are no specifications, as such, for a

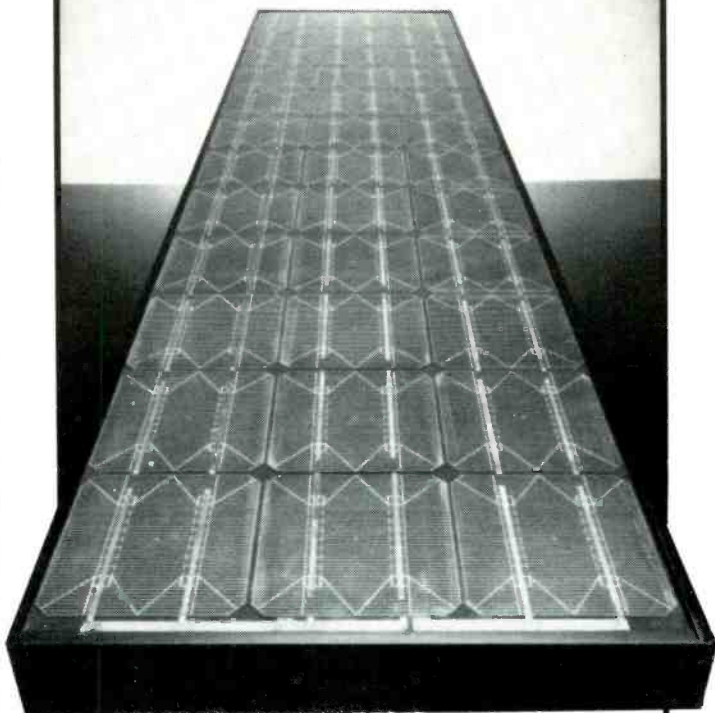
**Motorola AM Stereo Listing as of 02-22-85
Total Stations on the Air 220**

United States

State	City	Station	Freq (kHz)	State	City	Station	Freq (kHz)
Alabama	Atmore	WASG	1140	Kentucky	Gray	WALY	1590
Alabama	Gadsden	WKFX	930	Kentucky	Lexington	WTKC	1300
Alabama*	Jasper	WARF	1240	Kentucky	Lexington	WVLK	590
Alabama*	Tuscaloosa	WACT	1420	Kentucky	Louisville	WHAS	840
Alabama	Tuscaloosa	WJRD	1150	Kentucky	Middlesboro	WFXY	1490
Arizona	Tempe	KNIX	1580	Kentucky	Pikeville	WPKE	1240
Arkansas	Fayetteville	KFAY	1250	Kentucky	Richmond	WEKY	1340
California	Bakersfield	KUZZ	970	Louisiana	Alexandria	KSYL	970
California	Folsom	KHWY	1030	Louisiana	Crowley	KSIG	1450
California	Los Angeles	KFI	640	Louisiana	Denham Springs	WLBI	1220
California	Los Angeles	KIIS	1150	Louisiana	Garyville	WKQT	1010
California	Los Angeles	KZLA	1540	Louisiana	Lafayette	KXKW	1520
California	Los Angeles	KLAC	570	Louisiana	Monroe	KNOE	540
California	Palm Springs	KDES	920	Louisiana	New Iberia	KANE	1240
California	Redding	KCLM	1330	Louisiana	Rayville	KXLA	990
California	Sacramento	KRAK	1140	Louisiana	Shreveport	KOKA	1550
California	San Diego	KFMB	760	Louisiana	Thibodaux	KTIB	630
California	San Fernando	KGIL	1260	Maine	Auburn	WLAM	1470
California	San Francisco	KSFO	560	Maine	Gardiner	WABK	1280
California	Stockton	KJOY	1280	Maryland*	Cumberland	WTBO	1450
Colorado	Denver	KLZ	560	Massachusetts	Boston	WBZ	1030
Colorado	Denver	KIMN	950	Massachusetts	Worcester	WORC	1310
Colorado	Pueblo	KIDN	1350	Massachusetts	Worcester	WTAG	580
Colorado	Wray	KRDZ	1000	Michigan	Detroit	WJR	760
Florida*	Chiefland	WLQH	940	Michigan	Lansing	WITL	1010
Florida	Jacksonville	WJAX	930	Michigan	Saginaw	WSAM	1400
Florida	Jacksonville	WJNJ	1600	Minnesota*	Hibbing	WKKQ	1060
Florida	Miami	WCMQ	1210	Minnesota*	Richfield	KMFY	980
Florida	Ocala	WMOP	900	Minnesota	St. Cloud	KNSI	1450
Florida	Ocala	WOCA	1370	Mississippi	Gulfport	WROA	1390
Florida	Panama City	WDLP	590	Missouri	Sedalia	KSIS	1050
Florida	St. Petersburg	WSUN	620	Missouri	Springfield	KGBX	1270
Georgia	Atlanta	WSB	750	Missouri	St. Louis	KSD	550
Georgia	Atlanta	WPLO	590	Montana	Billings	KGHL	790
Georgia	Augusta	WRDW	1480	Montana	Billings	KOOK	970
Georgia	Columbus	WDAK	540	Montana	Great Falls	KMON	560
Georgia	Smyrna	WYNX	1550	Montana	Kalispell	KOFI	1180
Georgia	Valdosta	WGAF	910	Nebraska	Omaha	KFAB	1110
Hawaii	Honolulu	KIKI	830	Nebraska	Omaha	KOIL	1290
Idaho	Boise	KBOI	670	Nevada	Las Vegas	KMJJ	1140
Idaho	Boise	KGEM	1140	New Jersey	Morristown	WMTR	1250
Idaho	Idaho Falls	KUPI	980	New Jersey	Paterson	WPAT	930
Illinois	Chicago	WAIT	820	New Jersey	Princeton	WHWH	1350
Illinois	Chicago	WGCI	1390	New Mexico	Albuquerque	KRZY	1450
Illinois	East St. Louis	WESL	1490	New York	Buffalo	WKBW	1520
Illinois	LaGrange	WTAQ	1300	New York	Rochester	WPXY	1280
Illinois	Metropolis	WMOK	920	New York	Syracuse	WHEN	620
Illinois	Rockford	WROK	1440	N. Carolina	Boone	WATA	1450
Indiana	Indianapolis	WIRE	1430	N. Carolina	Chapel Hill	WCHL	1360
Indiana	Indianapolis	WNDE	1260	N. Carolina	Charlotte	WSOC	930
Indiana*	Indianapolis	WIBC	1070	N. Carolina*	Charlotte	WAYS	610
Indiana	Norte Dame U	O000	640	N. Carolina	Newton	WNNC	1230
Indiana	North Vernon	WINN	1460	N. Carolina	Winston Salem	WSJS	600
Kansas	Hays	KAYS	1400	N. Dakota	Bismarck	KLXX	1270
Kansas	Wichita	KFDI	1070	N. Dakota	Fargo	KQWB	1550

State	City	Station	Freq (kHz)
N. Dakota	Grand Forks	KKXL	1440
Ohio	Akron	WAKR	1590
Ohio	Dayton	WONE	980
Ohio*	Wooster	WWST	960
Oklahoma	Oklahoma City	KXXY	1340
Oklahoma	Tulsa	KRMG	740
Oklahoma	Tulsa	KVOO	1170
Oregon	Eugene	KYKN	1280
Oregon	Hillsboro	KUIK	1360
Oregon	Medford	KYJC	610
Oregon	Pendleton	KTIX	1240
Oregon	Portland	KGW	620
Pennsylvania	Allentown	WSAN	1470
Pennsylvania	Erie	WJET	1400
Pennsylvania	Lancaster	WLPA	1490
Pennsylvania	Reading	WRWA	1340
Pennsylvania	Roaring Spring	WKMC	1370
Pennsylvania	York	WNOV	1250
S. Carolina	Greenwood	WGSW	1350
S. Carolina	Hilton Head Island	WHHQ	1130
S. Dakota	Rapid City	KKLS	920
Tennessee*	Athens	WLAR	1450
Tennessee	Kingsport	WKPT	1400
Tennessee	Memphis	WKDJ	680
Tennessee	Murfreesboro	WGNS	1450
Tennessee	Nashville	WSM	650
Texas	Beaumont	KLVI	560
Texas	Big Spring	KBST	1490
Texas	Corpus Christi	KIKN	1590
Texas	Corpus Christi	KUNO	1400
Texas	Dallas	KMEZ	1480
Texas	Dallas	KRQX	570
Texas	Houston	KRBE	1070
Texas	San Antonio	KKYX	680
Texas	San Antonio	KCOR	1350
Texas	San Antonio	KAPE	1480
Texas	Victoria	KCWM	1340
Utah	Price	KRPX	1080
Utah	Salt Lake City	KBUG	1320
Utah	Salt Lake City	KFAM	700
Utah	Salt Lake City	KALL	910
Vermont	Burlington	WDOT	1390
Virginia*	Alexandria	WPXK	730
Virginia*	Danville	WBTM	1330
Virginia*	Danville	WDVA	1250
Virginia	Harrisonburg	WKCY	1300
Virginia	Harrisonburg	WHBG	1360
Virginia	Norfolk	WTAR	790
Virginia*	Radford	WRAD	1460
Virginia	Woodstock	WAMM	1230
Washington	Seattle	KMPS	1300
Washington	Spokane	KJRB	790
Washington*	Tocoma	KTAC	850
West Virginia	Charleston	WQBE	950
West Virginia	Huntington	WKEE	800
West Virginia	Morgantown	WCLG	1300
Wisconsin	Baraboo	WRPQ	740
Wisconsin	Green Bay	WGEE	1360
Wisconsin	La Crosse	WLXR	1490
Wisconsin	Madison	WTDY	1480
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Canada

Province	City	Station	Freq (kHz)	Province	City	Station	Freq (kHz)
Alberta	Calgary	CHQR	810	Saskatchewan	Saskatoon	CKOM	1250
Alberta	Calgary	CFAC	960	Saskatchewan	Saskatoon	CFQC	600
Alberta	Camrose	CFCW	790				
Alberta	Edmonton	CHQT	1110	Australia			
Alberta	Edmonton	CJCA	930	N.S.W.	Bendigo	3BO	945
Alberta	Lethbridge	CHEC	1090	N.S.W.	Sydney	2GB	873
Brit. Col.	Kelowna	CKOV	630	N.S.W.*	Sydney	2WL	1340
Brit. Col.	New Westminster	CKNW	980	N.S.W.	Sydney	2WS	1224
Brit. Col.	Prince George	CJCI	620	N.S.W.	Sydney	2UE	954
Brit. Col.	Vancouver	CJVB	1470	N.S.W.	Sydney	2UW	1107
Brit. Col.	Vancouver	CKWX	1130	N.S.W.	Sydney	2CH	1170
Brit. Col.	Victoria	CFAX	1070	Queensland	Brisbane	4KQ	693
Brit. Col.	Victoria	CJVI	900	Queensland	Brisbane	4T0	1008
Manitoba	Winnipeg	CKRC	630	Victoria	Melbourne	3AK	1503
Nova Scotia	Sydney	CJCB	1270	Victoria	Melbourne	3AW	1278
Ontario	Hamilton	CHML	900	Victoria	Melbourne	3KZ	1179
Ontario	Hamilton	CKOC	1150	Victoria*	Melbourne	3MP	1377
Ontario	Kitchener	CKKW	1090	Victoria	Melbourne	3UZ	927
Ontario	Kingston	CKWS	960	S. Australia	Adelaide	4BH	882
Ontario	London	CFPL	980	S. Australia	Adelaide	5AD	1323
Ontario	Ottawa	CJSB	540	S. Australia	Adelaide	5DN	972
Ontario	Thunder Bay	CJLB	1230	S. Australia	Adelaide	5KA	1197
Ontario	Toronto	CFRB	1010	South Africa	Radio Johannesburg		702
Ontario	Windsor	CKLW	800	Venezuela	Radio Caracas	YVMY	1550
Quebec	Montreal	CJAD	800				
Saskatchewan	Regina	CJME	1300				
Saskatchewan	Regina	CKCK	620				

*Delta Electronics, Inc.

BFO or product detector that would make one receiver more valuable than another when comparing to the more important specs mentioned last month. One nice feature to have is a receiver whose frequency remains constant when switching from upper to lower sideband. It does not make it

necessary to retune the receiver to the other sideband when switching from upper to lower or vice-versa.

ANL: The other item on the older type receivers that has been pretty much replaced by the noise blanker of today is the ANL or Automatic Noise Limiter. This gizmo was

limited in what it would do anyway. Basically, it was a diode that would limit the level of the audio from the detector to the audio amplifier of the receiver. If the noise was as loud as the received signal, it just wouldn't get any louder! One would still be hard-pressed to hear the signal. It does not remove the noise as a noise blanker does, it just limits the noise. The noise blanker actually removes the noise by turning the receiver off for the length of time the noise is present and then turns it back on. This enables one to hear signals much weaker than the noise. Noise generally is very short duration pulses. If the receiver can be turned on and off at a very rapid rate, the received signal will be disturbed very little, but the noise will be "blanked" out. If an NB (noise blanker) has a variable or switchable rate, then more different types of noise (such as the Russian woodpecker) can be eliminated.

There have been a number of requests for my AM Stereo stations list. It is \$2.50 including postage. Computer programs for the Commodore 64—which include keeping updates and call letter changes, logs for AM/FM and SW, and AM Stereo updates—are available on disk or tape. Write, sending an SASE for details. These programs are menu driven and can be used with a printer or strictly on the screen. Complete instructions are included with each program.

When writing, please include postage if you want a personal reply. The address for Broadcast Topix is P.O. Box 5624, Baltimore, MD 21210.

The Longwave Club of America, 45 Wildflower Rd., Levittown, PA 19057. Here's a club for those rugged enthusiasts interested in knowing what's happening below 540 kHz! Their monthly publication, *The Lowdown*, not only covers listings of stations operating between 10 and 540 kHz, but also has interesting coverage of the 1750 Meter (no license) low power communications band as conducted by Ken Cornell (W2IMB—well known "Lowfer" authority. Membership includes mailing of the publication by First Class Mail and costs \$10 per year



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FCC ACTIONS AFFECTING COMMUNICATIONS

Petition For Partial Stay Of Requirements For Remote Control and Security Devices

The Security Equipment Industry Association (SEIA) submitted a petition seeking a stay of the requirements in Part 15, Subpart E, for remote control and security alarm devices.

SEIA is a trade association representing nearly 100 producers of various types of security systems. The systems in question employ low power radio transmitters, typically having an operating range of no more than a few hundred feet. Requirements in Part 15 of the Rules are designed to control potential interference to authorized radio services that may be caused by such devices.

SEIA's petition for stay follows a number of other filings and Commission actions concerning the rules for remote control and security devices. The regulations for remote control and security devices were first adopted in October, 1981, and were later modified on reconsideration in October, 1982, in FCC Docket 20990. In January, 1984, in response to a petition filed by the Door Operator and Remote Control Association (DORCMA), the Commission granted a partial stay of the rules as they apply to garage door opener controls, temporarily permitting these devices to operate under special provisions for garage door openers in existence prior to Docket 20990. Meanwhile, the Commission will consider DORCMA's petition for rulemaking (RM-4637), requesting a number of changes in the technical standards and measurement procedures for remote control and security devices.

Also in January, 1984, the Commission granted a partial waiver to the Alarm Device Manufacturing Company (ADEMCO), a division of the Pittway Corp., dispensing with the requirement to report measurements of emissions above 1000 MHz for one of its security devices. The device remained subject to the other rules adopted in Docket 20990. Authority was granted to the Chief Scientist to issue waivers to other manufacturers who meet the same conditions as ADEMCO.

SEIA submitted comments in support of the DORCMA petition, and in June, 1984, submitted its own petition (RM-4813) for amendment of the requirements in Subpart E of Part 15, detailing the particular needs and concerns of security equipment manufacturers.

Both the DORCMA and SEIA petitions for rulemaking were put on public notice and the time period for filing comments has expired.

In filing its recent petition for stay, SEIA states that there is an immediate need for re-

lief beyond the scope of the ADEMCO waiver. Specifically, SEIA requests relief from the rules for security devices, until such time as the rules may be amended, in the following areas:

- Stay of the requirement to measure emissions above 1000 MHz. See Section 15.205.
- Stay of the requirement to average pulsed emissions over an interval of 0.1 second. See the NOTE following Section 15.205(b).
- Stay of the practice of correcting for pulse desensitization when measuring pulsed emissions with a spectrum analyzer.
- Stay of the requirement that receiver emissions not fall in certain forbidden frequency bands.
- Stay of certain practices followed by the FCC Laboratory concerning configuration of the equipment during the tests, such as setting coding switches to produce maximum emissions, and attachment of lead wires to transmitters intended to be activated by an external switch.

Restricted Radiotelephone Operator Permit In Domestic Aviation And Maritime Services Eliminated

The Commission eliminated the requirement for the Restricted Radiotelephone Operator Permit in the domestic Aviation and Maritime Services, which has been issued to persons filing an FCC Form 753.

In amending Parts 81, 83, and 87 of the rules to eliminate the requirement for operators of domestic VHF stations in the Aviation and Maritime Services, the Commission concluded that this would relieve these operators of the burden of applying for the permit, and would save scarce FCC resources by reducing the number of permits to be issued. The permit still will be available to operators engaged in international aviation and maritime services.

Maximum Reimbursement Allowed For An Amateur Volunteer Administered Examination

The Commission announced that the maximum allowable reimbursement for out-of-pocket costs for a volunteer administered amateur radio examination will be \$4.16. This amount is based on a 4% increase in the Department of Labor Consumer Price Index between the months of September, 1983 and September, 1984.

Each volunteer examiner and each volunteer examiner coordinator may be reimbursed by examinees for out-of-pocket expense incurred in preparing, processing, or administering examinations for amateur op-

erator licenses above the Novice class. The amount of such reimbursement fee from any examinee for any one examination at a particular examination session, regardless of the number of examination elements taken, must not exceed \$4.16.

Allow 800 MHz Stations Operating In San Diego Area To Increase Effective Radiated Power

The Commission amended Section 90.635 of the Rules to allow 800 MHz conventional and trunked stations located on four mountaintop sites in the San Diego area to operate with increased effective radiated power (ERP).

The action came in response to Motorola, Inc.'s request that 800 MHz conventional and trunked stations located atop Mt. Palomar, Otay, Woodson, and Miguel be permitted to operate with a maximum ERP of up to 500 watts.

In 1975, the Commission had permitted licensees operating on four specific mountain peaks in the Los Angeles area to use a higher ERP of 1 kw, regardless of the station's height above average terrain. Dead spots in radio coverage, caused by irregular terrain in the Los Angeles area, were reduced by the increase in ERP. In that decision, the FCC said any similar situations would be analyzed on an individual basis.

Noting the similarity between the Los Angeles and San Diego situations, the Commission said 800 MHz stations atop Mt. Palomar, Otay, Woodson, and Miguel would be permitted to operate with 500 watts ERP.

FM Applicants File Early With FAA

This represents the FCC's continuing effort to expedite the processing of FM applications in order to bring new broadcast service to the public as rapidly as possible.

In *First Report and Order*, MM Docket 84-231, adopted December 19, 1984, the Commission amended its Table of Assignments to allot 689 new FM channels to communities throughout the United States. It is expected that a large number of applications will be filed in response to the implementation of this omnibus rulemaking.

In order to avoid unnecessary processing delays, the Commission strongly encourages applicants required to file FAA Form 7460-1 (Notice of Proposed Construction or Alteration) with the Federal Aviation Administration to do so at the earliest possible time. Generally, when an applicant receives reasonable assurance of site availability for its proposed site, it should file Form 7460-1 immediately with the FAA.

An applicant may file FAA Form 7460-1 prior to the effective date of the allocation for which it intends to file an FCC Form 301 (Application for Construction Permit for Commercial Stations). However, it is important to note that a positive determination by the FAA will automatically expire within six months of the date of the determination, unless the applicant files FCC Form 301 within that time. Ordinarily, the FAA will make a determination within 60 to 90 days of the date of filing FAA Form 7460-1 for proposed towers of less than 153 meters (500 feet) above ground. The FAA may take substantially longer to make a determination for higher towers.

No comparative advantage is derived by filing FAA Form 7460-1 early. However, the early filing of FAA Form 7460-1 will assist in avoiding potential processing delays that could result in the event the FAA makes a negative determination of the proposed site. In this regard, an early filing could mitigate an applicant's need to file an untimely engineering amendment or the Commission's need to include an Air Hazard Issue in a Hearing Designation Order.

Finally, each applicant is encouraged to prepare one additional copy of Section V-G when filing the requisite three copies of FCC Form 301 with the Commission. This will expedite coordination between the Commission's FM and Antenna Survey Branches.

New Experimentals

The Commission, by its Office of Science and Technology, Frequency Liaison Branch, took the following action:

KO2XIV, Eaton Corporation, Farmington, New York; Atlantic City, New Jersey; and Lakehurst, New Jersey. New experimental station to operate on 979, 1055, 1080, and 1134 MHz to develop and test an equivalent DME function compatible with the military TACAN and ICAO/FAA DME, but with better accuracy than normally available.

The following were granted to State of California on frequency 401.7895 MHz to collect data for use in prediction of fire, weather forecasting, and water run-off using GOES satellite:

KE2XOU, Carrville, California.

KE2XOV, Carrville, California.
KE2XOW, Rovana, California.
KE2XOY, Castella, California.
KE2XPB, Oak Grove, California.
KE2XPC, Independence, California.
KE2XPD, Tennant, California.
KE2XPE, Halls Flat, California.
KE2XPG, Magnavox Gov't & Industrial Electronics, Ft. Wayne, Indiana and mobile within Continental U.S. New experimental station to operate on 401.926 MHz to collect data for use in prediction of fire, weather forecasting, and water run-off using GOES satellite.

KO2XHM, Exxon Communications Co., Mobile within Beaufort Sea, Alaska. New experimental station to operate on 401.650 MHz for collection of data from buoys on large ice flows using TIROS-N satellite.

KO2XIG, Advanced Communications Engineering, Inc., Palm Bay, Florida. New experimental station to operate on 5925-6425 MHz band to test and develop spread spectrum transmission techniques.

KO2XIW, Norand Corporation, Troy, Michigan and mobile within two mile radius. New experimental station to operate on 457.5375, 457.5875, 468.2125, and 469.9625 MHz for development of accounting and inventory control system for retail facilities.

KQ2XAC, R. A. Isberg, P.E., San Francisco, California and mobile in Oakland Metropolitan Bay area. New experimental station to operate on 457.525 MHz to test CATV amplifiers as radio signal boosters in interior alleyways, companionways, engine room, and officer and crew quarters.

KQ2XAD, VAL-COMM, Inc., mobile within State of New Mexico. New experimental station to operate on 954.450, 958.050, 955.750, 959.350, 956.050, and 959.650 MHz for demonstration of equipment to prospective customers.

KQ2XAE, Atlanta Transtext Development Co., Mobile within Atlanta, Georgia. New experimental station to operate uncertified computing devices that fall under Part 15, Subpart J of FCC Rules.

KQ2XAF, Crescive Die & Tool, Inc., Mobile 10 mile radius of So. Lyon, Michigan. New experimental station to operate on 152.105 MHz to develop and evaluate the effectiveness of an inexpensive school bus alert receiver to increase the safety of bussed children.

KQ2XAG, Cessna Aircraft Company, Airborne in the State of Florida, Alabama, Mississippi, Louisiana, Ohio, Tennessee, No. Carolina, So. Carolina, Virginia and W. Virginia. New experimental station to operate on 15100 MHz and 225-399.95 MHz band to provide airborne training of undergraduate Naval Flight Officers as required by U.S. Govt. contract.

KQ2XAH, Hazeltine Corp. Smithtown, New York. New experimental station to operate on 5031, 5047.8, 5061, 5075.7, and 5090.7 MHz for development of MLS under U.S. Govt. contract.

KQ2XAI, Hazeltine Corporation, Com-mack, New York. New experimental station

to operate on 5031, 5047.8, 5061, 5075.7, and 5090.7 MHz for development of MLS under U.S. Govt. contract.

KQ2XAJ, RCA Corporation, Moores-town, New Jersey. New experimental station to operate on 1239, 1280, 1340, and 1365 MHz for evaluating antenna required by U.S. Govt. contract.

KQ2XFQ, Norand Corp., Cedar Rapids, Iowa and mobile within two mile radius of fixed. New experimental station to operate on 457.5375, 457.5875, 468.2125, and 469.9625 MHz for development of radio equipment and systems for a limited range 2 watt retail cost accounting and inventory control system.

KQ2XFR, IRT Corp. Mobile within San Diego County, California. New experimental station to operate on 9650 and 2986 MHz for illumination of specific test target objects on an outdoor antenna range to develop target response data.

KQ2XFS, ITT Giffilan, Inc., Van Nuys, California. New experimental station to operate on 3100-3500 MHz band for development of a radar for export to the United Kingdom.

KQ2XFT, Cubic Precision, Inc., Winchester, Tennessee. New experimental station to operate every .1 kHz between 1610.0 and 1612.4 kHz and every .1 kHz between 1771.0 and 1773.4 kHz for propagation studies of nighttime radiolocation.

KQ2XFW, Cubic Precision, Inc., Tullahoma, Tennessee. New experimental station to operate on the same frequencies and for the same purpose as stated above.

FCC Expands Use Of 31 GHz Band For Fixed And Mobile Services

The Commission expanded use of the 31 GHz band for the fixed and mobile services by permitting individuals access to the band for the transmission of personal communication and by adopting new technical standards for equipment development.

The proposal for the 31 GHz band was designed to satisfy various short-range, fixed and mobile communications, the Commission noted. For example, an individual wanting to install a remote video security system or a private earth station could use this band, as could a common carrier to establish a temporary radio link to bypass a cable system which had been disrupted. A broadcaster or cablecaster needing a radio link between a TV camera and a mobile relay station could find this band valuable.

However, while the probability of causing or receiving harmful interference at 31 GHz would be slight, the Commission said, no licensee could object to harmful interference since operations in this band will be on a co-equal, non-protected basis.

Due to the higher frequency involved, the low power level restriction and no protection against harmful interference from other users, the Commission pointed out that notification for all operations will be required.

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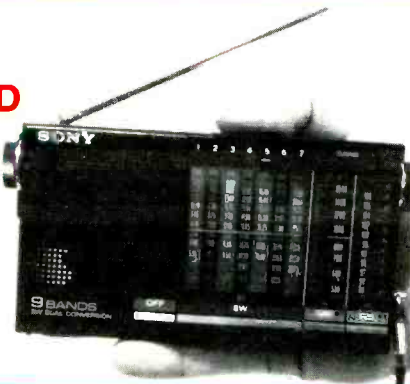
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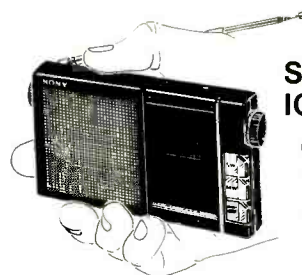
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