



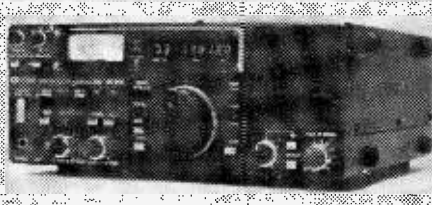
MONITORING TIMES

VOLUME 1 - NUMBER 6

BRASSTOWN, NORTH CAROLINA 28902

NOVEMBER/DECEMBER, 1982

Presstime Newsbreak...



Two New Receivers Announced

Two new general coverage receivers have been released to the United States by prominent offshore manufacturers.

ICOM had been rumored for months to be planning a receiver to compete with the popular Kenwood R-1000 and Yaesu FRG-7700. Their ICR-70 is now available from Grove Enterprises and other equipment dealers.

Contrary to earlier impressions, the ICR-70 is not a carbon copy of the receiver section of the ICOM 720A transceiver. A high level spokesman from the company says it is actually better.

The new receiver boasts wider dynamic range, higher intercept point and lower synthesizer noise. Frequency range is 100 kHz through 30 MHz with 100 Hz digital display capable of 10 Hz ultimate resolution (optically encoded increments like the JRC NRD-515).

No memory expansion is offered with the ICOM other than one channel on each of two VFO's. The receiver also features

passband tuning with improved AM capability, a noise blanker, squelch on all modes and an FM option.

Selectable IF bandwidth is chosen between 2.1 (SSB) and 6.0 (AM) kHz; additional filters are available from the factory for CW and RTTY.

Powered from the standard AC line, an adaptor kit is available to permit 12 VDC operation as with the Kenwood R-1000. **COMING ATTRACTIONS** yet another advanced receiver is about to be announced by a leading manufacturer.

Delivery after the first of the year is expected for this top-of-the-line receiver, expected to have memory and a list price of around \$1000. Now being test marketed in Europe, it will be available from Grove Enterprises.

A full story will be in the January issue of Monitoring Times.



Our gift to you...

We at Grove Enterprises would like to take this opportunity to sincerely wish all of our friends a happy holiday season and a joyous new year.

We would also like to offer you a gift and our help as well.

Buying technical merchandise or publications for a friend or loved one can be very frustrating...we know. May we help you with some honest advice?

Take a look at our Christmas "WISH LIST" in this issue and give us a call on our toll-free line (1-800-438-8155). We'll be glad to help you make the best choice. And when you place your order, we'll send you a free SOUNDS OF SHORTWAVE cassette tape to say "Thank you" for allowing us to be of service to you.

Free Radio From The Emerald Isle

by John Santosuosso

The winter DX season is just about here, and with it comes the chance to log those fascinating European free radio stations.

By far, Ireland offers the best

target for those of us in North America. But you better hurry, because before long Irish free radio could once again be pirate radio, or even nonexistent radio!

Currently unlicensed stations in the Republic of Ireland are operating openly as a result of a successful legal action in 1978 by Radio Dublin, whose lawyers found a loophole in the 1926 Wireless Telegraphy Act prohibiting the state Radio Telefis Eireann from having a monopoly on broadcasting rights.

A publicity campaign launched in January 1978 by Radio Dublin and Alternative Radio Dublin also helped the cause. Some 10,000 people demonstrated in the streets in support of the pirates.

For the time being the government has backed down, and there have been no serious raids since 1978. Stations have sprung up all over the country including Boyneside Radio's "pirate" television station which began broadcasting four hours a day in February 1981.

Now all this may change. The present Minister for Energy, Albert Reynolds, introduced two bills in 1980 which could possibly become law before the end of this winter. The proposed legislation would destroy Irish free radio, allowing only for the licensing of some stations in cities of 50,000 or more persons. These precious few

Tuning In On The US Army

While Air Force and Navy communications are readily heard on shortwave, Army communications are far less frequently reported.

There are, nevertheless, daily two-way single sideband (as well as radioteletype) transmissions made among forts, garrisons,

missile bases, reserve centers and other posts throughout the nation.

In the eastern portion of the country (Army Region 1), the network is controlled by Ft. George Meade, Maryland and Ft. Gordon, Georgia headquarters. Responding stations are classified by

state. All operations are fixed (point to point), not mobile or portable.

Since the Army is a business, operations are generally confined to normal working hours, weekdays only. The accompanying list will provide system details for interested listeners.

U.S. ARMY SSB NETWORK, REGION ONE. All frequencies kHz.

STATE:	AL	CT	DC	DE	FL	GA	MA	MD	ME	MS	NC	NH	NJ	NY	RI	PA	RI	SC	TN	VA	VT	WV	
4233		X				X	X	X	X			X		X	X							X	
4520		X	X	X		X	X	X	X			X	X	X	X					X	X	X	
4610	X				X	X		X		X	X							X	X	X			
4640		X	X	X		X		X			X		X	X		X				X		X	
7360	X					X		X			X							X	X	X			
8060			X	X		X		X			X		X		X					X		X	
8170		X		X		X	X	X	X			X	X	X	X	X						X	
8180	X				X	X		X		X	X							X	X	X			
12060		X				X	X	X	X			X		X	X							X	
12090			X	X		X		X					X			X				X		X	
12240			X			X		X			X				X					X		X	
12255	X					X		X			X							X	X	X			
12270	X				X	X		X		X								X	X				
13524.5		X	X	X		X		X					X	X	X					X		X	

REGION-WIDE NET: 4415 4780 9122.5 4030 13555 kHz

"The Pirates Of Long Island -Part II"

by John Edwards

(The first installment of this three part series about pirate radio operators on New York's Long Island, told us about why they risk fines and imprisonment to pursue their avocation. Here, in Part II, we'll find out how they evade FCC detection and just what sort of equipment they use.)

When an "on-the-air night" is scheduled at pirate station WONS (usually on a weekend or holiday morning, when the FCC is least likely to be active), owner Dave Lewis telephones friends the day before the broadcast to gather his operating crew. The volunteer broadcasters come from all walks of life--bankers, secretaries, students, teachers--all united by the common dream of bringing their brand of radio to the masses.

When the crew arrives at Lewis's home, about three hours before air-time, it quickly begins work at predesignated positions. While most volunteers are assigned typical radio station jobs such as DJ, engineer and record librarian, others are appointed "security guards." Their task is to patrol neighborhood streets for the familiar white van or station wagon with federal license plates, which would indicate the FCC is closing in. When one of these vehicles is spotted, the call immediately goes back to the house, via two-way radio, to shut the station down.

Yet, occasionally, even the most carefully organized plans don't work out. Lewis remembers a time, during the station's first year, when the FCC paid a surprise visit.

"We were in the middle of a broadcast," he recalled, "when the van pulled up in front of the house. A middle-age man wearing glasses came to the door, announced he was with the FCC, and said he had reason to believe that an illegal radio station was being operated on the premises. I didn't say yes or no.

After a few minutes, during which he informed me of the rules I was violating, he told me that without a search warrant and a federal marshal he couldn't enter the house to look for any radio equipment; therefore, the visit was just a warning.

But before he left, he gave me a piece of advice. He said that if I didn't use any four-letter words, didn't interfere with any legal stations and kept my on-air time within reason, odds are he wouldn't be bothering me again. But if I broke just one of those "rules," my equipment would be confiscated and I'd be in front of a judge within a week. I guess the Commission just has bigger fish to fry than the undergrounders."

Taking the FCC agent's words to heart, Lewis quickly brought WONS into compliance. The first job was moving the station's transmitting frequency from 1020 kHz to 1620 kHz, just off the upper end of the broadcast band. Next, he instructed his volunteer DJs to keep their shows free of ex-

pletives and made a pledge to himself not to keep the station on the air for longer than five hours at a stretch. Still, the security guards remain on patrol, just in case the FCC changes its mind.

If the feds ever do make a return visit to WONS, they'll have some great equipment to confiscate. In Lewis's estimation his station gear is far above average for an underground operation.

Tucked away in his finished basement, the gear includes three turntables; a surplus cartridge player (used for station IDs and promos); a home-built audio console; a library of about 300 albums; a four-channel, reel-to-reel tape recorder; various microphones; and the heart of the station--a converted amateur radio transmitter of 1950's vintage.

"Even though our transmitter only puts out around 90 watts, we still get an excellent coverage pattern," Lewis says. "We've had reports of our signal being heard as far away as Ohio, North Carolina and Newfoundland. But on an average night, I would guess that we have about a 25-mile range."

Finding equipment to stock an underground station isn't as difficult as it may seem; the biggest problem is coming up with the cash. Audio equipment and accessories can be purchased at numerous area stores, most notably those of the "electronics row" of Manhattan's West 45th Street. Miscellaneous electronics parts can be found at CB "coffee breaks," ham radio flea markets and the like. Occasionally, a legitimate radio station will change ownership or revamp its facilities, and its old equipment can be obtained inexpensively or--if the undergrounder has a contact--for free.

Ironically, the FCC doesn't have the power to require a purchaser to show proof of a license when buying a radio transmitter. Theoretically, an undergrounder could go to one of the commercial broadcast equipment manufacturers and order a transmitter built to his specifications. However, considering the financial condition of most underground station operators, it is doubtful whether any could scratch together the approximately \$10,000 needed to make such a purchase!

Short of a custom-designed unit, most undergrounders will settle for a used broadcast transmitter or adapt one that was designed for another service. According to Lewis, one of the best local sources for used radio equipment is Barry's Electronics at 512 Broadway, in lower Manhattan.

"A virtual cornucopia of surplus commercial, military and government transmitters, ranging in price for \$30 to \$1,000," he says. "All the prospective undergrounder has to do is go down there, select the unit of his choice, bring it home, order a transmitting crystal (cut to the

undergrounder's desired frequency), plug it in and he's all set. Just run a wire across a backyard or terrace, and he's a radio station owner for under \$100."

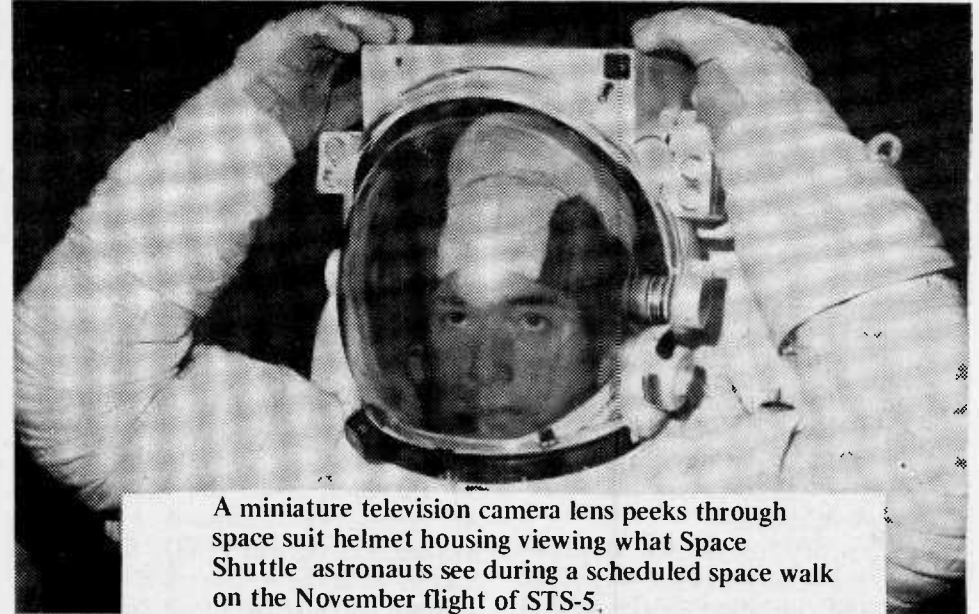
Once the equipment is

assembled and ready for operation, the next task facing the undergrounder is organizing a format for the station. We'll look at the sort of programs Long Island's pirates offer in the next issue of MONITORING TIMES.

Editor's note: Monitoring Times does not condone any illegal radio communications or broadcasting.

However, intelligently-planned pirate radio stations are devised which represent no interference threat to other users of the spectrum. Such an operation is visited this month in the second of fascinating three-part article by author John Edwards.

Ham Shuttle Rebroadcasts Ruled Illegal



A miniature television camera lens peeks through space suit helmet housing viewing what Space Shuttle astronauts see during a scheduled space walk on the November flight of STS-5.

Considerable publicity recently surrounded the use of California amateur repeaters for rebroadcasting NASA communications in support of the last shuttle mission.

Everyone enjoyed the informative monitoring and congratulated the repeater societies who were getting the audio feed from JPL (Jet Propulsion Laboratories) in Pasadena--except the FCC!

The Commission ruled that it is against the law for hams to do broadcasting of any nature not related to amateur radio (code practice, bulletins, etc.).

As a result, the popular practice will not be repeated for subse-

quent flights.

Still, scanner enthusiasts near major NASA complexes may hear the communications which are transmitted for the press services to copy.

At Johnson Space Center (Houston) these transmissions are made on 171.150. Since this frequency is also common to Edwards and Cape Kennedy, it would be a good idea to watch these frequencies there as well.

Fringe area reception of these and other high band and UHF signals may be enhanced enormously by the use of a high quality outside gain antenna like the Grove ANT-1 Scanner Beam combined with good coaxial cable.

Radio Havana Bombards US Broadcast Band

In an obvious move to protest the intent of the Reagan administration to put an anti-Castro transmitter in Florida beamed at Cuba, the Castro regime has begun a sporadic radio war with the United States.

Usually beginning at around 7 p.m. (Eastern time), the powerful signals from the Voice of Cuba may be heard jamming American broadcasters on 550, 570, 650, 1040, 1160 and 1380 kHz.

Broadcast band DX'ers may optimize their listening to these and other stations by the use of an external preselecting tuner like the popular Grove TUN-3 MiniTuner (see Grove ad).

The frequency 1040 kHz has been tentatively designated as the transmitting frequency for Radio Marti, named after an early 20th century Cuban patriot, and

scheduled to begin operation from southern Florida within a few months.

Operating schedules for the Cuban radio bombers are erratic, language may be English or Spanish, and interference to low-powered Florida AM broadcasters has been considerable.

Just what effect the Cuban offensive may have on the eventual implementation of Radio Marti is still an open question.

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Free Radio

Continued from page 1

licenses most likely would go to major commercial interests and not the individuals who struggled to make Irish free radio a reality.

However, at least for the moment, you still have the opportunity to hear what Ireland has to offer—and there is plenty to hear. While there are numerous medium wave and FM stations all over the island, almost all of these are impossible to receive in North America. Although quite a longshot, one that just might be possible is Sunshine Radio, thanks to its clear frequency of 531 kHz, and a 24-hour schedule. Sunshine is quite popular in Ireland with about one-half million listeners tuning in sometime during the week. Part of the secret of its success is probably due to the fact that it hired several disc jockeys from the new defunct, but still legendary, English offshore commercial pirate Radio Caroline.

Like many other free radio stations in the country, Sunshine accepts commercial advertising. Their address is 539 Baggot-Rath Place, Dublin 2.

The shortwave stations are, of course, those most likely to be heard. Irish stations sometimes announce special tests for North America, but if you are tuning randomly the best time to come across a broadcast is Sunday mornings from approximately 0600 to 0900 GMT. Last winter the most widely reported station was South Dublin Radio, thanks to its 1000-watt transmitter.

Unfortunately, the operator recently sold the transmitter and is now using considerably less

RADIO DUBLIN

INTERNATIONAL

Q.S.L.

TO *Telenor*
OF *Kilkenney Radio*

We are pleased to confirm your reception report of Radio Dublin on 6245 KHz between 5:04 and 8:35 GMT on the 11/14/82 at *atask*

Studios: 58, INCHICORE ROAD, DUBLIN 8 (Visitors welcome)
Mailing Address: RADIO DUBLIN, DUBLIN 8, IRELAND.
Telephone: 01-758684

power, but under the right conditions you may still be able to hear him on 6240 kHz.

There are recent indications that the station is also relaying broadcasts for English pirates.

South Dublin, like most Irish stations, is a good verifier. Reports may be sent to South Dublin Radio, North Street, Swords, County Dublin.

The oldest of the Irish free radio stations still active is the famous Radio Dublin, which began operations in 1966. It broadcasts on two medium wave frequencies, and on shortwave used to be received extremely well on the East Coast of North America with its 400 watts of power.

Programs could be heard on 6910 kHz as early as 2300 GMT, even in summer months. This is no longer the case, as in the spring of 1982 Radio Dublin suffered serious problems with its shortwave transmitter and had to shut it down.

It does hope to be back, so

1180 KHz
6315 KHz
90.2 MHz

BY THE PEOPLE
FOR THE PEOPLE



BROADCASTING HOURS

7a.m. to 1:30 a.m.

6910 is a frequency worth watching. In the past 6290 and 6315 have also been used. The address is Radio Dublin, 58 Inchicore Road, Dublin 8.

Another popular shortwave station which can be received on this side of the Atlantic is Westside Radio with its famous disc jockey Prince Terri. This station is especially helpful in keeping listeners up to date on the Irish free radio scene. It has special DX program every second Sunday of the month.

Look for Westside on 6280 and 10488 (but remember all free radio frequencies are subject to

change). Westside Radio can be reached at 53 Charlestown Road, Ranelagh, Dublin 6.

Other more difficult shortwave targets include Wicklow Local Radio whose shortwave transmissions are on 6275. The best time to try for this one is most likely around 1000 GMT. Somewhat easier to hear is Capital Radio which occasionally is received on 6268 kHz.

Communications Law And You

(NOTE: It is our privilege to present the first of several articles concerning the laws of listening. Author Bob McGovern is well known to RCMA members for his series on "Monitoring and the Law".)

by Bob McGovern

Can you operate a scanner in your automobile? Is it legal to tape record what you hear and play it back for yourself or someone else? Is it lawful to walk down the questions will be answered in this article and in subsequent presentations.

Whether you are new to monitoring or have been an active monitor radio listener for years, you probably have questions concerning the mobile or portable use of scanner receivers. Few persons are aware of the many restrictions which limit or prohibit the use of scanners outside of the home. These limitations consist of state laws and county or municipal ordinances. Upon conviction, a person may be sentenced to a small fine or face a period of up to three years confinement, depending upon the jurisdiction involved.

In this article, several states will be reviewed for such laws. In Kentucky, Chapter 432.570 forbids citizens to have in their

automobile or other vehicle any mobile radio set or apparatus capable of receiving signals in the police radio service. Conviction constitutes a misdemeanor with a fine of not less than \$50.00, but not more than \$500.00, and/or 12 months confinement.

In addition, any radios seized will be subsequently destroyed, forfeited, or become the property of the State.

It is further noted that this law does not apply to a retailer or wholesaler, who, in the ordinary course of business, offers such products for sale.

A commercial or educational radio or television station may possess a scanner at its place of business, and you may possess a scanner at your place of residence.

Other exceptions apply to licensed commercial auto towing vehicles, newspaper reporters and photographers, and law enforcement officers authorized in writing by the head of their agency.

If you live or travel in Kentucky and don't meet the exceptions, listen only in your home or motel room. Don't walk down the street with your programmable scanner in hand!

The State of New Jersey has a

statute (2A:127-4) which prohibits any person from possessing, in any auto, a radio receiver operative on frequencies assigned by the FCC for fire, police, municipal, or other governmental uses.

However, persons with a permit issued by the chief of the county police, or the chief of the municipal police wherein such person resides are permitted mobile possession. This law does not apply to any fire, police, or other governmental official of the State or of any county of municipality thereof.

It is noted that the term "fire official" includes all active members and officers of any municipal fire department or force or any first aid and emergency or volunteer ambulance or rescue squad whether said department, force or squad be paid, part-paid, or volunteer.

Punishment upon conviction is very severe, as it calls for a fine of up to \$1000.00 and/or three years imprisonment. Authorities in New Jersey take a dim view of mobile monitoring.

A more reasonable restriction concerning monitoring can be found in the State of Oklahoma. Section 1214 of the Criminal Code states that it is unlawful for any

person to operate a mobile radio capable of receiving transmissions made by any police agency for illegal purposes (to aid in the commission of a crime). In other words, hobby type listening is acceptable, whether it be on foot, at home, or in a motor-vehicle.

Persons who violate this statute may be confined for three years in the State Prison and/or face a fine of up to \$5000.00.

As you can see, there is considerable disparity among states with respect to monitoring laws. Many are overly restrictive, but several, like Oklahoma, are reasonable and acceptable for hobby listeners.

The second installment of this column will be forth-coming in the near future and will contain additional monitor laws with interpretations. Subsequent columns will address other legal questions relative to communications and the listener.

Your questions and comments concerning the legal aspects of monitoring are most welcome. Direct your correspondence to this writer in care of Grove Enterprises, and be sure to include an SASE if you desire a personal reply.

Viewpoint

I read your review of the Yaesu FRG-7700 receiver. However I believe that the FRG-7700 has an RF attenuator not an RF gain control. Also I noticed that you mentioned the VHF converters available from Yaesu. There are six models A thru F however only Models A and F are available in the U.S.. In addition the Model A has an undocumented feature. If both of the last two buttons of the frequency selection buttons are pushed in together then the 150-160 MHz frequency band may be tuned in (of course with some reduced sensitivity), but this does give S meter capabilities. Finally Yaesu does not seem to be aware of a preamp available from them for the Yaesu FRG-7700.

I enjoyed your article on frequency expansion for the FRG-7700 very much. Are you planning on sharing the other two methods of accomplishing this with us in Monitoring Times?

Finally you might not be aware that the instruction manual for the FRG-7700 lists the narrow IF filter (CF1002) as LF-C2A. This filter may or may not be in your FRG-7700. When I opened the case of my FRG-7700 I found a Murata CFM-455-J1 which is not nearly as "tight" as the LF-C2A. I ordered the LF-C2A and found after installing it that the IF gain had to be increased to help offset the more narrow IF filter, but the SSB is much better. Although the AM narrow position is somewhat more muffled. Dr. Michael Hastings, Nevada, MO.

After examining the sample paper you sent, I find I am very pleased with the amount of information you supply. I do have a suggestion, which may or may not be practical. If you were to print your paper on 8½"x11" sheets then it would be very easy for subscribers to perforate holdes for a 2 or 3 ring binder and start a library of the Monitoring Times, as there is so much information to save, it would be much easier to do this than to have to rewrite and put into a binder. I would be interested to hear your opinion of this idea. Robert Reick, Danbury, WI.

(Ed. comment: Thanks for the input Robert. Unfortunately, the cost of printing and postage is so high, the tabloid is the most economical method.)

I am trying to gather a list of NASCAR race team frequencies. Since these teams are located over a ten state area it's really hard to pin some of them down. I would appreciate mention of this in your publication. Persons that forward information will be put on a mailing list for free exchange of updated list twice a year. Larry Williams, Radio Research, 10 Elf Lane, Greenville, SC 29611. Phone 803-246-3261.

With much interest and enjoyment I have read the two sample issues of the Monitoring Times

you have had the kindness of sending me. I was impressed with the generally high quality of your publication and have decided to take out a subscription.

However, I do have some suggestions for making the MT even more interesting to your foreign readership. This would entail including more material of direct interest and practical usefulness to overseas readers. Examples of such material are the articles in Volume 3 by Robert Leary, as well as the one on "HF Broadcasting Via Satellite". D.G. Lange, Uppsala, Sweden.

(A good suggestion! How about it, authors?...ed)

I am writing to say thanks! Thanks, Bob, for the Scanverter; thanks, Bob, for the time and phone calls. Without your help and products I would still be in the dark.

I am glad there are still people in the USA who care about the products they sell and the people who buy them. In the future, if you need any frequencies from this area or monitoring information, please call or write me.

An F-16 just flew over my parts store...it's closing time and I'm going home to see what he is up to! Thanks again. Clair Frew, N. Ogden, UT.

(Thank you Clair, for the kind comments. Unfortunately, there are too many profiteers with little regard for customer satisfaction. Fortunately, we are not one of them!....Bob)

Your "Technical Topics" column (vol. 1, No. 5) states that "all Regencies to my knowledge have a 10.7 MHz IF..." This is in error. For example, the K100 has an IF of 10.745 MHz. Remember, too, that individual units can have their IF's modified rather easily if desired.

However, I imagine you and Art Kimball are correct in assuming that his M-400 does have a 10.7 MHz IF. My guess is that like most recent Regency models the M-400 does a poor job receiving AM transmissions. Bearcats seem to be consistently better at receiving AM. Considering that FM receivers aren't supposed to receive AM, this is a dubious feature. Martin A. Toomajian, Jr., D.D.S., Watervliet, NY.

WOW, what service! I mailed my order for the Scanverter on Saturday and received it on Wednesday afternoon. I know it works, I have already heard a C-130 calling "Caldron" on 252.1, also "Happy" on 255.4 talking to "Voter 31". Happy Monitoring! Scott Menke, Elgin, IL

(Scott, Sounds like you are having great success with the little Scanverter. We are constantly making improvements in the unit, and the new ones have excellent sensitivity....Bob)

Monitoring Times is fantastic! Imagine, a publication just for us communications monitors-at last. I have only one 'beef' - less

material on shortwave broadcast stations, as there are sufficient other publications for that area of interest (to which I also subscribe), and more articles regarding shortwave utility stations, with emphasis on the HF Aero Bands, both civilian and military. Would also like to see more features on VHF Aircraft frequencies - including changes, etc. I will be a contributor of these from time-to-time also.

By the way - a point of interest to your other subscribers from the Indianapolis area: I've found a repair/service shop that will take care of Radio Shack communications receivers - it's Mr. Radio, on East Troy Avenue! Don't bother to take your receiver back to the Radio Shack outlet from which it was purchased - that's an exercise in futility. Keep up the good work! Jean Baker, Indianapolis, IN.

I would like to personally thank you for checking out and modifying my Scanverter. I am pleased to tell you that I have heard USAF aircraft on it in my local area.

I am somewhat reluctant in purchasing equipment via mail, however, I assure you that this feeling is fully relaxed when dealing with you. Your service is prompt, courteous and efficient.

Just one more thing -- I would like to propose to you a new product for manufacture. How about an in-line signal strength meter for scanners making it possible to pin-point various transmitter sites - while using a beam of course. Robert Skwirsk, Wayne, MI.

(I'm pleased that your Scanverter is working as well as many others now across the nation, Robert! How about it, readers? Would you like a direction-finding attachment for scanners? In spite of scoffers, I think it can be done....Bob)

....there has long been a need for a publication that would be "pan-spectrumatic", covering all aspects of radio monitoring. MT is heading in the right direction, Bob.

I noted you listed Ontario DX Association in Club News; we thank you very much for that, as we are striving to put out the "Number One" club bulletin - and are more or less succeeding, except for the lack of publicity. But that's improving! A few notes - our membership fee/Canadian subscription is: Canadian \$19.00; US subscriptions are \$20.00 and overseas \$25.00 (Canadian currency or international money order). Membership is open to Ontarians only (all that means is that our Logging and QSL columns will remain regional) Subscribers can contribute articles, DX News, programming info, opinions - the whole works. Terence H.V. Bowden, Ontario, Canada.

I would like to express my opinion on your Bearcat 100 review. I'm an active fire buff and I use the scanner mainly for fire frequencies. But I also listen to the other public bands in my area.

First, all pocket scanners do

not receive as good reception as the full size models. And with anything that's computerized the smaller it is, the more costly it is.

If you want good reception in an automobile, buy a mobile scanner. A pocket scanner is not really designed for mobile use as you can see. I've owned my scanner for a year and never had problems with microprocessor failure.

The keyboard is fair with one problem. Nothing to indicate that you've entered the frequency. And with all pocket scanners audio is a problem. But I've solved that problem by buying a Motorola XL lapel speaker which improves the audio output and quality.

But we have to realize this scanner is small and compact and there's only so much you can build into it, even with today's technology.

The only problems I've had is: the 42.340 birdie is the State Police freq. in my area. A belt clip would have been nice but the way it is now it can't fall off your belt. Otherwise this is the best pocket scanner on the market. You can't expect the manufacturers to come out with the perfect scanner because it will never happen.

I enjoyed the article by "Havana Moon" in the July/Aug. issue of MT. I used to read his column in the now defunct NNRC Newsletter. Also, I have listened on the frequencies he mentioned and have found the signals there most of the time. Would like to see a regular column by him. Emil F. Kasprzyk, Jr., Austin, TX.

Backtalk

The Numbers Game..

I take exception with the following statement from Numbers Update (p.6) of the (September) Monitoring Time: "The occurrence of "doublets" in randomly generated numbers in groups of five is exactly TEN PERCENT".

If you mean the probability of having a single doublet, e.g. 22532 or 12235, in a group of five randomly generated digits, the probability is 29.16%, not 10%. The use of the word exact is also improper; in the long run, we expect 29.16% to include a single doublet. For a large sample, near 29.16% should contain a single doublet. (for groups of two digits instead of five, the probability of a single doublet is 10%).

When sample size is taken into account, 27% is close enough to 29.16% to probably be statistically insignificant.

Probabilities for the occurrence in a five digit random number:

Single doublet (e.g., 22532 or 12235) 29.16%
Two doublets (e.g., 22332 or 22122) 2.43%
Triplet (e.g., 22201 or 22232) 2.43%
Quadruplet (e.g., 22225 or 34444) .18%
doublet/driplet (e.g., 22233 or

Continued on page 5

Backtalk Continued from page 4

33300) .18%
all same digits (e.g., 11111 or
33333) .01%
(David L. Wilson,
Mathematics Dept., Indiana
University of Pennsylvania, In-
diana, PA 15705)

*I make no excuses for the near
TWENTY PERCENT ERROR in state-
ment "A."*

*I will say, however, that I knew bet-
ter; my colleague knew better; our
handwriting, of several years back, was
near impossible to decipher!*

*The error is not without some
benefit. It seems that you have provid-
ed much needed light on an otherwise
dark subject. Numbers monitors now
have-for the first time-a reliable
percentage guide in regards the in-
cidence of occurrence of doublets,
triplets and quadruplets.*

*I suspect that Professor Wilson will
agree that the incidence of occurrence
(in Numbers transmissions) of doublets,
triplets and quadruplets appears to be
far above the norm.*

*How about an article on your find-
ings on "Spy-Numbers" transmis-
sions? I'm sure it would be most infor-
mative.*

**WELL DONE, PROFESSOR
WILSON. ADIOS,
HAVANA MOON**

EDITORIAL COMMENT

by
Robert Horvitz
54 East Manning St.
Providence, RI 02906

Bob:
Monitoring times readers may be interested to know that they are not the only ones irritated by the Reagan Administration's new policies on information classification. And some of those irritated are in a position to do something about it--with a little encouragement from the public.

Last April 28, Sen. David Durenberger (Republican from Minnesota) introduced a bill that would restore two important "tests" for determining whether or not a piece of information should be classified or not. These tests were abandoned in Executive Order 12356, which was signed on April 2 and which went into effect last August. Sen Durenberger's bill is S. 2452: "The Freedom of Information Protection Act of 1982". S. 2452 would limit classification to

"matters the disclosure of which could reasonably be expected to cause identifiable damage to national security, and matters in which the need to protect the information outweighs the public interest in disclosure."

The first clause means that a decision to classify would have to be justified by reference to a specific, identifiable harm to national security. A bureaucrat's vague feeling that the information might be useful or interesting to some potential enemy wouldn't be enough. The second clause embodies the idea that there is an intrinsic public interest in information held by the government and this public interest must be taken into account. It is based on the principle that the government is the agent of the public--that the government is the custodian rather than the unlimited owner of information on its possession.

The "identifiable harm" standard and the "balancing" test were, until recently, part of the rules of classification. President Reagan's Executive Order 12356 eliminated them--along with several other important limitations on the government's right to classify. S. 2452 would reestablish them. Anyone who understands that protecting public access to information is the first line of defense against government tyranny should support this bill--and should express that support by writing to the four senators who are its co-sponsors:

Sen. David Burneberger
353 Russell Senate Office Building
Washington, DC 20510

Sen. Walter Huddleton
2121 Dirksen Senate Office Building
Washington, DC 29510

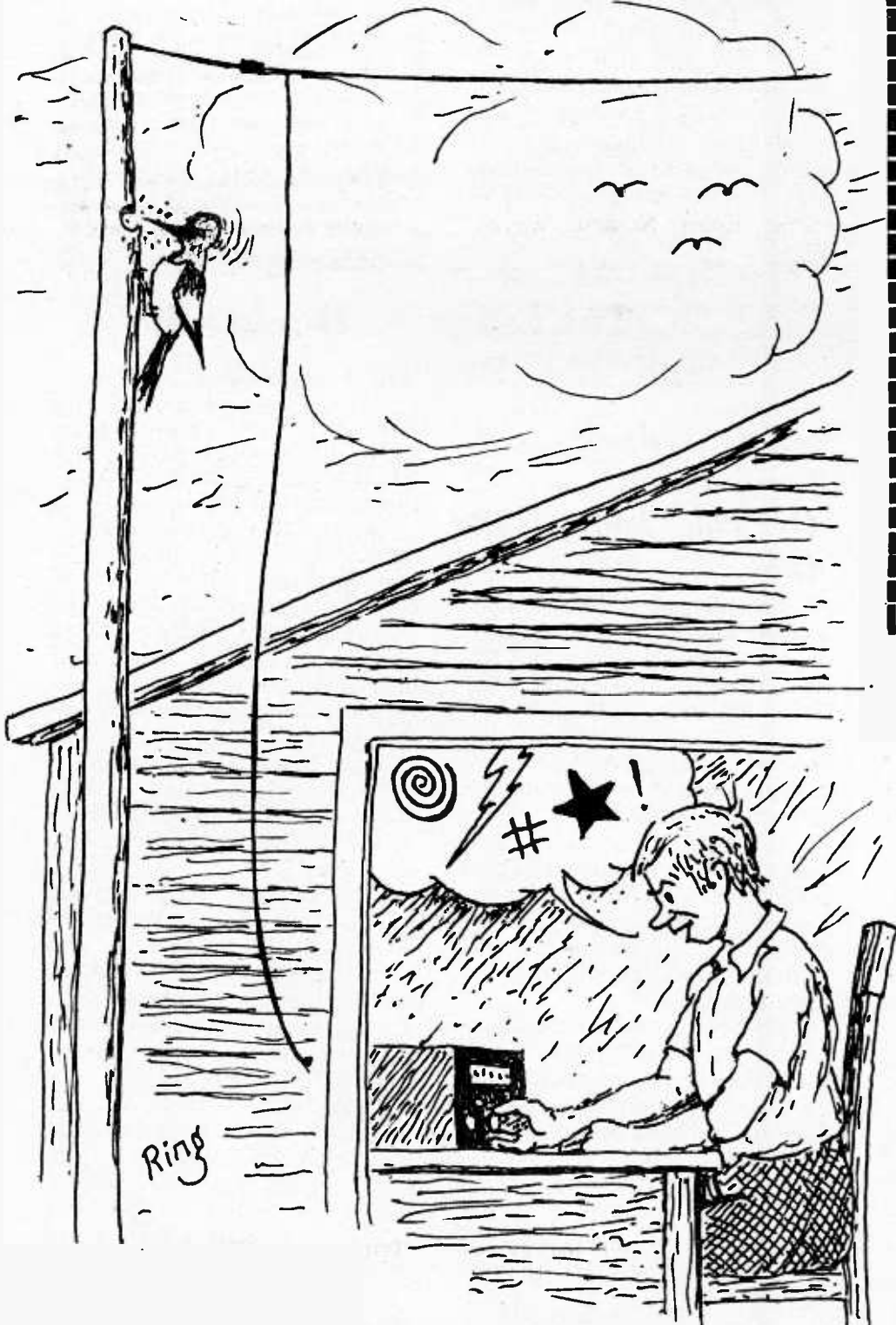
Sen. Patrick J. Leahy
427 Russell Senate Office Building
Washington, DC 20510

Sen. Daniel Patrick Moynihan
442 Russell Senate Office Building
Washington, DC 20510

The bill is currently before the Judiciary Committee, but I don't know if any hearings have been scheduled. The fact that Sen. Durenberger is a member of the Intelligence Committee, and therefore presumably familiar with the reality of classification issues, is encouraging. But given the current political climate, and the number of controversial issues on people's minds, it's possible that this bill may be just shunted aside--unless there is visible public support for it.

Over on the House side, there is also dissatisfaction with the new Reagan secrecy orders. A highly critical report, "Security Classification Policy and Executive Order 12356", House Report No. 97-731, was released last August 12th. Produced by the Government Information and Individual Rights Subcommittee, it gives them in historical and legal context. Copies of this report can be obtained for free by writing to the House Document Room, Room H226, US Capitol, Washington, DC 20515 (be sure to ask for it by its report number and title). Rep. Glenn English (Democrat, Oklahoma) is the Subcommittee Chairman. He too seems receptive to public comment, and has been effective (so far) in deflecting the Reagan Administration's repeated attempts to emasculate the Freedom of Information Act.

Last July 19, President Reagan said, "Our Constitution was not written to protect the government from its people. It was written to protect the people from their government." But given his attacks on the FOIA and his new secrecy order, these words sound utterly hypocritical. As true as they are, actions still speak louder than words!



"It's that darn Russian woodpecker again!" (With thanks

to Harold Ringgenberg of Cincinnati, OH)

FCC Releases New Disaster Frequencies

Monitoring Times reader Mike Cooper has alerted us to the new band plan authorized by the Federal Communications for use in the Part 90 Disaster Communications Service (section 90.264).

A total of 28 frequencies between 2 and 8 MHz are provided for the use of upper sideband voice transmissions with a maximum power of 1000 watts PEP.

While fixed (point-to-point) stations may use all of the frequencies, mobile (in motion) transmissions are confined to the 2 MHz assignments.

Center (suppressed carrier) frequencies are shown; upper

sideband frequencies are assumed to be 1.6 kHz higher.

All communications are intended for use in the 48 contiguous United States only.

2326	2466	2587	5195
2411	2471	2801	7477
2414	2474	2804	7480
2419	2487	2812	7802
2422	2511	5135	7805
2439	2535	5140	7932
2463	2569	5192	7935

NEW DISASTER COMMUNICATIONS SERVICE FREQUENCIES (KHZ).

“Los Numeros”

32444 69213 88816 52196 63811 94216

Havana Moon



by Havana Moon

The summer months are behind us and a hot one it was. Lots of clandestine, numbers and unknown activity to report for this issue of MT. (John Santosuosso reports elsewhere in this edition on clandestine activity.) End your three-day sulk and join me as we journey through the dark and mysterious world of numbers and other unknowns.

Careful! You might even bump into E.T.!

SUNDAYS: Five-digit Spanish monitored on 4435 KHz at 0300Z; 3381 at 0400 with repeat on 4044 at 30 past; 4044 at 0500 with repeat on 3090 at 30 past; 7830 at 0830; 5938 at 1000; 4044 at 0500 with repeat at 15 past on 5135.

Four-digit Spanish monitored on 9074//11,532 KHz at 0100Z; 9075 at 0400; 8420 at 1000; 11,532 at 1130; Three digit Spanish on 7836 KHz at 0430Z. (Code and not cipher groups)

MONDAYS: Five-digit English on 13,891 KHz at 0200Z. Each group repeated twice. This YL terminates with: “End of the information.”

Three-digit Spanish on 7836 KHz at 0430Z. (Code and not cipher groups)

TUESDAYS: Five-digit German on 9266 KHz at 0100Z. This YL terminates with: “Ende.”

Four digit Spanish on 11,532//13452 KHz at 2300Z.

WEDNESDAYS: Five-digit English on 13,891 KHz at 0200Z. Four-digit Spanish on 5812//8418 KHz at 0200Z; 11,532//13,452 at 2300.

THURSDAYS: Three-digit/two-digit German on 11,545 KHz at 0100Z. (123 45 678 90)

Five-digit Spanish on 4027 KHz at 0100Z; 9386 at 0130; 8112 at 0500; 7887 at 0500; 4044 at 0500 with repeat at 15 past on 5135.

FRIDAYS: Three-digit/two-digit German on 11,545 KHz at 0100Z.

Five-digit Spanish on 6894 KHz at 0700Z. Four-digit Spanish on 11,532//13,452 KHz at 2300Z.

SATURDAYS: TAPED CW GROUPS alpha characters (10) transmitted in groups of 5 on 5842 KHz at 0300Z. Repeats on 6292 at 30 past. (“on-air” tape rewind noted at end of both transmissions)

TAPED CW GROUPS also monitored on 4044 KHz at 0400Z with repeat on 3083 at 0430.

Five-digit Spanish on 4030 KHz at 0300Z with repeat on 3085 at 0330; 6572 at 0400.

Four-Digit Spanish on 9074//11,532 KHz at 0100Z; 7838 at 0300.

Three-digit Spanish on 7836 KHz at 0430Z. (Code and not cipher groups)

A comprehensive schedule of times and frequencies for numbers stations and CW beacons is presented on pages 87-90 of Grove’s Shortwave Frequency Directory (BOK-13 from Grove Enterprises).

THE TRIAD (E.T.’s, DAD? Not likely!) A TRIAD is best defined as: “...a union or group of three closely related things...” The R-S-T system would be one example of a triad. RST 488, for example, means: “...readable with practically no difficulty; strong signal; and near perfect tone with slight trace of modulation...” A better example would be “Baltic Ice Codes.” This code is used by Denmark, Finland, Germany, Norway, Poland, Sweden and U.S.S.R.

“...winter fast-ice; no change; and, navigation difficult for low-powered vessels without assistance of ice-breaker, dangerous for vessels of weak construction...” This information would be transmitted by the code-group, 502.

Table one from the Baltic Ice Code lists the character of the ice; table two lists the degree of ice development; and table three lists the effects of the ice on Navigation. All three tables contain predetermined listings on a scale of zero through nine. Another example: 000 would mean that there is no ice with no change and that navigation is unobstructed.

It’s one heck-of-a-way to compress a lot of information into 3 digits.

P R E C E D E N C E

DESIGNATORS. The precedence assigned to a message indicates the required speed of delivery and the relative order in which the message should be handled by communications personnel and noted by the addressee.

<u>Designator</u>	<u>Precedence</u>
Z	FLASH

Initial enemy contact in matters of the greatest urgency, such as war warnings. Handled as fast as humanly possible with an objective of less than 10 minutes.

O	IMMEDIATE
---	-----------

Typhoon and hurricane warnings. Distress. Storm conditions. Amplifying contact reports. Delivery objectives are 30 minutes to 1 hour. Processed, transmitted and delivered ahead of all messages of lower precedence.

P	PRIORITY
---	----------

Ship diversions. Normal weather conditions. Ship movement reports. Time standards are 1 to 6 hours. Immediate delivery on receipt at addressee destination.

R	ROUTINE
---	---------

Matters which justify transmission by rapid means

unless of sufficient urgency to require higher precedence. Can be handled from 3 hours to start of business the following day.

THE ADFGX CIPHER REVISITED. Having difficulty in getting 26 characters to fit into 25 squares? Why not combine the I & J or the Y & Z? Security-wise, the ADFGX cipher really misses the mark in every aspect. It could be enhanced by displacing the letters of the plaintext alphabet; for example:

```

ABCDEFGHIJKLMN OPQ
RSTUVWXYZ
GHIJKLMN OPQRSTUVW
XYZ [A B C D E F]
    
```

The above cipher alphabet is said to be “displaced by six.”
 A B C D E F G H I J K L M N O P Q
 R S T U V W X Y Z
 N U M B E R S A C D F G H I J K L
 O P Q T V W X Y Z

Displacement, in this instance, is by use of a “key” or “key-word.” (“NUMBERS”)

Let’s try another:
 A B C D E F G H I J K L M N O P Q
 R S T U V W X Y Z
 I N F O R M E D A B C G H J K L P
 Q S T U V W X Y Z

“Key” is: “Informed”
THE UNKNOWN....

ENCRYPTED VOICE TRANSMISSION on 4669 KHz at 0210Z on 3 July 1982. Transmission terminated just prior to 4-digit Spanish transmission. (4669//5812 KHz at 0230Z) Encryption was similar to “rolling-inversion.” Same type encryption noted on 3368 KHz at 0445Z on 22 August 1982.

“N” beacon on 9076 KHz at 0817Z on 29 August 1982.

“N” and “A” beacon on 9868 KHz at 0118Z on 5 September 1982. Abrupt stop at 22 after the hour. At 0130Z, a 5-character (A1) transmission. Same characters and same format as reported for 5842 and 4044 KHz. NOT A TAPE!!

“A” beacon on 7435 KHz at 0430 on 5 September 1982. Morse ID of KA7KKY in background at random intervals.

AN UNUSUAL INCIDENT: 5-DIGIT SPANISH TRANSMISSION WITH IDENTIFIABLE INTERMOD(?) Intermod (?) in the form of 5-character (CW) groups noted along with numbers transmission on 6572 KHz at 0400Z on 18 September 1982. Intermod was identical (same identifier and group count) to TAPED CW transmission monitored on 5842 KHz at 0300Z. Acting on a hunch, I tuned to 4044 KHz and there it was. **COMPROMISE OR A CLEVER DIVERSION?**

ADIOS,
 HAVANA MOON

Example of a one-time-pad utilizing “non-carrying” addition. A similar system was used by KGB Col. Rudolph Abel. Abel, the highest ranking spy caught in the United States, made extensive use of a similar system prior to his apprehension in New York City in 1957. Col. Abel was later turned over to the Soviets in exchange for U.S. Spy Pilot Francis Gary Powers. A more detailed look at Abel will be presented in a future issue of MT.

“Havana Moon”

The Bearcat 300 and the Regency D-810

....A side-By-side Comparison Of The Top of the Line

Recently, we decided to take a closer look at the performance of two popular scanners, the BC-300 from Electra and the D-810 from Regency. Although test equipment was available, it was decided that actual on-the-air performance would be of greater interest to our readers.

While the two scanners share many features (50 channels, pre-programmed memory channels, non-volatile memory, informative owner’s manual) their actual performance was as different as night and day.

Both receivers had initial problems: the BC-300 display would blank out leaving the receiver inoperative (restored by shock-exciting the unit by pulling the plug out of the wall and re-inserting it with the receiver still switched on); the Regency volume knob had to be removed and altered to make it stay on and turn the control shaft.

Keep in mind: An enormous amount of technology is packed into modern crystalless scanners at a low consumer cost. Only

large volume can justify these costs, and some problems are bound to slip by. That’s what warranty cards are for!

One of the greatest advantages of the D-810 was its ability to be programmed out of band, well beyond its advertised limits. In our unit (serial number 403704) purchased from a local distributor, we were still able to receive with reasonable sensitivity the following frequency ranges: 25.6-52.22 FM, 88.1-107.9 WBFM, 108-136.95 AM, 136.96-189.05 FM and 351.2125-545 MHz FM. That’s quite a chunk of spectrum!

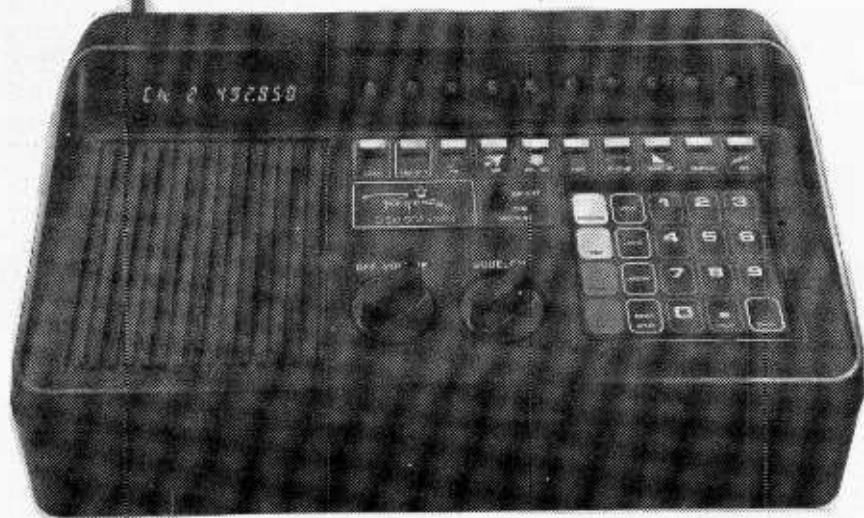
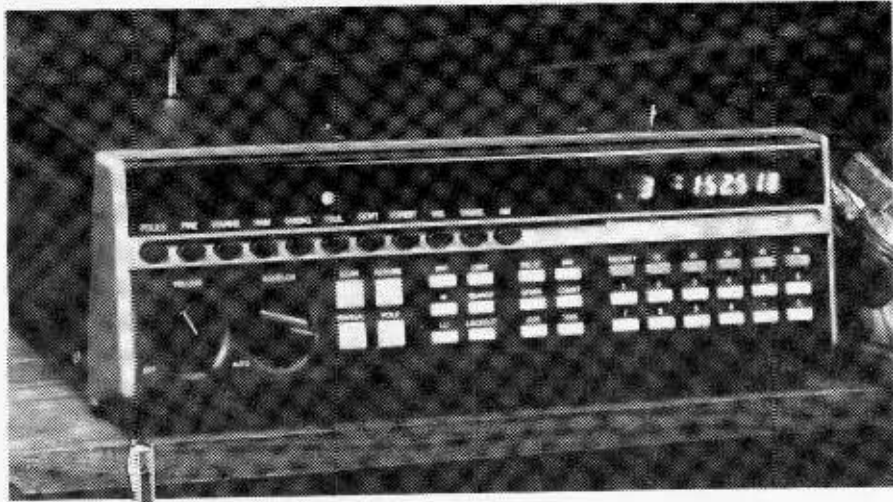
The Bearcat (serial number 52159) was decidedly more substantial in appearance and feel. The keyboard entry is more positive than the membrane switches of the Regency. Sensitivity was measurably better on the Bearcat, especially at UHF.

The Regency D-810 has FM broadcast band (wideband FM) with crisp audio quality and pre-programmed weather channels as well. The digital display was sharper and brighter than that of the Bearcat.

The BC-300 had ancillary features not found on the competitor from Regency: Tape-

Continued on page 7

Listeners Log



The Bearcat 300 Continued from page 6

recorder activation and several pre-programmed bands (2-meter amateur, industrial, local government, transportation). However, there are many more memorized channels in the pre-programmed banks of the D-810.

But let's take a side-by-side look at various considerations for deciding which scanner to buy.

CHARACTERISTIC

- Number of functions—BC-300
- Number of preprogrammed services—BC-300
- Ease of programming—BC-300
- Number of services per preprogrammed channel—D-810
- Readout clarity—D-810
- Direct channel access—D-810
- Frequency coverage—D-810
- Squelch sensitivity—BC-300
- Overall sensitivity—BC-300
- Selectivity—Equal
- Compactness—D-810
- Memory capacity—Equal
- Image rejection—Equal
- Oscillator radiation—BC-300
- Spur rejection—BC-300

- Shielding—BC-300
 - Scan/search speed—BC-300
 - Shipping package—Equal
 - Audio quality—Equal
 - Keyboard "feel"—BC-300
 - Keyboard illumination—D-810
 - Speaker loudness—Equal
 - Styling—(Subjective)
 - AC/DC power—BC-300
 - Accessories—BC-300
 - Construction quality—BC-300
 - Owner's manual—Equal
 - Lightweight—D-810
 - Cost effectiveness—BC-300
- Several prominent synthesizer products were noted from the D-810 which were not present on the BC-300, most notably 3580 and 895 kHz, and 27 kHz multiplex harmonics below 6 MHz. The audio quality of the BC-300 tends to be bassy, while that of the D-810 was crisp but tinny. A mobile bracket and DC cord are provided with the BC-300; the D-810 is AC only. The BC-300 has a metal cabinet; the D-810 has a plastic look and feel.

More Tricks For Your Scanner

5 KHZ SPACING ON AIR-CRAFT SEARCH

Since the new Grove CVR-2 GLOBESCAN converter is capable of covering the entire shortwave spectrum how may the companion aircraft band scanner with 25 kHz frequency increments provide complete coverage?

Very simply. While it is true that many multiband scanners with the 118-138 MHz aircraft band will automatically hop every 25 kHz when searching, there is

nothing wrong with starting the search and ending the search in successive segments, each 5 kHz higher than the last.

For example, instead of programming 118-136 MHz for your search, try 118.005-135.980, 118.010-135.985, 118.015-135.990 and 118.020-135.995.

With this special programming technique, the entire shortwave broadcasting spectrum from 4-22 MHz may be easily covered with no gaps.

Federal Government

Washington, DC

- by Greg Danes, Alexandria, VA (All freqs., MHz FM)
- Mt. Vernon, Va.
- George Washington Birthplace-163.125
- J.F.K. Center (DC) 409.050
- Langley AFB, Va.-173.587 Fire And Crash
 - 173.562 Medical Net
 - Police-149.565
 - Security-150.165
 - Security Police-163.512
- Naval Weapons Lab, Va.-149.075
- Portsmouth C.G. Security-165.262
- Quantico M.C. Training Center-149.350 Fire
 - 149.100 MP's
 - 149.130 MP's
- Yorktown, Va Naval Supply Center-149.425 Security
- Washington DC Naval HQTR's-148.310-Fire
 - 150.110-Police Pentagon
 - 409.750 " " (Mobile)
 - 411.925 National Visitors Center (Rptr)
 - 409.850 " " " (Mobile)
- News Media
- ABC NEWS
 - 455.0875 F1 Assignment Desk
 - 455.5875 F2 Engineering
- Mobile
 - 450.5875 F3 Engineering Desk
 - 450.850
 - 455.350
 - 455.700
 - 450.4125
- CBS
 - 450.4875
 - 450.5125
 - 450.6125
 - 455.800
- NBC
 - 455.050
 - 455.350
 - 455.750
 - 455.850
- Wash. 97.1 FM
 - 450.250 Traffic Plane
 - 161.730 Reporters (shared with TV Ch. 5-WTTG)
 - WDCA TV Ch. 20 Audio carrier 511.762
 - WDVM TV Ch. 9
 - 450.2125
 - 450.750
 - WETA TV Ch. 26
 - 455.1875
 - 455.2875
 - 455.3875
 - WJLA TV Ch. 7
 - 455.550 Reporters
 - 455.1125 Mobiles
 - WMAL AM 630
 - 161.70 Traffic Plane
 - 455.2125 Reporters
 - WRC TV Ch. 4
 - 161.670 Reporters
 - WTOP AM 1500
 - 450.350 Reporters and Traffic Plane
- Railroads
 - AMTRAK 160.800—Present Ch. 1
 - 160.920—Future Ch. 1
 - 160.515—MofW/Signal Dept.
 - 161.295—Police
 - 161.205—Police
 - CHESSIE SYSTEM 160.230—Ch. 1 Road
 - 160.320—Ch. 2 Yard (Georgetown Switcher)
 - 160.530—Ch. 3 Yard
 - CONRAIL 160.800—Ch. 1 Road

- 161.070—Ch. 2 Road and Yard
- FRUIT GROWERS EXPRESS
- 160.740—Car Shops
- POTOMAC
- YARD 160.275—Switching
- 160.305—Ch. 1 (Rptr)
- 160.335—Ch. 2 "
- 160.365—Ch. 3 "
- 160.425—Piggyback Ramp
- 160.455—Ch. 4 (Rptr)
- 160.485—Ch. 5 "
- 160.515—Ch. 6 "
- 160.545—Ch. 7 "
- 160.575—Ch. 8 "
- 160.710—Ch. 9 SB Hump
- 160.770—Ch C Car Dept. (RPTR)
- 161.280—Ch. 10 NB Hump
- 161.460—Switching
- 161.550—Ch. 12
- RICHMOND, FREDERICKSBURG AND POTOMAC
 - 161.550 - Ch. 1 Road
 - 161.550 - Ch. 2 Dispatcher to train
 - 161.490 - Ch. 2 Train to dispatcher
 - 161.355 - Ch. S Supervisor and Police (Rptr)
- SOUTHERN 160.950 - Ch. 1 Road and dispatcher
 - 160.830 - Ch. 2 Train to Dispatcher
 - 160.245 - Ch. 2 Dispatcher to Train
 - 160.500 - Alexandria, VA yard
 - 161.205 - Police-
 - 161.475 - Remote Control Loco's
 - 161.565 - " " "
- WMATA (Subway) 160.260 - Red Line Trains
 - 160.380 - Blue Line Trains
 - 161.235 - Yard
 - 160.605 - Yard
 - 160.620 - Power Director
 - 161.025 - MofW
 - 161.385 - Police
- WASHINGTON TERMINAL (UNION STATION)
 - 160.290 - Ch. 1 Road
 - 160.350 - Ch. 2 Car Shops
 - 160.440 - Police (Rptr)
- Fire Department
 - 33.06 Emergency Ambulance Service
 - 154.400 Ch. 1 (Repeater Input)
 - 154.190 Ch. 1 Dispatch (Rptr)
 - 154.235 Ch. 2 Fire Ground Operations
 - 154.280 Ch. 3 Mutual Aide
 - 154.205 Ch. 4 Paging, Ambulance Paging and Fire Ground Operations
- Police Department
 - 460.500 1st District
 - 460.250 2nd District
 - 460.450 3rd District
 - 460.475 4th District
 - 460.350 5th District
 - 460.025 6th District
 - 460.425 7th District
 - 460.325 City Wide 1
 - 460.400 City Wide 2
 - 460.200 TAC
 - 460.150 "
 - 460.100 "
 - 460.275 Special Operations
 - Division (SOD)
 - 453.550 Metro (Inter-jurisdictional channel)
- Department of Corrections
 - 39.02
 - 39.08
- Government (Misc.)
 - 45.56 Civil Defense
 - 45.60 "

Continued on page 8

Washington, DC

Continued from page 7

153.980 D.C. Guard Armory and
JFK Stadium (Star-plex)
154.040 Health Dept.
453.400 Highway Dept.
453.750 " "
453.450 Traffic
154.115 Electric Dept.
153.455 Power Utilities
158.130 " "
37.94 Public Works

U.S. Capitol Police
164.800 Ch. 1 (Rptr)
164.625 Ch. 2 (Rptr)

U.S. G.S.A. Police
415.200
417.200

U.S. Park Police
166.725 F 1 (RPTR)
166.925 F 2 Main (Rptr)
167.025 F 3 (Base/Mobil)
166.850 F 4 (Base/Mobile)
172.475 (Rptr)
172.750 (Base/Mobile)
411.625 Downtown
409.550 Downtown (Control/Mobil)
411.1725 Downtown
409.650 Downtown (Control/Mobil)
411.825 JFK Center (rptr)
409.750 " "
411.925 National Visitors Center
(R p t r)
409.850 " " " (Mobile)

News Media
ABC News
455.0875 F1 Assignment Desk
455.5875 F2 Engineering Mobile
450.5875 F3 Engineering Desk
4 5 0 . 8 5 0
4 5 5 . 3 5 0
4 5 5 . 7 0 0
4 5 0 . 4 1 2 5

CBS
450.4875
450.5125
450.6125
455.800

NBC
455.050
455.350
455.750
455.850

WASH 97.1 FM
450.250 Traffic Plane
161.730 Reporters (shared with TV
Ch. 5 WTTG
WDCA TV Ch. 20 Audio carrier
511.762
WDVM TV Ch. 9
450.2125
450.750
WETA TV Ch. 26
455.1875
455.2875
455.3875
WJLA TV Ch. 7
455.550 Reporters
455.1125 Mobiles
WMAL AM 630
161.70 Traffic Plane
455.2125 Reporters
WRC TV Ch. 4
161.670 Reporters
WTOP AM 1500
450.350 Reporters and Traffic Plane

Railroads
AMTRAK 160.800 - Present Ch. 1
160.920 - Future Ch. 1
160.515 - MofW/Signal Dept.
161.295 - Police
161.205 - Police

CHESSE SYSTEM 160.230 - Ch. 1
R o a d
160.320 - Ch. 2 Yard (Georgetown
S w i t c h e r)
160.530 - Ch. 3 Yard
CONRAIL 160.800 - Ch. 1 Road
161.070 - Ch. 2 Road and Yard

Government Agencies

Kansas and Missouri

by Michael Jones, Kansas City
KC Weather Service
Frequency Profile
2776 kHz SSB voice; technical
training center
6977 kHz SSB voice; technical
training center
9947 kHz SSB voice; technical
training center
163.025 MHz Hydrology network
repeater (Baldwin, KS)
165.5875 MHz National Weather
Service HQ communications
166.225 MHz Hydrology network
(flood conditions) (KC, Topeka.
Richards-Gebaur AFB)
172.100 MHz Tornado early warn-
ing network to broadcasters
(MCI)
2860 GHz Weather surveillance
radar (MCI)
5600 GHz Radar training
transmitter (Hardesty Street)
KANSAS STATEWIDE NA-
TIONAL GUARD NETWORK
(Callsign: "Sunflower")
4840 kHz SSB (primary)
3261 kHz LSB (alternate)
MISSOURI NATIONAL GUARD
4001.5 kHz SSB Statewide ad-
ministrative
46.70 MHz FM Air to ground
(Jefferson City)
49.80 MHz FM " " "
118.55 MHz AM " " "
139.10 " " Air to air Statewide
141.30 " " " "
142.40 " " " "
148.60 " " " "
232.50 " " " "
241.80 " " " "
242.40 " " " "
242.50 " " " "
244.50 " " " "

AIR NATIONAL GUARD (All
Freqs. MHz unless shown other-
wise)

Forbes Fld, KS

120.8
121.8
148.05
148.545
163.375
163.4875
164.5
165.0125
372.2
413.45
173.5375
173.5375
173.5625
173.5875

McConnell AFB KS

149.325
150.195
173.4375
390

Smoky Hill Range, KS

148.095
304.9
316.9

Ft. Leonard Wood Range, MO

392.2
396.1

8603.5 kHz
36.45
163.4625
Jefferson Bks, MO
4280 kHz
5977 kHz
6460 kHz
8624 kHz
9650 kHz
12908.5 kHz
15233 kHz

138.65
138.2
294.9
351.4

Robertson AGB, MO

148.075
148.2
148.45
148.5
149.15
163.4625
235.5
252.5
297.1
364.5
371.5
388.5
394.5

Smart Field, MO

4263.5 kHz
8615.5 kHz
9536.5 kHz
11764.5 kHz

St Charles, MO

108.3
121.6
126.3
225.025
252
274
300
325
334.1
375

(Thanks, Michael for a very com-
prehensive listing....ed)

VHF Military Frequencies

(NY & CT)

Contributed by Allan Oak
Nesteruk

Albany County Airport N.Y.
National Guard 41.000, 41.050
Bradley Airport C.T. Air Na-
tional Guard 34.150, 34.750,
40.650, 46.750, 49.850, 142.155,
148.075, 148.175, 148.525,
149.225, 149.300, 150.125,
150.200, 150.250, 150.300,
150.350, 163.485, 173.585,
413.450, National Guard
(Fury Operations), 41.900
Brooklyn N.Y. U.S. Navy
30.130, 140.675, 140.725,
140.750, 140.825, 141.00,
141.325, 149.095, 150.325,
(Security)-148.275, 148.275,
148.515, 173.050, 173.410,
173.585, 413.425
Buffalo N.Y. U.S. Navy 38.300,
41.900
Calverton Naval Weapons In-
dustrial Reserve Plant
Peconic Field N.Y. Grum-
mann Operations and Flite
Tests 36.900, 415.000, 420.000,
425.000, 434.000, 450.000
Coast Guard Academy New
London C.T. 171.235, 171.335,
171.360, 415.625
Dresden N.Y. U.S. Navy
34.730, 34.930
Floyd Bennett Coast Guard Air
Station Brookly N.Y.
164.300, 416.712, 418.412, (N.Y.
Helicopter Opera-
tions)-155.535

Fort Hamilton Brooklyn N.Y.
Army (MPs) 46.790,
(Army)-142.325
Fort Totten Brooklyn N.Y. Ar-
my 38.300
Fort Wadsworth Staten Island
N.Y. Army 38.380, 38.910
Garden City N.Y. U.S. Marine
Corps. HQ 1st District 138.550
Governors Island Coast Guard
N.Y. 165.260, 171.360, 419.975
Griffis Air Base Rome N.Y.
Air Force 40.170, 40.190,
138.075, 138.165, 138.175,
139.800, 139.900, 141.900,
143.850, 143.925, 148.065,
148.215, 148.515, 148.545,
149.565, 150.165, 150.345,
162.225, 163.460, 163.485,
164.485, 164.500, 165.010,
165.135, 165.185, 173.710,
173.435, 173.535, 173.560,
173.585, 413.150, 413.400,
413.450
Groton Submarine Base
Groton C.T. U.S. Navy
143.675
Grummann Bethpage Airport
N.Y. (Aerospace Operations
and Flite Tests)-36.900,
162.500, 165.625, 166.750,
168.250, 169.000, 169.750,
170.125, 170.250, 173.500
John F. Kennedy Airport
(Miscellaneous)-162.350
Lockport Air Force Station
N.Y. 148.450
Long Island MacArthur Air-
port Islip N.Y. (National
Guard)-41.000, 41.050-(Copter
to Copter)
Montauk Air Force Station
N.Y. 150.225
New Haven C.T. U.S. Navy
32.450, 36.550
New London Submarine Base
38.300, 138.720, 140.075,
140.460, 140.580, 140.650,
140.775, 141.000, 149.075,
149.125, 149.400
Niagara Falls Airport Air
Force (National
Guard)-41.000, (Air
Force)-149.150, 150.025,
150.150, 150.325, 164.025,
164.500, 164.860, 165.135,
165.160, 165.185, 173.585,
413.150, 413.200, 413.300,
413.450
New York Air Force 40.170,
40.190, (Army)-150.450,
163.000, (Military
Police) - 46.790,
(Navy)-32.650, 34.350, 34.950,
36.150, 140.075, 140.650,
140.775, 140.400
Orange C.T. Air National
Guard Communications Sta-
tion 141.800, 143.800
Plattsburg Air Force Base
(Weather) - 49.920,
(Security)-165.010, 165.135,
(Fire Dept. and Crash
Crews) - 173.585,
(Operations)-149.565, (Air
Force)-40.170, 40.190, 138.075,
138.165, 138.175, 148.065,
149.485, 163.125, 163.250,
163.485, 163.510, 163.535,
163.585, 164.175, 164.500,
164.985, 170.175, 173.410,
173.435, 173.535, 173.560,
413.150, 413.450
Raybrook N.Y. Army 163.260,
166.150, 168.025, 168.435,
169.900
Roslyn Air National Guard
Station N.Y. 41.950, 163.485

Continued on page 17

Tuning In On The Q. E. II

Recently, the Queen Elizabeth II paid a visit to New York, her first trip to the States after her use as a troop ship in the Falkland Island crisis.

Reader Harold Ort describes his monitoring encounter with the big vessel.

★★★★★

The luxury liner the Queen Elizabeth II steamed into New York harbor on her first voyage since being used as a troop ship in the Falklands crisis. While most New Yorkers were watching the arrival of the QE II on television, I punched up 156.65 (Coast Guard ship-to-ship ch 13) on my scanner.

Almost immediately I heard conversations between the QEII and the Coast Guard at New York Harbor. During the ship's three day cruise around Long Island, the Coast Guard provided assistance by cleaning a wide area of the Narrows of ships dodging the liner.

Here's an official list of Coast Guard, N.Y. frequencies that are a constant beehive of activity:

Frequency	Channel	Use
156.6	12	Port Operations working simplex used for commercial vessel traffic control in N.Y. harbor.
156.65	13	Bridge to bridge (ship) used for communications to arrange for docking, passing, etc.
156.8	16	Distress, safety and calling channel for the maritime mobile VHF-FM band.
157.10 MHz VHF-FM	22	Are designated as the Coast Guard and Non-Government (NG) ship stations liaison frequencies. They are available for use by ship stations to com-

Coast Guard Helicopter Frequencies Used in Metro New York Area

Channel	Frequency	Description
	381.8 MHz UHF-AM	Intra-Coast Guard UHF working simplex (Voice)
	121.5 MHz VHF-AM	International Aeronautical Emergency Frequency for VHF-AM band.

126.2 MHz VHF-AM	Coast Guard ships air/surface (Voice)
243.0 MHz VHF-AM	International UHF-AM Survival Craft frequency and U.S. Military common emergency channel.
156.8 MHz VHF-FM	Distress, Safety and Calling channel for the Maritime mobile VHF-FM band.
157.10 MHz VHF-FM	Are designated as the Coast Guard and Non-Government (NG) ship stations liaison frequencies. They are available for use by ship stations to com-

Continued on page 13



Our gift to you...

We at Grove Enterprises would like to take this opportunity to sincerely wish all of our friends a happy holiday season and a joyous new year.

We would also like to offer you a gift and our help as well.

Buying technical merchandise or publications for a friend or loved one can be very frustrating...we know. May we help you with some honest advice?

Take a look at our Christmas "WISH LIST" in this issue and give us a call on our toll-free line (1-800-438-8155). We'll be glad to help you make the best choice. And when you place your order, we'll send you a free SOUNDS OF SHORTWAVE cassette tape to say "Thank you" for allowing us to be of service to you.

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ELECTRONIC EQUIPMENT BANK THE NAME IN SHORTWAVE LISTENING

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ONLY \$378 ZENITH MONITOR
Reg. \$478 (LIST \$179)

The Perfect Pair for Those That Want RTTY at Its Finest. Here's Your System. Audio From Your Receiver Direct Into the M75 and Out Comes Teletype on Your Zenith Monitor.

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Frequency Coverage — 100KHz to 30MHz
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I.F. Frequency — 1st 70MHz, 2nd 9MHz, 3rd 455kHz
Dynamic Range — 100 db at 500Hz B.W.
Audio Output — 3 watts 8 ohms 10% distortion
Power Supply — AC 117-220V 50/60Hz 25 watts
DC 13.8V ± 15% 10 watts

- Pass Band Tuning
- Notch Filter
- CW-RTTY Wide/Narrow
- Computer Compatible
- Fully Synthesized
- Noise Blanker Wide/Narrow

Sensitivity — SSB-CW-RTTY — .16uV for 10 db S/N (1.6-30MHz)
AM — .5uV
Optional FM — .32uV (12 db sinad)
Selectivity — SSB-CW-RTTY — 2.3KHz
CW-N RTTY N — 500Hz
AM — 6KHz · 3KHz PBT
FM (optional) — 15KHz

ICOM, a world leader in amateur radio, now introduces a revolutionary receiver not previously available for under \$1500. Priced at only \$749.

As Advertised on WRNO New Orleans

Special Introductory SALE \$695

SAVE \$100

ONLY \$378 ZENITH MONITOR
Reg. \$478 (LIST \$179)

The Perfect Pair for Those That Want RTTY at Its Finest. Here's Your System. Audio From Your Receiver Direct Into the M75 and Out Comes Teletype on Your Zenith Monitor.

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5549.00 Discount - \$60.00 Rebate

Your Cost \$489.00
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CWR-6700 TELEREADER
RECEIVE-ONLY
RTTY/CW TERMINAL

LIST \$499.00 SALE \$449.00

RTTY - and CW

Now you can also enjoy shortwave listening to RTTY and Morse code transmissions with a unit designed for that purpose. The CWR-6700 offers many advance features. It receives and decodes only in Morse or RTTY mode. Some of these features are:

- Receive ASCII (Baudot) or Morse Code transmissions and see the decoded characters on the TV monitor screen.
- RTTY speeds from 45 to 300 baud (40, 46, 73, 100 & 300 spm).
- CW speeds from 4 to 50 wpm.
- Unmute on space (100% for Baudot reception).
- Receive ASCII printer output.
- Printer prints received ASCII, Baudot or Morse signals.
- Requires external TV monitor.
- Runs on 12 VDC, 8 Amps.

THE NEW MBA-RO

FEATURES:

- 32 Characters for Easy High Speed Copy of Morse
- ASCII and Baudot RTTY
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Optional AC-1 600 MA 12V Adapter \$14.95

Kantronics Code Reader

Buy the Kantronics Mini-Reader and put RTTY and CW readout in the palm of your hand. Decodes Morse (CW) and all common speeds of teletype (RTTY) BAUDOT-ASCII. Complete with 9 volt adapter and display stand. Plugs into your audio output. **SALE \$249.95**

B & W MODEL 88WJ148

Only 40 feet long
NEW PATENTED HIGH EFFICIENCY TRAPS
Automatically tunes the popular 11, 13, 16, 18, 21, 31 and 41 short wave bands.
Can be installed as a Cat trap.

Washer or inverted V long trouble free service.
Completely assembled (Low level cable) Center connector terminated with SO-238 Connector.

PRICE \$37.50

CABLES: RG-58 With PL-259

20 ft. \$ 8.99 50 ft. \$12.99 100 ft. \$19.99

The McKay Dymek DA 100D All Wave Receiving Antenna

Frequency Coverage 50 kHz to 30 MHz continuous
Antenna Height: 4 feet @ (142 cm)
Output impedance: Switch selectable 50, 100, 500 ohms
Amplifier: Compression Ratio 3.0 Vpp @ 13.5 dBm delivered to a 50 ohm load
Power Required: 110-120 or 220-240 VAC switch selectable, 50-60 Hz, 4 watts or 12 VDC 0.4 Amp

Active antenna — works better than 100 ft. long wire, easy to install, low noise pre amp at antenna base. The answer for apartment dwellers & travellers.

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YAESU FRG-7700

EEB'S BIGGEST SELLER
LIST \$549 SALE \$479
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MU-7700 Memory Unit 149.00 135.00
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As Advertised on WRNO New Orleans

KENWOOD R-1000 COMMUNICATIONS RECEIVER

Frequency range 200 kHz-30.0 MHz AM, SSB, and CW modes. Built-in noise blanker. PLL synthesizer covers 30 bands between 200 kHz to 30 MHz. Ideal 3-stage IF filters for receive mode. Built-in quartz digital clock with timer. Power requirements 100, 120, 220, 240 VAC, 50/60 Hz, 12 VDC option.

SALE \$449.95
LIST \$499.95

KENWOOD R-600

SALE \$359.95
LIST \$399.95

KENWOOD R-600 General Communications Receiver. — 150 kHz to 30 MHz continuous coverage of the AM, SSB and CW bands. Features 30 band coverage, PLL tuning, tone control and selectable AC power. 100/120/220/240 V, 12 VDC option.

PORTABLES

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ICF 6500W \$169.95	RF 2600* \$179.95
ICF 2001 \$269.95	RF 2900 \$249.95
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New Dealer Program Announced

Grove Enterprises has announced they will start a dealer program in January, 1983 to accommodate customers in their hometowns. Dealers interested in the program should write for more information on their business letterhead to Grove Enterprises, 140 Dog Branch Road, Brasstown, NC 28902.

NOTICE! Grove Enterprises and Monitoring Times offices will be closed for holidays November 26, December 24, 27 and 31.

**Become an
Expert In
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With These**

GIFTS

... Read!

Stuff Your Stocking With Books



COMMUNICATIONS MONITORING by Bob Grove (117 pages, 5 1/4" x 8 1/4"). Written for the shortwave listener and scanner buff, this fast-selling book describes all facets of radio listening from VLF through UHF.

Paging, telemetry, voice scrambling, bugs, antennas, receivers, accessories, clubs and publications, frequency allocations and more.

And as a special bonus, a special home projects section: Antennas, amplifiers, power supplies, receivers, converters, filters and other useful, easy-to-build items.
BOK-2, \$6.⁰⁰

HOW TO TUNE THE SECRET SHORTWAVE SPECTRUM by Harry L. Helms (182 pages, 6" x 9"). If your curiosity is aroused by unusual signals, this is the book for you.

Tour the world's secret radio spectrum: pirate and clandestine broadcasters, spy communications, mysterious beacons, long-delayed echoes, diplomatic and military channels, space communication.

One of our best-selling books. BOK-6, \$7.⁰⁰

SALE! (Reg. \$5.⁹⁵) SOUNDS OF SHORTWAVE (TAP-1) by Bob Grove (60-minute cassette). Puzzled by those strange sounds on the shortwave bands? This lively, professionally-produced tape identifies them for you!

Learn how to recognize jamming, spy transmissions, slow scan TV, teletype, multiplex, facsimile, telemetry and much more from actual off-the-air recorded examples.

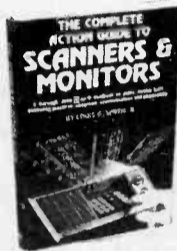
And as an added feature, helpful answers to your questions about antennas, receivers, grounds and other subjects most often asked by listeners. Get the most out of your listening.

Follow the diagnostic tips explained by Grove to test a receiver BEFORE you buy so you won't be disappointed!

THE COMPLETE ACTION GUIDE TO SCANNERS AND MONITORS by Louis A. Smith II (256 pages, 6" x 9"). A thorough, easy-to-read handbook on public service monitoring, including systems and accessories. Explains frequency allocations, scramblers, speakers, antennas and more.

Rules and regulations are stressed to help you understand the law. An excellent guide to questions and answers about scanner listening.

BOK-9, \$9.⁰⁰



THE TOP SECRET REGISTRY OF U.S. GOVERNMENT RADIO FREQUENCIES by Tom Kneitel (4th edition, 120 pages, 6" x 9"). An extensive collection of government and military frequencies, many considered highly-sensitive, from 25-600 MHz.

Includes many locations, callsigns, code names. Articles on surveillance, monitoring in the 1930's bugs, scramblers and pictures of federal QSL cards.
BOK-11, \$9.⁰⁰



SHORTWAVE FREQUENCY DIRECTORY BOK-13
The most comprehensive 1.6-30 MHz directory by Bob Grove of agencies and frequencies using the HF spectrum to date.

Some 5000 listings including Air Force, Navy, Coast Guard, Army, Foreign military, Energy, Emergency, State Department, Embassies, FCC, Inferior, Spies, beacons, clandestine and pirate broadcasters, aircraft and ships, space, RTTY/FAX, smugglers, INTERPOL, Border Patrol, radiotelephone and more.

Over 200 pages, 8 1/2" x 11", spiral bound for radio desk convenience. Only \$12.95.

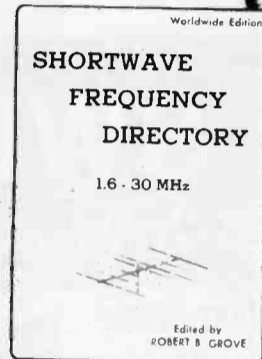
Truly an indispensable reference for any shortwave listener.

Listen to comments from delighted users:

"The most exhaustive directory of agencies and frequencies using the HF spectrum ever published. A must for the folks who DX the utilities." (Editors, American Shortwave Listeners Club)

"Worldwide in scope, Data is presented in clean, neat typing, and the offset printing was first rate. There is a very wide assortment of NEW military, governmental, commercial material...quite a collection of data covering virtually all aspects of utility communications. The Shortwave Frequency Directory is destined to be one of those MUST use books to have."

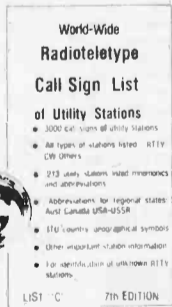
(Mike Chabak, utilities Editor, SPEEDX)



RTTY CALLSIGN DIRECTORY (new publication) (52 pages, 5 1/4" x 8 1/4"). Worldwide collection of some 3000 callsigns to help you identify those elusive RTTY stations encountered on the air.

The list includes callsign block allocations, common abbreviations and ITU identification regulations.

A handy reference guide for every RTTY enthusiast.
BOK-14, \$6.⁰⁰



RTTY FREQUENCY GUIDE by Joerg Klingentuss (50 pages, 8 1/2" x 11"). Expanded 8th edition -- The ultimate directory for tuning in news agencies, weather broadcasts, military communications, embassies and telegrams worldwide.

Over 2000 RTTY frequencies, 3-30 MHz, identified by location, agency, callsign and schedule. BOK-12, \$11.95.



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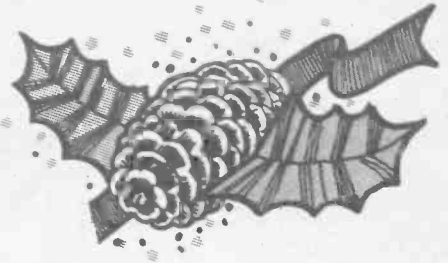
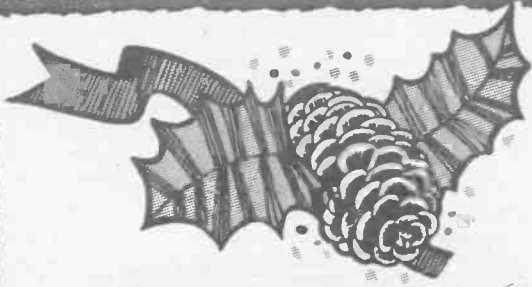
WORLD PRESS SERVICES FREQUENCIES, by Thomas Harrington, 3rd Edition). 72 pages, 8 1/2" x 11. An up to date comprehensive manual covering the field of radioteletype news monitoring. Contains three different lists of worldwide radio teletype frequencies used for transmitting news services in the English language, plus all needed information on antennas, receivers, terminal units, monitors and how-to-receive hints. Master lists include Transmission times, frequency, shift and speed, service (AP, UPI, TASS, REUTERS and other.) location and reception ratings. Highly recommended for all those interested in RTTY monitoring. BOK-5, \$7.95.



NEW! RADIO AMATEUR'S HANDBOOK. Now in its 60th edition, the Radio Amateur's Handbook continues to be the most widely-accepted, comprehensive guide to experimenter-oriented technical radio communications in the world. The new 1983 edition is the largest in history, containing additional material on satellites, TVI, ATV, computer and calculator programs and even an updated list of parts suppliers. Chapters include in-depth in-

formation on electrical fundamentals, radio design and terminology, solid state circuitry, power supplies, transmitters and receivers, antennas, CW, RTTY, SSB, radio wave propagation, specialized communications techniques, FM and repeaters and much more. 640 pages of well-written, easy-to-understand text revolving around amateur radio lends itself particularly well to all aspects of hobby electronics. BOK-16, \$12.

Shipping Charges \$1.00 for 1st book, \$1.00 for each additional book. UPS or bookrate USPS. Priority via USPS \$3.00 1st book, \$1.00 each additional book. Canada/Mex: Surface \$3.00 1st book, \$1.00 each additional book. Air \$3.00 1st book, \$1.00 each additional book.



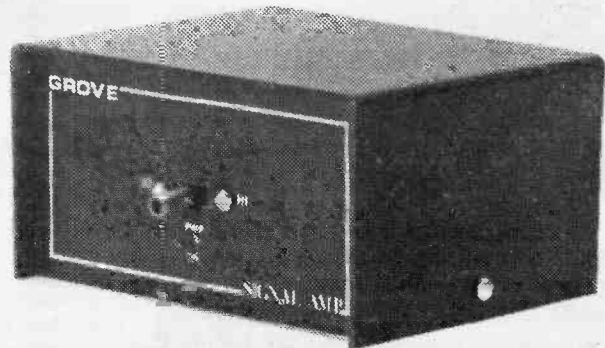
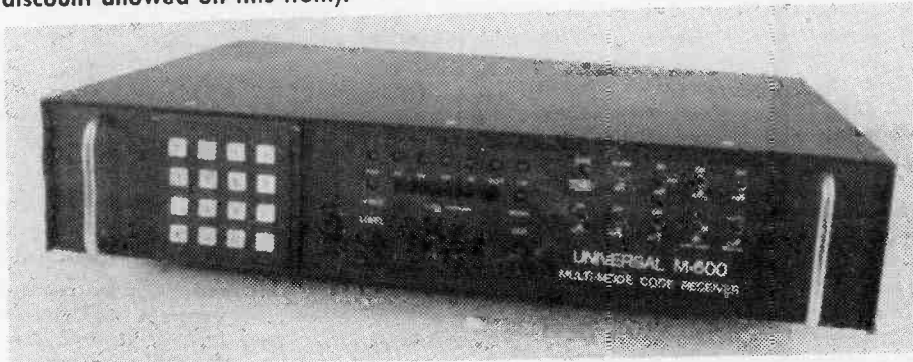
CHRISTMAS SHOWCASE

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M-600 UNIVERSAL RTTY/MORSE CRYPTO DECODER

Copy scrambled radioteletype messages never before readable with standard demodulators and readers. Bit inversion. TOR/SITOR, weather text—formerly garbled on other decoders, now perfectly clear on the revolutionary M-600! Simply attach to your shortwave receiver's external speaker jack and connect a printer or video monitor and copy government transmissions, ship-to-share messages, public correspondence stations and much more. A sophisticated microprocessor automatically sorts out the encryption for you; sit back and watch what you could never see before! The magnificent M-600 provides scrolling, page recall, speed readout, unshift a space, white on black video, 64 character upper-case ASCII, 36 or 72 character lines, 16 or 25 lines per page, selective call, buffered printer out put, isolated loop, and many other deluxe features. The M-600 copies ASCII (110, 150, 300, 600, 1200 baud), Baudot (60, 67, 75, 100, 132 WPM), Morse code (up to 60 WPM), in both standard and non-standard shift. Demand is heavy for this revolutionary new decoding system, so order now! Operates from 120/240 VAC, 50/60 Hz. \$799 plus \$10 UPS, \$20 USPS. (No discount allowed on this item).

New Products!

Prices effective through Dec. 31, 1982



SIGNAL AMP (PRE-1)

IT'S FINALLY HERE! A wideband mast-head preamplifier for ALL VHF/UHF scanning receivers! Simply install the unit on your existing antenna and enjoy improved reception on all frequency ranges, 30-960 MHz. Use your existing coax for economical installation; all hardware included for rapid installation. Ideal for remote surveillance. High-gain mast-head preamplifier encapsulated in weatherproof housing connects between antenna and your feedline. Control unit sets at your radio position, awaiting your command for activation. Signal Amp provides average gain of at least 15 dB with ultra-low noise figure of only 1.8dB! Install your Signal Amp now and hear those weak signals come up out of the background noise! Excellent for TV and FM as well! Requires 12 VDC at 15 ma. Only \$69 plus \$2 UPS or \$5 USPS. Recommended accessories: PWR-1, FTR-3.



GLOBESCAN SHORTWAVE CONVERTER (CVR-2) YOUR SCANNER CAN HEAR THE WORLD!

NOW! Hear worldwide shortwave broadcasts on your aircraft scanner! Radio Moscow, Voice of America, BBC, all booming in loud and clear with a unique, inexpensive converter. Sit back and listen to the mysterious spy numbers stations, pirate radio broadcasters, the opera from Rome, clandestine broadcasts from emerging nations, news reports from the Middle East...as it happens! If your scanner is capable of standard 118-136 MHz Am aircraft reception, you can receive the 4-22 MHz shortwave spectrum with no gaps! Use with Regency or Radio Shack aircraft scanners and listen all the way down to the .55-1.6 MHz standard broadcast band! Your scanner provides listening luxury not even found on expensive shortwave receivers! Enter your favorite shortwave broadcast stations into your scanner's memory for instant recall! Scan, search for shortwave stations while your scanner's squelch quiets the receiver until a signal is heard! A convenient lookup chart assists rapid calculation for digital frequency entry into your scanner. Use your existing outside scanner antenna to hear the loud ones, or install an inexpensive shortwave antenna for worldwide reception! Requires 12 VDC at 20 ma. Complete with accessory plugs and full instructions. CVR-2 only \$79 plus \$2 UPS or \$5 USPS. Recommended accessories: PWR-1, BOK-3, TUN-3.



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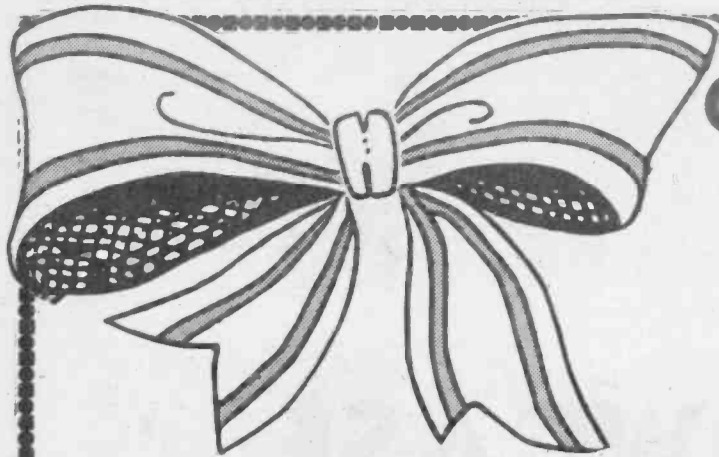


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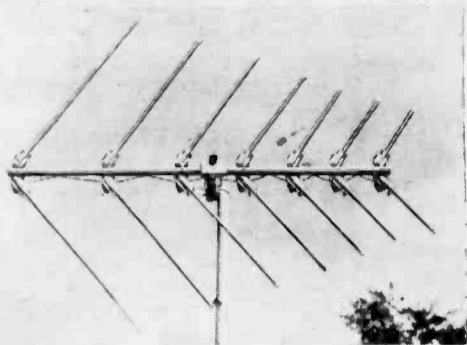
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Confidence. You'll KNOW distant, weak signals will be heard with the best scanner antenna money can buy. And at a budget price, too! Continuous 108-512 MHz coverage, up to 8 dB gain over conventional monitor antennas. Receives 30-50 MHz, too. Scanner Beam is used worldwide by government and military agencies, search and rescue teams and serious listeners who demand the very best. Why waste your money and listening time on inferior antennas when the Scanner Beam can be shipped to you today? Complete with mounting hardware, offset boom, weather boot, matching transformer and instructions. Only \$49 plus \$3 UPS, \$7.50 USPS. Recommended accessories: CBL-1, FTR-3. CANADIANS! Scanner Beam can now be shipped by USPS to you!



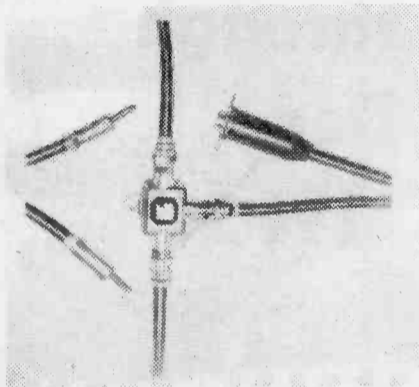
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If you own one of the popular general coverage communications receivers and are using an outside antenna, YOU NEED this extra measure of selectivity! A simple turn of the dial will totally eliminate images, intermod and phantom signals which plague Kenwood, Yaesu, Sony, Panasonic, Radio Shack and similar receivers. No power required; simply connect to your receiver's antenna and enjoy reduced-interference reception from 100 kHz through 30 MHz. All accessories are included. Only \$54 plus \$2 UPS or \$5 USPS.



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Hearing aircraft on your police and fire band? Mobile telephone tones in the middle of other communications? TV or FM broadcasts on your scanner? You can tune them out with a twist of the dial on your Scanner Filter. New dual-band model rejects interference from 76-216 and 406-512 MHz. No power required. Ready to plug into your scanner. Only \$39 plus \$2 UPS or \$5 USPS.



NEW SHORTWAVE MODEL! CPL-2

RECEIVER MULTICOUPLER CPL-1

SAVE MONEY!

If you use more than one scanner or shortwave receiver, you don't need two antennas and two feedlines. With the Multicoupler, simply plug your one outside antenna cable into the CPL-1 or CPL-2 and all signals are automatically fed to both receivers! Eliminate loss and mutual interference caused by direct-connect (splicing) techniques. All adaptors and cables provided. Super for combination AM/FM car radios and scanners using one outside antenna.

Order CPL-1 (Scanner) or CPL-2 (shortwave) Budget priced at only \$14 plus \$1.50 UPS or \$3 USPS.



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Listen to Air Force, Coast Guard, National Guard, Blue Angels, NASA flights and many other services never before available on your scanner's aircraft band. If your scanner is presently capable of normal aircraft band reception (118-136 MHz), you can now cover the entire 225-400 MHz federal government/military aircraft band! Simply plug the CVR-1A into your scanner's antenna jack and open up a new world of aerospace intrigue! Why pay more for an obsolete war surplus radio when your scanner can provide scan, search, memory channels and digital readout? Order now and receive a free AC adaptor. Sale priced at only \$89 plus \$2 UPS or \$5 USPS (Reg. \$99.95 plus \$8 adaptor). Recommended accessories: Scanner Beam or discone antenna.

SALE! SAVE \$18!

POWER ANT ANT-4

You can boost those weak VHF/UHF signals with this powerful combination preamplifier/active antenna. Use it as an amplified stand-alone indoor antenna (telescoping whip included), or as an antenna preamplifier when you plug your external antenna plug into it. Panel control allows you to adjust the gain as high as necessary for hot reception of those distant, weak signals. A brilliant LED indicates the unit's readiness status. Order now and receive FREE our popular PWR-1 AC adaptor. SALE PRICED AT ONLY \$59 plus \$2 UPS, \$5 USPS (Reg. \$69 plus \$8 for adaptor).

**Prices effective
thru 12/31/82**



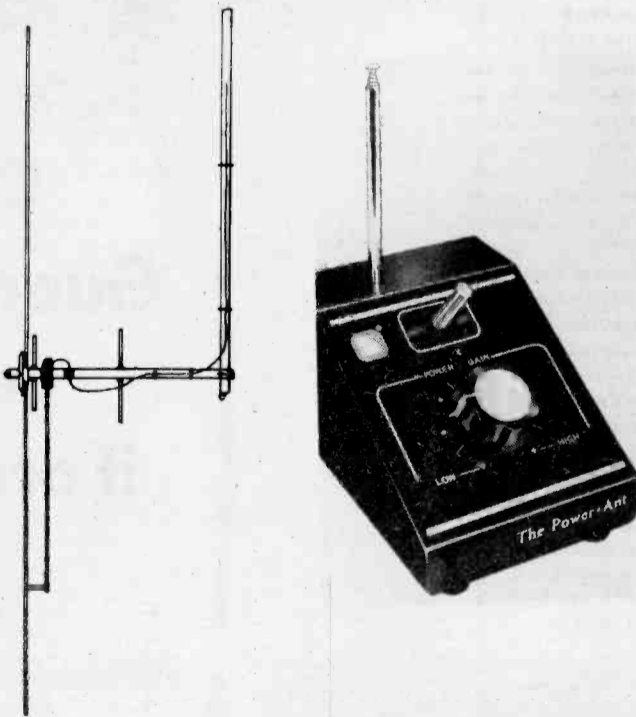
AC ADAPTOR PWR-1

Our universal AC adaptor powers all Grove accessories and those of other manufacturers as well. Converts normal 120 VAC 60 Hz house current to your choice of 3, 4.5, 6, 7.5, 9 or 12 volts DC at up to 300 ma. current. An array of plugs (phone, coaxial and 9-volt) included. Switch-selected voltages and polarity. A \$14 value for only \$8 plus \$1.50 UPS or \$2.50 USPS.



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Don't waste money! If you buy the best scanner antenna and connect it to low-grade coax, you lose signal strength! The CBL-1 is selected for critical high-performance, low-loss scanner reception. The 65' CBL-1 comes equipped with F and Motorola connectors to fit the majority of scanner installations. Discount priced at only \$14 plus \$2 UPS or \$4.25 USPS.



OMNI ANTENNA ANT-5

Looking for an outstanding rooftop antenna for your multiband scanner? The OMNI provides unexcelled 360 degrees coverage on all scanner bands: 30-50, 108-174 and 406-512 MHz. This rugged, no-compromise low, high, air and UHF band antenna comes complete with all mounting hardware and instructions. Only \$20 plus \$3 UPS, \$7.50 USPS. Recommended accessories: CBL-1, FTR-3. CANADIANS: The OMNI can now be shipped by USPS to you!



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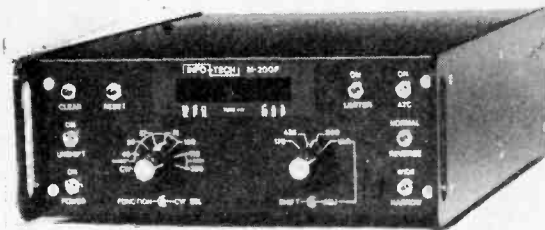
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Unbeatable performance at an unbeatable price! Just plug this handy Morse/RTTY display terminal into the external speaker jack of your shortwave receiver and watch those signals write as plain text across a brilliant 10-character fluorescent screen! Copy ship to shore messages, weather reports, news transmissions, ham communications received either as CW or RTTY. No other accessories or equipment required except your receiver! RTTY speeds of 60, 67, 75 or 100 words per minute selected at the press of a button! Morse signals at virtually any speed tracked automatically! Even computer ASCII (110 or 300 baud) can be displayed. Additional features include code practice display, 24 hour clock, speed display, audio frequency counter and lapsed time chronometer! Even the accessories are included—AC adaptor, tilt stand, interconnecting plugs—at this new low price! Discount priced at only \$269 plus \$3.50 UPS or \$7.50 USPS.

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INFOTECH M200F DEMODULATOR

This deluxe Morse/RTTY receiving system provides the ultimate in full-function flexibility for conventional Morse and RTTY reception. Use in conjunction with either a video monitor or serial printer to provide 36 or 72 characters per line and 16 or 25 lines per page. Automatic scrolling and editing, 110 or 300 baud and 60 ma. loop drive for printers—even autostart! Automatic threshold improves copy during signal fading. Select 60, 67, 75 or 100 words per minute; 110 or 300 baud ASCII; or automatic Morse coder reception of virtually any speed! Tuning is assisted by a 10-step LED bargraph. Operates from 115/230 VAC, 50/60 Hz, 20 watts. **SPECIAL DISCOUNT PRICE ONLY \$549 AND RECEIVE A LIMITED-TIME \$60 REBATE!** (Shipping \$7.50 UPS or \$15 USPS).

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Tuning In On The Q.E. II

Continued from page 9

communicate with the Coast Guard and to receive Maritime information and certain weather broadcast information.

- 23 157.15 MHZ VHF-FM Intra-Coast Guard Maritime mobile UHF-FM working simplex (voice). Used when working SAR case with CG group New York, ATLANTIC CITY NJ, and Shinnecock NY
- 81 157.075 MHZ VHF-FM CG Mobile stations-Marine Environmental operations frequency (Voice). Used Helo working SAR case with CG Group Long Island sound.
- 83 157.175 MHZ VHF-FM Intra-Coast Guard Maritime mobile VHF-FM working simplex (Voice) used when working SAR case with CG group Sandy Hook NJ

Signals from VHF high band and UHF stations may be improved greatly with the use of a high quality gain antenna like the Grove Scanner Beam (ANT-1) (See Grove ad).

(Thanks, Harold, for an interesting insight....ed)

Teaser Of The Month

How do you resolve the bidirectional ambiguity of a Bellini-Tossi fixed-loop goniometer?

Earliest correct answer received by mail will receive a free technical book from our library.

Send entry to: Technical Topics, c/o Monitoring Times, 140 Dog Branch, Brasstown, NC 28902

WANTED: CREATIVE ELECTRONIC DESIGNER WHO WANTS TO LIVE IN THE MOUNTAINS

Grove Enterprises is looking for a design technician with experience in consumer RF, Audio and Digital circuitry for new product development.

Knowledge of consumer IC design is mandatory.

Applicants **MUST WRITE** (not telephone) with full credentials and salary requirements to Bob Grove, President, Grove Enterprises, Inc., 140 Dog Branch Rd., Brasstown, NC 28902.

Applicant must be a non-smoker and willing to relocate. The position will be available on or about January 1, 1983.

We at Monitoring Times constantly receive letters from readers which begin, "Please send me everything you have on....". Invariably, such requests don't even include a self-addressed stamped envelope.

Obviously, such requests can not be answered. As much as we would like to help, we are not a public library service. Many publications are available with frequency lists, and our Book Shelf section contains excellent reference works.

We will be happy to reply as time permits to those who inquire with problems. Letters received with an SASE will be answered; questions of a general interest will be reprinted with answers in the Technical Topics column.

And as always, my telephone line is open for prepaid calls every afternoon from 4-5 p.m. Eastern (704-837-2216).

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Converts Morse & RTTY (Baudot & ASCII) to video, and serial Baudot or ASCII for hard copy



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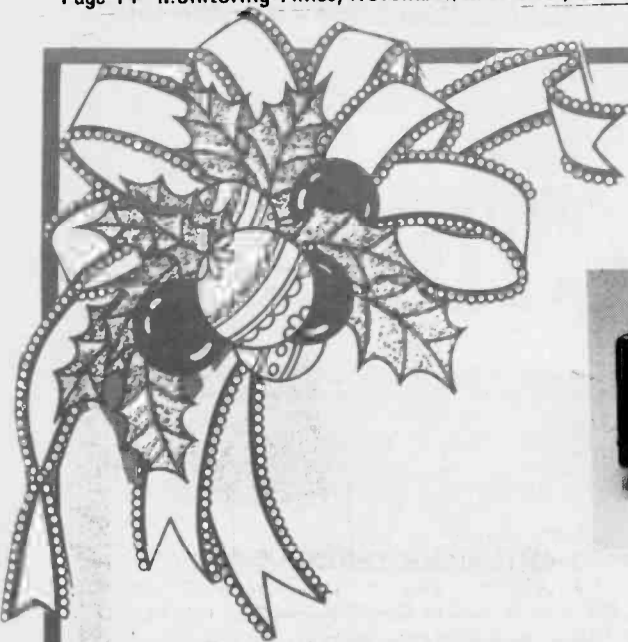
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Manufactured to exacting specifications by a prominent military and commercial shipboard communications company, the NRD-515 continues a tradition of unexcelled performance. No other receiver comes near the features of the NRD-515 represents a hallmark in receiving technology.

From the optically-encoded frequency selection mechanism to the continuous passband tuning system the NRD-515 represents a hallmark in receiving technology.

Continuous 100 kHz-30 MHz coverage, phase-locked-loop stability, all mode (AM, USB, LSB, RTTY, CW) reception, up-conversion double superheterodyne virtually eliminates images, switchable selectivity and AGC timing, input attenuator, modular construction and a wide selection of terminals for recording and external control.

A matching 24 or 96 channel memory unit (optional) affords the luxury of instant selection of any frequencies in any order you desire. Program it with your favorite international broadcasters, military networks, ship-to-shore channels...anything you wish from the NRD-515 receiver range.

Even remote control is possible with the flexible NCM-515 microprocessor frequency controller (optional).

An illustrated color manual is available to those seriously interested.

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RECEIVER TERMINOLOGY
DYNAMIC COMPRESSION: (DESENSITIZATION) As the input to an amplifier is increased, a point is reached where the output signal no longer increases proportionally to the input signal. This is the gain compression point of the stage. At this point, sensitivity is reduced for every signal in the passband of the stage. Thus, it is important to choose transistors with high dynamic range for broadband amplifiers.

INTERMODULATION DISTORTION (IMD or INTERMOD): If more than one signal is present in the mixer passband, they may mix and produce spurious products. At high signal levels, higher order intermod products may begin filling the passband.

CROSS MODULATION: Most noticeable in AM reception, cross modulation is characterized by the appearance of the modulation of another signal superimposed on the received carrier.

IMAGES: Any time two signals mix, such as when the desired signal is mixed with the receiver's

local oscillator, the sum and difference of these two frequencies as well as their multiples (harmonics) will be present. If no means to filter out the unwanted signals is used, all may be present in the passband.

THERMAL STABILITY (DRIFT): Temperature changes

Low Power AM, FM, TV Possible

The FCC is hearing comments on several proposals to allow limited-range broadcasters to use lower power, thus sharing many channels now reserved for high powered stations on a non-interference basis.

VHF TV broadcasters would be limited to 10 watts for 10-15

miles range, while UHF TV broadcasters could use up to 1000 watts.

Prospective low-power (Class A) FM broadcasters would be allowed to use up to 3000 watts.

Actions on the proposals are expected within the next few months.

may cause changes in the values of components in the receiver's oscillator circuit, resulting in a gradual shift off frequency of the received signal.

MECHANICAL STABILITY: Impact or pressure on the cabinet of the receiver may deform components in the receiver's oscillator section, resulting in a shift off frequency of the received signal.

SELECTIVITY: Ideally, only one signal at a time should appear in the receiver's passband. Efforts to achieve single-signal reception are made both in the RF and IF stages. The desired signal should be passed unaffected, while adjacent (off-frequency) signals should be infinitely rejected.

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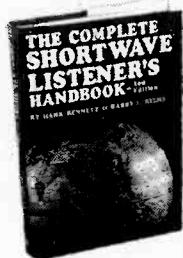
Heavy duty switched extension cord features 6 three-wire outlets, pilot light and circuit breaker. Extruded aluminum housing provides secure protection and superior shielding.

Control several pieces of equipment with one master switch. Operates at up to 18 amps (1875 watts). **\$16.00 plus \$2 UPS or \$5 USPS in U.S.**

THE GIANT BOOK OF ELECTRONICS PROJECTS by the editors of 73 Magazine. (498 pages, 5 1/4" x 8 1/4"). A massive collection of eminently-useful home projects for both beginners and advanced experimenters.

More than 100 liberally-illustrated projects include antennas, filters, receivers, transmitters, test equipment, clocks, power supplies and more. **BOK-15 \$9.⁹⁹**

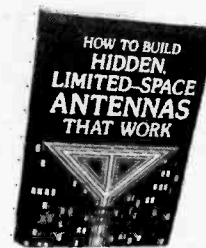
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SAVE \$2.45
THE COMPLETE SHORTWAVE LISTENER'S HANDBOOK by Hank Bennett and Harry Helms (2nd edition, 306 pages, 6"x9"). A thorough introduction to the exciting world of shortwave listening.

Learn more about receivers, antennas, frequencies, radio wave propagation, harmonics, logging, reception reports.

Fascinating and informative reading. **BOK-7, \$8.⁹⁹**



HOW TO BUILD HIDDEN, LIMITED SPACE ANTENNAS THAT WORK by Robert J. Traister. 308 pages, 6"x9". A collection of clever and innovative antennas for SWL's, hams and anyone else who finds he has no room for conventional antennas. Special projects for apartment dwellers include suspended verticals, window antennas and attic antennas.

Devise effective antennas from downspouts, window screens, TV antennas and other available surfaces. **BOK-8, \$7.⁹⁹**

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HOME-BREW HF/VHF ANTENNA HANDBOOK by William Hood (210 pages, 6"x9"). Down-to-earth presentation tells you what you want to know about antennas, dummy loads, SWR meters, dip wave meters, impedance bridges and more.

A handy guide for the home experimenter. **BOK-10, \$5.⁹⁹**

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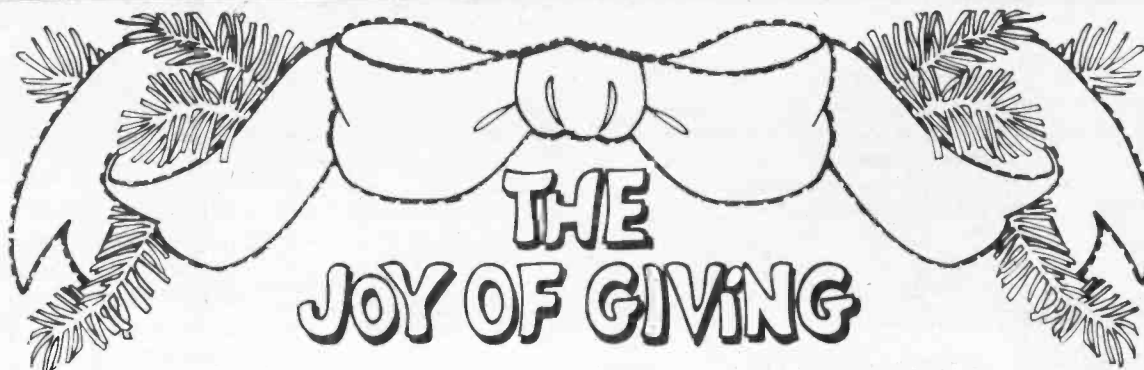
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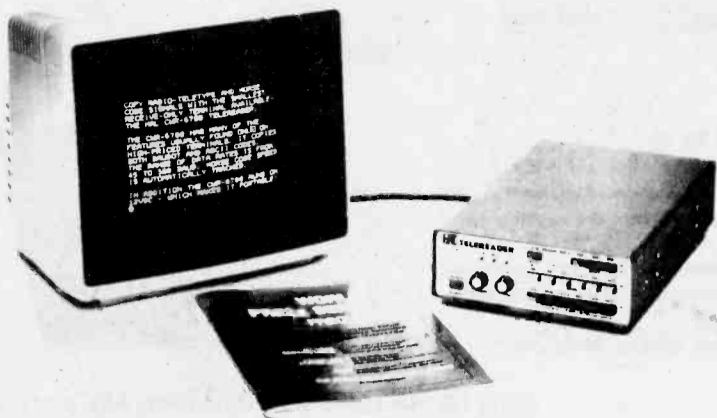
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WAYNE GREEN BOOKS



Novice License Study Guide
 by Timothy M. Daniel N8RK

This book emphasizes the practical side of getting a license and putting a station on the air. Complete with information about learning Morse code, the latest FCC amateur regulations and application forms, this guide is easily the best path into the exciting world of ham radio.
 SG7357 \$4.95

General License Study Guide
 by Timothy M. Daniel N8RK

Learning rather than memorizing is the secret. This is not a question-and-answer guide that will gather dust when the FCC issues a new test. Instead, this book will be a helpful reference, useful long after a ham upgrades to General. Includes up-to-date FCC rules and an application form.
 SG7358 \$6.95

World Repeater Atlas

Completely updated, 2000 repeater listings are indexed by location and frequency, pinpointed on more than 50 maps throughout the USA. Foreign listings include Europe, the Middle East, South America, and Africa. In addition to covering the popular two-meter repeaters, the **World Repeater Atlas** lists repeaters for six meters, 220 MHz, and the other bands.
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The New Weather Satellite Handbook

by Dr. Ralph E. Taggart WB8DQT

This revised edition contains all the information on the most sophisticated and effective spacecraft now in orbit. The book is also an introduction to satellite watching, providing all the information required to construct a complete and highly effective ground station. Not just ideas, but solid hardware designs and all the instructions necessary to operate the equipment are included.
 BK7383 \$8.95

The Magic of Ham Radio

by Jerry Swank W8HXR

Under various call signs, W8HXR has been heard on the ham bands since 1919. He has watched amateur radio grow from the days of Model A spark coils to an era of microprocessors and satellite communications. Drawing on his own colorful experiences and those of many other hams, Jerry has compiled this word-picture of ham radio during the past six decades.
 BK7312 \$4.95

Behind the Dial

by Bob Grove

This book explains, in detail, what's going on on all the frequencies, from shortwave up to microwave, including some of the secret stations of the C.I.A. and F.B.I. Surveillance, station layout considerations, antenna systems, interface, and the electromagnetic spectrum are included.
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Meters Or Megahertz?

The use of "meter band" by many broadcasters and amateurs alike often causes confusion on the part of the listener unfamiliar with the definition of each.

Radio Waves are composed of fields of electromagnetic energy; they vibrate at extremely rapid rates as they move their signals across the earth.

The actual physical measurement of the distance between one of these waves and the next is called wavelength. The number of waves to pass a point each second is called frequency. Since the speed is constant, the more waves that pass a point each second, the shorter the length of each wave. Thus, as frequency increases, wavelength decreases.

The product of wavelength (in meters) and frequency (in megahertz) will always be a constant (approximately 300). Therefore the 75 meter ham band edge is at 4 MHz, the 49 meter international broadcast band centers around 6 MHz and so on.

A table of international broadcasting bands and their frequency equivalents are presented here for reference:

METERS	MEGAHERTZ
49	5950-6200
41	7100-7300
31	9500-9900
25	11650-12050
19	15100-15600
16	17550-17900
13	21450-21850
11	25600-26100

Adventist World Radio DX Contest

The popular "Radio Monitors International" program conducted by AWR-Asia has announced a three-part contest to take place the week of November 7, 1982.

PART 1: Log as many DX programs as possible in as many languages as possible, one program per station. Make out a reception report from each DX program in each language.

PART 2: List your 5 favorite DX programs in order of preference.

PART 3: In one paragraph, state what you like about your favorite DX program.

Send your entry, postmarked before November 22, to: Radio

Monitors International, Box 15, Poona 411001, India.

PRIZES: The world winner will receive the coveted 1982 bronze medallion and a large set of health books. Many other minor prizes will be awarded, and all reception reports will be verified with specially-marked QSL's.

Consult the World Radio TV Handbook for frequency and program information regarding SLBC, Sri Lanka. Some frequencies heard on Sunday include 7190, 9720, 11800 and 15425 kHz. English DX programs may be heard Sunday 1130 UTC on 11835, 15120 and 17850 kHz, and at 1400 UTC on 9720 and 15425 kHz.



73 Magazine is a virtual encyclopedia for radio amateur communications, covering a complete range of topics from A to Z:

- | | | |
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| Broadcasting | Jamming | Satellites |
| Construction | Keys | TVRO |
| Detection | Listening | UHF |
| Electronics | Microwaves | VHF |
| FCC | New Products | Wayne Green's editorials |
| Globe-trotting | Oscillators | X-array |
| Hams | Police Freqs | Year-end indexes |
| | Questions and Answers | Zepps |

Yet, unlike typical encyclopedias **73** never becomes outdated because it is updated every month. And not only does **73** offer you the practical information you need, it addresses the pertinent questions you want answered: questions about satellite TV, about state of the art listening, about the increasing role of computers in digital communications.

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VHF Military (NY & CT)

Continued from page 8

Schenectady Airport N.Y. (Air National Guard)-163.485, 173.410, 173.435, 173.535, 173.585

Sikorsky Airport Stratford C.T. 36.900, 38.900, 41.100, 49.700

Steward Field Newburgh N.Y. (Army)-40.000, 139.100, Army Reserve Operations (Crispy Chariot)-38.200, (Army)-148.925, 149.800

Suffolk County Airport Westhampton Beach N.Y. (Air National Guard)-163.460, 163.485, 163.510, 163.585, 165.010, 165.110, 165.135, 165.160

Syracuse Hancock Airport N.Y. (Army)-30.100, (Air Force)-32.450, 36.800, 41.950, 46.850, 138.075, 138.165, 138.175, 138.300, 148.125, 149.200, 149.250, 149.325, 149.475, 149.535, 150.195, 150.200, 150.275, 150.315, 163.510, 163.585, 165.110, 165.160, 173.535, 413.450, (Miscellaneous)-139.025

Waterfown Air Force Station N.Y. 165.035

Watervliet Arsenal N.Y. Army (Security)-165.060, 165.535, 173.460

Westchester County N.Y. Air National Guard (Polo Operations)-46.750, 139.700, 149.175, 149.200, 149.250, 149.300, 149.325, 150.150

West Point Military Academy (Army)-38.550, 38.950, 40.900, 49.700; 49.800, 165.060, (Hospital)-150.700, (Fire Dept.)-38.850, (Military Police)-38.700

(Thanks, Allan, for these contributions....ed)

**Mobile Telephone...
At 20,000 Feet!**

Anyone who has used a scanner radio has discovered the mobile telephone frequencies in the 152 and 459 MHz band. But few may be aware that domestic airlines are becoming equipped with that same luxury.

As of this fall season some 11 airlines, including Delta, TWA and American, have introduced credit card telephone service. The full duplex system, air to ground, operates in the 454.700-454.975 (ground) and 459.700-459.975 (air) MHz bands.

While directory assistance is free for the airborne callers, rates are \$7.50 for the first three minutes and \$1.25 for each additional minute.

Because of the altitude of the aircraft, considerable distances can be afforded reliable communications, making for interesting listening among scanning enthusiasts!

Since most scanners fall off in sensitivity on UHF, a high quality preamplifier like the Grove ANT-4 or PRE-1 is recommended for greatest range.

**“E.T.”.....
on your radio!**

by Tom Williamson

No, not your beloved sci-fi movie character, but rather, “Exact Time!” Readers of this magazine who possess a short wave receiver will probably already know they have available at their fingertips a minute-by-minute “talking clock” at certain points on the dial. The frequencies most used by such stations are 5, 10, and 15 megahertz, exactly.

However, at my last count, there were at least 85 different frequencies in use for these Standard Time and Frequency transmissions, as they are termed in technical jargon, and operated by 38 different organizations.

The stations are operated by various national agencies in many countries, such as the National Bureau of Standards in the U.S., the National Physical Laboratory in England, and the National Research Council in Canada.

In other lands we find the hand of the military involved, such as Argentina’s Naval Observatory, and the Oceanographic Institute of the Navy in Ecuador.

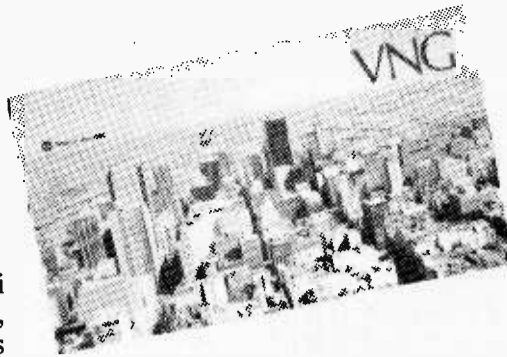
Obviously I cannot give an exhaustive account of all these operations, but let us look at some of the more frequently heard stations, some of their characteristics, and the use to which the average non-technical listener can put these signals. 5-10-15 MHz. The best known on these channels is the N.B.S. with transmitters at Colorado (10WV) and Hawaii (WWVH). These provide continuous time tones each second with voice announcements of time and station identification. In addition they give standard audio tones of 440/500/600 hertz, geophysical data, and marine storm warning, all on voice broadcasts.

These stations are the most familiar to the listener although their signals may be badly mixed with other stations on the same channels.

Similar broadcasts, though with less extensive data, are to be heard from LOL Buenos Aires, JJY Tokyo, and some others occasionally. Your location will determine which of these you will hear most often.

Some stations operate outside these conveniently spaced harmonic frequencies; prominent among these are CHU (the Dominion Observatory in Ottawa, Canada), on 3330-7335-14670 khz, and VNG (Telecon Australia) on 4500-7500-12000 khz, both with seconds time tones and voice announcements.

Two other stations are heard quite frequently, at least in the Western hemisphere: HD210A (Ecuador) on 3810-5000-7600 khz, and YVTO (Venezuela) on 6100 khz right in the middle of the 49 meter broadcast band!!



LABORATOIRE PRIMAIRE
DU TEMPS ET DES FREQUENCES
Observatoire de Paris
61, Avenue de l'Observatoire
75014 PARIS
France



YVTO
FRECUENCIA
DE
6.100 K.C.

YYTO is easy to log with its time “pips”, but not so easy to pull out with a clear voice announcement due to interference from other broadcasters!

Less well known than these are certain stations which transmit time tones, but only identify in Morse code (telegraphy). There are quite a few which are well received and useful, such as PPR, Brasil (EMBRATEL) on several channels, best heard in N.E. USA & Canada on 22353 khz; LQB9 (Argentina) on 8167, DAM (Nordeich Radio, West Germany) on 12763, and the Paris Observatory, France, (FTN87) on 13873 khz.

Other frequencies are used at varying times and you may find alternative channels more useful at your location.

USES TO THE LISTENER

These signals have many uses apart from the obvious one of checking the time of day. If your watch, clock or even local radio station doesn't agree with the radio signal...then you are wrong!

The transmissions are HIGHLY accurate, being generated from atomic clocks, with cesium beam standards, and constantly interchecked with other stations around the world, notably the BIH (Bureau International de l'Heure in Paris).

You also have an exact calibration of the RADIO FREQUENCY of the broadcast, so you can check the accuracy of your receiver dial or digital readout. If you have a crystal calibrator this can be checked against a 5/10/15 MHz signal, probably WWV. Your calibrator should be “zero-beat” with the WWV signal. All the other odd-frequency transmissions mentioned provide useful checks around the dial of your receiver and can be relied upon to be accurate.

Finally, if you need to tune musical equipment, you may be able to use the audio tones of the N.B.S. stations mentioned above.

There are numerous other uses of these signals which are of interest to professionals working in electronics and physics. But there is one aspect of interest to

many short-wave listeners: radio propagation. WWV/WWVH carry reports of solar activity and geomagnetic data and forecasts at 18 minutes past each hour. Few of us would rely on these for listening times, but they are useful and interesting when you suspect there is an unusual ionospheric disturbance, or auroral activity, with unusual reception conditions.

I find at my location in Ontario that an upset in normal reception on 10 or 15 MHz is a guide to looking for unusual stations to be heard. For example, although I usually hear WWV on top of all other stations, if WWVH or LOL are the strongest, I know there are unusual conditions prevailing, and maybe I can log some new or rare station.

Many of these stations will answer listener's reception reports with a nice QSL card, some of which are shown here; and many will send you, on request, detailed data on their transmissions.

Much more information is available in various publications such as the World Radio Handbook, List of Time Signal Stations by Gerd Klawitter (Ochtruper Str. 138, D-4430 Steinfurt, Fed. Rep. of Germany).

An extensive cross-reference of current standard time and frequency stations worldwide is listed on pages 184-187 of the Shortwave Frequency Directory by Bob Grove, BOK-13 from Grove Enterprises.

For the technically-minded, excellent publications are the U.S. Dept. of Commerce publication no. 432 (NBS services), and the Nat. Research Council Canada booklet “Standards of Time & Frequency”-free from CHU, Ottawa, Canada.

So, “tune in to time”!.....and good listening!

NEW BOOKS

NRC DOMESTIC LOG by Ronald J. Musco (National Radio Club), 208 pages 5¼"x8½", spiral bound.

Designed as the ultimate reference for the AM broadcast band DX'er, Log is cross-referenced by frequency (540-1600 kHz) and callsign (KAAA-WZZZ, CBA-CKYR, VOAR-VOWR) for US and Canadian stations.

Listings include network affiliation, location, operational hours, power and mailing address.

This 1982 edition is a gold mine of BCB information. \$9.50 from National Radio Club Publications Center, PO Box 164, Mannsville, NY 13661.

UPDATE/FREQUENCY MANUAL FOR RADIO SCANNER (San Diego and Parts of California), 112 pages, 8½"x11".

J. Patrick McDonald is now in his 4th edition of this nicely-organized regional VHF/UHF directory. Covering public safety, aircraft, marine, business and federal government, UPDATE contains over 1300 frequencies in the 30-512 MHz popular scanner bands, as well as some out of band entries.

Amateur radio repeaters, bus lines, Civil Defense and Red Cross, Forestry Department, Motion Picture Studios, Hotels, Broadcasters and Newspapers are all included.

\$12.95 from J. Patrick McDonald, PO Box 393, Vista, CA 92083.

AMATEUR RADIO EQUIPMENT FUNDAMENTALS by Albert D. Helfrick (K2BLA) 284 pages, 6"x9¼", hardbound, 1982.

Written for the serious hobbyist with some electronics expertise, Fundamentals introduces the reader to the array of equipment now available to the amateur.

Receivers, transmitters and accessories are dissected circuit by circuit, explained for the technically curious. Photos and schematics liberally illustrate the book.

Several excellent home construction projects are included for the more adventurous reader.

\$18.95 from Prentice-Hall, Inc., Englewood Cliffs, NJ 07632.

COMPUTERS AND THE RADIO AMATEUR by Phil Anderson (WXI), 208 pages, 6" x 9¼", hardbound, 1982.

The penetration of microprocessor control into virtually every facet of our lives is a modern-day fact. In no hobby is that intrusion more extant than electronics and ham radio.

Many amateurs are reluctant to incorporate digital circuitry into analog techniques, but the marriage is consummated in modern transmitters and receivers, and many accessories.

Author Anderson is well known in amateur radio circles as the guiding force behind Kantronics, respected manufacturer of accessories.

Computers covers an historical overview of digital logic

as well as modern applications. Projects and uses include keyers, code readers, contest secretary, and programmable calculators.

Painstaking care is given to explanations of terms and binary theory. Computers serves as both a textbook and a handbook.

\$18.95 from Prentice-Hall, Inc., Englewood Cliffs, NJ 07632.

BASICODE (HOBBYSCOOP) (Radio Netherlands) 69 pages, 8¼"x11¼", paperbound.

Radio Netherlands, widely-respected for their pioneering in shortwave broadcasting, has just released their bilingual (English/Dutch) collection of computer programs specially written for intercompatibility among different BASIC dialects for different machines.

Programs include digital clock, multivibrator and active filter design, word games, Sorcerer and calendar programs.

The manual is designed to be used with several popular personal computers including the Apple, TRS-80, PET/CBM, SWTPC-6800, OSI and others.

To make it even easier, Radio Netherlands includes a program cassette all ready to go!

Payment must be in Dutch guilders (or international money order equivalent) to avoid monetary conversion charges.

Cost to USA and Canada air mail: 30 Dutch guilders. Order from: BASICODE, Administratie Algemeen Secretariaat, NOS, POB box 10, 1200 JG Hilversum, The Netherlands.

(See article "Radio Netherland's computer experiments" in this issue of MT)

BOOKLIST from Radio Netherlands. Since 1980 Radio Netherlands has been offering a unique series of pamphlets with consumer guides to various aspects of international short-wave listening. The latest edition of the "Booklist" is designed to give guidance in this respect with publication, publisher and price details over a wide-selection of material related to short-wave listening. Both technical and program-orientated publications are dealt with, plus a special section dealing with cassette tapes. For a free copy write to "Media Network", Radio Netherlands, P.O. Box 222, 1200 JG, Hilversum, Holland.

THE RADIO AMATEUR'S HANDBOOK (ARRL), 1983 edition, 640 pages, 8½"x11", paperbound.

Internationally recognized as the singular most indispensable technical reference for the radio hobbyist, the information-packed 60th edition is now available from Grove Enterprises.

Profusely illustrated and written in an easy-to-understand style for all levels of technical competence, the new Handbook comprises 23 chapters covering all aspects of radio communications.

Antenna theory and construction, transmitter and receiver

design and projects, solid state fundamentals, basic electrical and electronic theory, radio wave propagation, construction practices and data tables, amateur radio rules and regulations, specialized communications techniques including OSCAR satellites, packet radio, TV and moon-bounce are all covered, and more!

\$12 plus \$1.50 shipping from Grove Enterprises, 140 Dog Branch Rd, Brasstown, NC 28902.

SCANNER RADIO LISTINGS by Norman H. Schrein. Regionalized, 8½"x11", paperback.

Six regional editions of Norman Schrein's carefully-assembled scanner frequency lists in book form include thousands of entries of interest to scanner listeners.

Cross references by callsign, agency and frequency (categorized) make the books easy to use.

Listings include public safety, local and federal government, military, aircraft, business, news media, satellites, weather stations, and numerous subdivisions of these categories (taxi, railroads, busses, tow trucks, etc.).

Confirmed listings actually heard on the air are noted by "M". Several ten codes are also enclosed within the pages of the recent directories.

Books are available for the following areas:

Louisville and Lexington, KY (surrounding areas); Cincinnati and Dayton, OH (Incl. Eastern IN and Northern KY); Ft.

Wayne/Lima (incl. Muncie, IN, and Findlay/Sidney, OH areas); Toledo, OH (incl. Sandusky, Bowling Green, OH and Monroe, MI); Columbus, OH (southern OH); Tampa and St. Petersburg, FL (Tampa Bay area cities)

\$5.95 per edition from Chillicothe Communications, 1107 Sharewood Court, Kettering, OH 45429

PRACTICAL REPAIR AND MAINTENANCE OF COMMUNICATIONS EQUIPMENT by Albert D. Helfrick. Prentice-Hall, Inc., Englewood Cliffs, NJ 07632. 6"x9", 308 pages, hard cover.

For the technically competent or curious, Practical Repair is a powerful tool in the troubleshooting or circuit comprehension of modern communications equipment.

Well illustrated chapters include failures and repairs; electronic circuit analysis; analyzing high frequency, VHF and UHF systems; analyzing synthesizers, accessories, preventive maintenance and performance restoration of older equipment.

Helfrick leaves few stories untold; his manner is easy to understand and his knowledge of the field is considerable. Simplified circuit diagrams illustrate concepts for the reader; a pleasant writing style is almost conversational in nature and enjoyable to read.

Best of all, the equipment chosen for discussion is modern, not obsolete, and the approaches are state of the art.

Repair would be an important addition to the bookshelf of your repair shop.

....An Inside Look at the Super-Secret National Security Agency

Book Review

The Puzzle Palace, by James Bamford. Houghton Mifflin Company, 1982. \$16.95, hardcover. 465 pages.

By Richard Prelinger

Referring to the "indecent exposure" of NSA (National Security Agency) operations, a senior agency official once wrote: "Packs of hungry animals of various breeds, having caught the scent, are out there gnawing at the foundations of the storehouses, sniffing and rooting for more beans."

While this comparison may not please everyone, all those interested in communications monitoring and interception, cryptography, and the secretive art of signals intelligence are sure to find James Bamford's new book of exceptional interest.

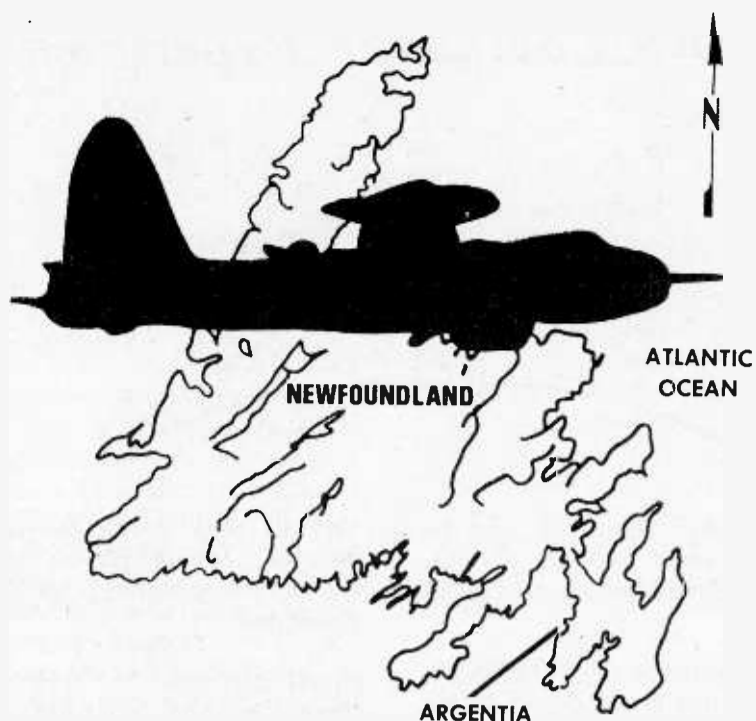
Readers seeking technical information on communications interception and codebreaking may look elsewhere as the scope of the book permits only an overview of the extremely broad range of NSA's worldwide operations. Though uninformed individuals often attribute near-magical capabilities to intelligence agencies, Bamford's book is an at-

tempt to document the truth (as much as can be learned) about NSA. Nevertheless, the statistics he presents boggle the mind.

NSA controls some 68,200 people—including 45,000 military employees—engaged full-time in intercepting and transcribing voice, CW and data traffic worldwide; it classifies between 50 and 100 million documents every year; generates some 200 tons of classified waste every week, and operates an estimated 11 acres of computers with esoteric names like CARILLON and LOADSTONE!

NSA's headquarters at Fort Meade, Md., halfway between Baltimore and Washington, D.C., is populated by analysts and codebreakers who devote innumerable man-years to breaking foreign codes (messages sent to our friends, such as Great Britain, are scrutinized as attentively as those sent by our adversaries).

In case decipherment is not possible, traffic analysis fills the gap. Traffic analysts, like scanner monitors working "hidden" or "unpublished" frequencies, note



Moscow Molly And

The Neptunes Of Argentina

(The Psychic Clandestine(?) Of the North)-Part I

By Havana Moon

It was a pleasant surprise to see George (a fictitious name as are the other names in this article) again. It had been several months since our last brief meeting. For the first few days of his visit, I was involved in a flurry of office and after-office-hours activities. It was the beginning of a long weekend before we were able to relax, converse and argue.

The Sony ICF 2001 was hurriedly removed from the den as I headed for my favorite spot on the patio and sat down.

A book that George had been reading and a half-eaten nectarine was lying on the table where I placed the Sony. Two Coors cans sat alongside a soggy towel on the pool-side bench.

"What a slob!" I said to myself as he began one of his semi-lectures. He was hung-up on night-shooting techniques and a new electronic night-sight that he had recently installed on a Smith and Wesson.

I made every attempt to listen and be the perfect host. He was well into how the NiCads were placed under the hollowed-out grip panel of the S & W as my attention drifted towards the silent Sony.

For no particular reason, I entered the frequency of 7085 KHz and then hit the execute button. I was much surprised to hear the familiar voice of Commandant David on Radio Libertad Cubana. It was --more-or-less--0330 GMT--not his usual time; and, not his usual frequency.

George was visibly annoyed and abruptly ceased his monologue in mid-sentence. He, however, listened intently as this master of "hard-sell" psychological warfare did his thing.

George must have asked questions for at least an hour after the transmission terminator. Apparently my answers had satisfied him as he remained

silent for a rather long time afterwards.

"How about a night-sight for your Walther?" he asked, in his semi-lecture voice.

"No way you touch the P-38K!" I barked. I was definitely not taken with the idea of the P-38K being toyed with.

Then--suddenly-- George smiled wryly as he spoke: "Let me tell you about a clandestine broadcaster named Molly--she was something else! Even had psychic powers!"

I was astonished as he related his rather strange story of this sinister lady of the spectrum. It sounded as if it had been taken from the pages of one of those supermarket check-out-stand tabloids.

Was George putting me on? I don't think so.

The Newfoundland morning of mid-October, 1959, dawned gray and snowy for Navy Lieutenant George Carpenter. The Argentia Naval Base was one hell-of-a-lot different than the Naval Communications Station at Pearl Harbor.

Ensign Frank Arlington, George's Security Officer, wasn't too impressed either. He was --in a manner of speaking, ---- off! He was hardly "checked-in" at the Atsugi Naval Air Station in Japan, before being ordered to Newfoundland -- ASAP!

These two tired and dejected souls grumbled as they left the warmth of BOQ (Bachelor Officer Quarters) to sludge through the snow towards the base administrative complex. The obligatory BS of the "new-arrival" briefing was about a "minus-ten" on their list of personal gratifications.

George, his senses numbed from the cold, had to think for a minute before he could remember the correct sequence to dial the entrance device in order to gain access to the inside warmth. Dial it wrong three times and you

would find yourself face-to-face with a Marine's forty-five! (This entrance device was hardly "user-friendly").

The heavy steel door opened on George's second try and they hurriedly cleared with an armed and half-asleep or half-awake Marine Security Officer. (It's --always-- hard to tell with Marines.)

Operations security at Argentia was tight; all personnel with a "need-to-know" were briefed and debriefed on a daily basis. These rituals were redundant in their stern warnings that appropriate actions be taken to deny the adversary any information concerning planned, on-going and completed operations.

An intense emphasis was placed on the capabilities and practices in the areas of espionage, subversion and the exploitation of electronic communications. The integrity of their operations were not to be compromised.

Their adversaries --they were to abruptly learn-- flew the flag of the Soviet Union! The sudden and semi-mysterious appearance --in North Atlantic waters-- of a contingent of Russian trawlers, submarines and other support vessels had Washington and the intelligence community highly concerned.

This highly visible force was --no doubt-- engaged in COMINT, RADINT and ELINT operations. (Communications, Radar and Electronic Intelligence) Their target: The DISTANT EARLY WARNING SYSTEM: communications activities at Argentia; and Air Force Radar operations at Gander.

The temperature of the "cold-war" would gradually rise for the next 26 month period. A hastily improvised "round-the-clock" ELINT and COMINT surveillance was implemented --on direct orders from Washington-- by Argentia based P2V-5 Neptune patrol bombers.

The Lockheed P2V-5 was a long range radar equipped U.S. Naval aircraft with a top speed of about 230 knots. For this sensitive mission, the Neptunes were stripped of their offensive weapons; only the defensive weapons remained intact.

This "stripping" was to make space for the tons of state-of-the-art electronic eavesdropping and related equipment. It was to be a mission for which the Neptunes were well suited.

Ironically, the first naval aerial reconnaissance occurred in Russia some time prior to 1905.

Despite the growth of the technology of reconnaissance, more words than pictures were being produced. The lack of an adequate strategic aerial reconnaissance program in the Pacific during 1941 was at least as much to blame for the tragedy at Pearl Harbor as any other factor. It was not a cryptological breakdown as some have suggested.

It took the Korean conflict to bring new and exciting reconnaissance developments. Naval aerial reconnaissance and

surveillance would come to encompass the use of multisensor, electronic and visual reconnaissance/surveillance methods.

The Argentia based air reconnaissance operations were to provide a major means of collecting information that was current. This information was processed and analyzed to extract any intelligence that was present.

The Argentia crew consisted of twelve highly skilled intelligence specialists. It was a diverse crew, and their security clearances were of the highest level.

George, was -- well, what the crew called "mysterious". Whispers were that George was -- CIA! George rather enjoyed being cast in the role of a mysteryman and did nothing to quell the rumors.

Their Neptune carried the "skin-number," LB- and the "N" number ----. The "LB" was prominently displayed on the tail with the single digit displayed on the nose. The six-digit "N" number was prominently displayed on the side of the aircraft.

The tactical callsign of this particular aircraft was alphanumeric and began with a nine. This call was in continual use for this twenty-six month period. (A rather unusual procedure)

"Nine ----" established radio contact on the hour and half-hour with NWP1 at Argentia on a frequency of 9001 KHz. The alternate frequency was 9035 KHz.

As their altitude seldom exceeded 2,000 feet and their distance from Argentia was approximately 220 nautical miles; this frequency pair was perfect for day and night transmissions.

UHF and VHF were used primarily for take-offs and landings; communications with other Neptunes and Navy Fighters; and the two destroyers that kept a close watch on this Russian flotilla.

Steve Conrad, the radioman, had but two loves in life: first was his reverence of hand-sent Morse; next was his black over canary-yellow '57 Chevy.

His CW was near machine quality and he could quickly imitate any "fist" he ever heard. It was the latter ability that would make Steve a very valuable man in the years ahead.

The HF transmitter in use on the Neptunes was the ARC-38 with about 90 watts output. CW traffic was standard U.S. Navy 5-digit cipher and was inviolate.

The HF transmitter in use on the Neptunes was the ARC-38 with about 90 watts output. CW traffic was standard U.S. Navy 5-digit cipher and was inviolate.

The Russian traffic was 5-character groups and "made-up" of the 30 characters of the Cyrillic alphabet. The Russian transmissions were confined to several frequencies just slightly above 12,000 KHz. Their traffic was also said to be inviolate.

On one of the first flights, Steve had tuned the Hammurand to 12,000 KHz in search of trawler

Continued on page 22

Moscow Molly Continued from page 21

traffic that seemed to be eluding him. Suddenly -- he let out a piercing yell.

"Someone ask you to QRS or repeat? the Security Officer mockingly asked.

"Listen to this X!##\$\$#!# broad! Steve screamed back. His language would have burned the chrome off a '54 Buick.

Steve quickly switched from headphones to intercom. The crew was --well, shocked! They were being greeted by name and welcomed to the frigid waters of the North Atlantic.

They were bombarded by recordings of Chuck Berry as well Hank Ballard and "The Midnighters." She even threw in a little B.B. King. It was --music wise-- just what many had listened to on their car radios during high school and college years.

They were advised of current weather conditions at Argentia; families of crew members were mentioned; and obscene remarks were made in regards the Security Officer and his fiancée.

This 12,000 KHz clandestine(?) was promptly given the name of --"Moscow Molly." This name was never actually used, however, by this unidentified Slavic version of "Tokyo Rose." It was a name, however, that stuck with all of the crew members of the Neptune flights.

Molly would have more --very much more-- in the way; of sinister surprises in the months ahead. Molly would haunt one crew member--for a very long time.

Adios
Havana Moon

WORKSHOP SURVEY RESULTS

Several months ago, Monitoring Times polled its readers to find out your interest in the prospect of a weekend seminar in radio reception. Inquiry was made as to desired topics, seminar locations, costs, seasons and so on.

We have finally tabulated the responses to the poll and thank all of you who responded. The general consensus is reproduced here:

- Season: Summer (50%)
- Length: One or two days (evenly divided)
- Room/board: Arranged by participant (77#)
- Fee: \$25 per day (45%)
- Topics: Shortwave, scanners, equipment and accessories, frequency allocations, antennas, satellites (30-68%)

Cities: Chicago, New York, Washington DC, Boston, Raleigh, Cincinnati, Minneapolis, Philadelphia, Dallas, Milwaukee, Portland, Seattle, St. Louis.

Many other useful suggestions were offered by respondents for which we are grateful.

At the present time we are evaluating the responses from a practical standpoint. If a decision to hold a seminar next summer is made, readers will be notified in the pages of Monitoring Times.

Radio Nederland's Computer Experiments

by M.J. Edelson

As home or personal computers become more prevalent, users are seeking ways of exchanging programs.

The Dutch domestic radio service has been broadcasting computer programs in machine readable form since 1979. This was a relatively slow process reaching only about 12,000 users and each program could be used by the specific brand of homecomputer it was written for.

Towards the end of 1981, an "ESPERANTO" for computers was developed. See "New Books" section in this issue of MT for more information on how to order this program) It consists of a 1200 baud code, consisting of two tones (1200 Hz binary zero and 2400 Hz binary one).

For most computers one uses a translation program followed by the HOBYSLOOP code (Hobbyscoop is pronounced "Hobbyscope"). The Hobbyscoop code was developed to help reduce the amount of time required to transmit a program and makes it possible for users to share programs despite the fact that they do not have the same computers. This code is a universal compiler for the BASIC computer language.

As of January 1982, 13 computers could use the Hobbyscoop code: APPLE, DAI, EXIDY Sorcerer, NASCOM, OSI, CHALLENGER, Phillips 2000, Commodore PET, TRS-80 Model I, Level II or III, Southwest Technical Products computer, Sharp MZ-80K, TI99/4 and the Commodore VIC-20. Unfortunately, the low-priced Sinclair ZX-81 cannot use the Hobbyscoop code due to a lack of sufficient memory.

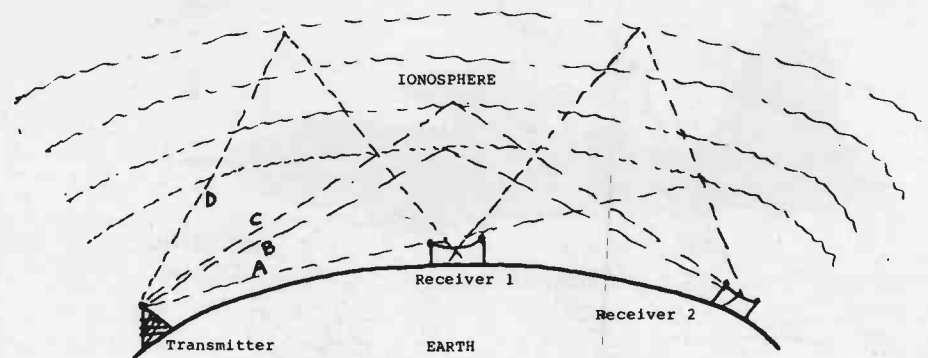
The baud rate of the Hobbyscoop code is 1200, much faster than most systems; computers using a slower baud rate can use the code to store programs and use up less tape or disk space. This also allows the system to be used as a backup when storing important programs.

The frequencies of the tones used for the computer-to-tape interface can be accommodated in the 3kHz bandwidth of the existing telephone systems; users having different computers can send programs between each other's computer systems without using a modem (modulator-demodulator).

The code is designed not to abort the reading or loading of programs should it fail to read a portion of the data. In most cases, this will cause only a letter or two to be incorrect.

These advantages make the system able to withstand the rigors of transmission on shortwave.

It has been discovered that the 1200 baud speed is too high for most systems and so it is being altered to operate at a lower speed to assure reliable transmission of the program for the next



Ground wave signal (A) can be heard by local, but not distant, stations. Single-hop skywaves (B

and C) may reach the distant receiver out of phase, as can multihop skip signal D, producing distortion.

test transmission from Holland.

Since this development Radio Nederland has been broadcasting cassette-recorded computer programs by shortwave radio to various parts of the world including Europe, North America, and Belize.

On September 10, 1981, the first program was transmitted; it calculated the range and bearing of a transmitter in relation to a receiver.

All programs are prepared for transmission by Professor John Campbell of Exeter University, Department of Computer Science, in England.

This first experiment was for the TRS-80 Level I Model II, Commodore PET, and the APPLE home computer systems. The APPLE was later removed as it did not perform well, possibly because of some internal handling of the signal from the radio to tape and into the computer.

The program was transmitted again on Sept. 17, 1981. On January 28, 1982, the second in this series of transmissions was made and involved a program to calculate the path of SUNRISE-SUNSET. It was designed to assist in radio wave propagation forecasts. For this test, it was decided to use the commodore PET, Atari 400, Atari 800 and the Sinclair ZX-81. 76% of those reporting success live within one ionospheric bounce from the transmitter.

Both programs require the use of the latitude and longitude as exactly as possible for your location and the location of interest; each program prompts you for the necessary data and will inform you of data entered incorrectly.

The TRS-80 version of the second program produces a graphics display--"SUNRISE & SUNSET Radio Netherlands"--followed by a series of sounds.

Listeners who monitored these tests reported the best results when the recording was made directly from the receiver to the tape recorder with the recording level set as high as possible without distortion. Tone controls were set for maximum treble, and the receiver set at the widest possible bandwidth.

Successful program recording was not dependent upon

signal strength, but how many times the signal was reflected by the ionosphere. There are several layers within the ionosphere, each reflecting differently. As signals are not reflected from one layer along, a signal can get out of phase with itself. Since some signals are reflected many times, the problem gets worse with each successive bounce.

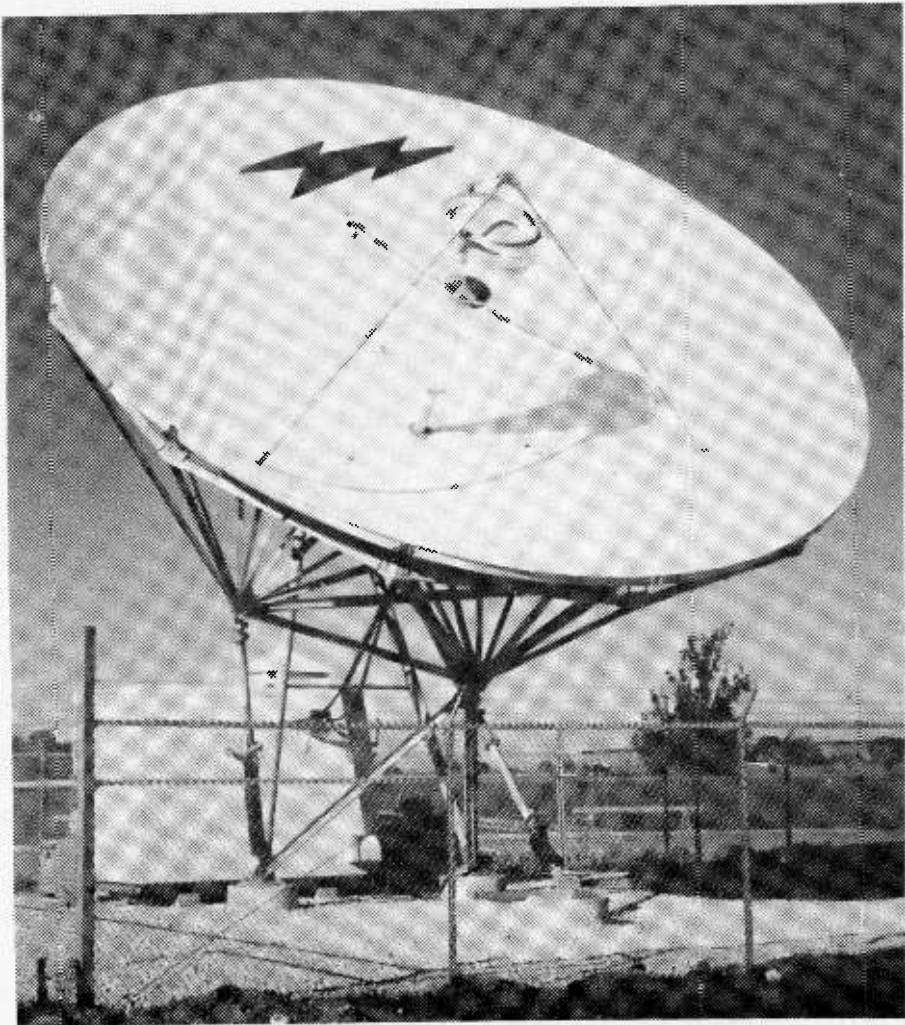
A signal can also go out of phase if the waves travel by different paths to the receiver. This problem is even greater with digital transmissions because the signal contains a definite combination of tones that, if altered, would have a different meaning. It was discovered that the best results were obtained using average quality receivers and recorders. It was also found that if the program was recorded but did not load or run on the computer, 10% of the users could re-record the programs onto a different tape at a higher recording level to make a copy that could be loaded and run.

This system can be a cheap way to transmit data programs. A modest receiving station can be set up for about \$500. The system can also be used for a business with widely-dispersed branch offices in remote areas where it is too costly to lay a cable or where there is no reliable power system. Hobbyscoop may herald the beginning of standardized compilers, opening a new age where a variety of computers may be interfaced for informational exchange.

Where the Heck Is Brasstown?

Many of our incredulous readers and Grove Enterprises customers inquire as to where Brasstown, North Carolina is located. In truth, Brasstown is located between Smackass Gap and Hanging Dog, just west of Picken's Nose and Granny Squirrel.

Since there is a remote possibility that some of you haven't heard of those locations before, Brasstown is nestled in a mountain valley in extreme western North Carolina, right on the corner between Tennessee and Georgia.



Domestic and foreign intelligence is monitored by NSA is relayed to Ft. Meade, MD via satellite using

large dishes like this one (photo courtesy Andrews).

Book Review Continued from page 18

the frequency and volume of messages passed, their destination and origin, and the variety of cipher systems used. In this way information about the message may be deduced without actually understanding its contents. Specialized aptitude tests are used to select apprentice traffic analysts out of NSA's job applicants.

From land-based listening posts worldwide, on ships like the Liberty and the Pueblo, and from satellites in geosynchronous orbit, NSA continually monitors HF, VHF/UHF and microwave communications of all kinds. A secure satellite system beams intercepts back to Fort Meade for analysis and decryption if necessary.

Using hints found in unclassified sources, Bamford locates numerous NSA monitoring posts throughout the world. Principal HF intercept points include Two Rock Ranch in California, (some 150 miles north of San Francisco) and Vint Hill Farms, in Fauquier County, Virginia.

At Vint Hill, 30 or 40 rhombic antennas, each oriented towards a particular circuit that is constantly monitored (point-to-point radiotelephone circuits, for example) are installed over several hundred acres.

Assigned targets are checked against a publication known as "TEXTA" for "technical extracts of traffic." This publication (which hobbyists would give their eyeteeth to examine!) contains information on "how, what and to whom each transmitting station communicates."

Though NSA is prohibited from monitoring communications between destinations inside the

continental United States, a great deal of traffic is passed between the USA and foreign points which could be of interest to the US intelligence establishment. Bamford points out for the first time in the public literature that NSA listening posts in the U.S. are located very near COMSAT's satellite terminals!

One of the largest NSA listening posts is in Sugar Grove, West Virginia, within the "National Radio Quiet Zone." This zone was ostensibly established to protect this "radio astronomy" installation from earthbound interference. Less than 60 miles away, at Etam, West Virginia, are COMSAT's dishes. A 105-foot dish at Sugar Grove complement's Etam's largest antenna.

In a similar manner, the Naval Security Group's activity at Winter Harbor, Maine, within Acadia National Park, is close to COMSAT's Andover, Maine facility; a secret installation in the middle of the Yakima, Washington Firing Center may cover the Brewster, WA COMSAT station some 100 miles north; and the Army Security Agency's interception station at Two Rocks Ranch, Calif., may cover the fourth earth station at Jamesburg.

Bamford also speculates that undersea telephone conversations are monitored at the points where cable circuits jump up to microwave circuits: at Montville and Cheshire, Connecticut.

At Fort Meade itself, a receiving-only microwave station ties right into local telephone company circuits and from there to the Bell System's New York-Washington circuits. This setup

would be ideal for monitoring traffic between diplomats of foreign nations located in New York (at the UN) and in their embassies in Washington, D.C. The receive-only circuit capacity is "extremely broadband" and "implies that they are scanning, continuously, thousands of circuits all over the country."

Products of these interceptions are released to other intelligence agencies and to the White House, usually with the exact to which NSA monitors domestic and/or foreign communications.

The net must necessarily scoop in many irrelevant and "forbidden" messages. It is no wonder that NSA's programs of intercepting cable messages and telephone calls have caused great controversy and generated much litigation in the past few years. Bamford's book presents the history of these cases.

NSA is entrusted as well with providing methods, principals, and equipment to protect the privacy of secure US government

communications. It develops and issues voice and data scramblers and monitors new inventions emanating from the private sector to ensure that security is not compromised.

Two inventors who tried to patent a homebrewed scrambling system for CB radios a few years ago found their patent classified by NSA and ultimately resorted to legal action to win back the right to profit from their invention.

There are ground, Bamford suggests, for believing that NSA is determined to protect its "monopoly" over the means and methods for secure communication.

All those interested in intelligence and Federal Government communications will find this book, which went to press over the strenuous objections of the Government, well worth reading. It is an incisive and unequalled look into the operations of this huge agency whose mission is so sensitive that its 1952 charter is still classified.

Technical Topics

Q. I'm stationed with the Air Force in the Netherlands. My US TV set won't bring in the audio. How come? (A.R., APO NY)

A. Here in the States, aural and video signals are separated by 4.5 MHz; in the Netherlands, 5.5 MHz. You may wish to purchase an export model scanner which is capable of 66-80 MHz coverage, allowing you to tune in on that wideband FM signal (with some distortion). Channel 2 should come in at about 67.75 MHz if video is on 62.25 MHz.

Q. I have a bad hum when I try to record from my Bearcat scanner. Even an audio transformer doesn't seem to help. Can you? (B.B.)

A. I'll try. This is a common complaint and at least one company, DNE (Rt. 7, Box 257, Hot Springs, AR 71901), makes an isolation unit for that purpose ("Tape Mate").

The best trick we have seen to eliminate the hum was sent in by reader Dan Kosko of Maple Heights, Ohio. Dan suggests hooking the winding of a reed relay (Potter & Brumfield R10S-E1-Y1-J1.0K with 470 ohm series resistance) across the auxiliary terminals on the Bearcat 250 and 300.

This switching system isolates the contacts which control the tape recorder.

For home brew, you may wish to try rotating the transformer to make sure you aren't picking up inductive hum fields; also ground both common sides of the two windings to the scanner chassis. Next, try returning the ground path to the chassis through a 10 mfd. capacitor (as well as the hot lead to the primary winding). Try swapping leads around, both on the transformer and by reversing the line plug in the AC.

If all else fails, you may have to devise a 60 or 120 Hz notch filter

or high-pass filter to reject the hum frequency.

Q. I have been using the Grove Scanner Beam for about a year and find it superior for UHF reception on my M-100, M-400, BC-250 and PRO-2002. Recently, I added an FM beam to the mast about 6 feet below the Scanner Beam, whose performance then dropped off. Removing the FM antenna, the performance once again was optimum. How come? (H.L., Carlisle, MA)

A. That's a toughie! Ordinarily, antennas separated by at least $\frac{1}{4}$ wavelength at their lowest frequency of operation won't be significantly affected by each other. At scanner UHF this means only about 7 inches! Since all elements on the Scanner Beam, a log-periodic dipole array, are active, I suspect that some interaction is occurring on a harmonic side lobe.

I recommend that the supporting that the supporting vertical pipe mast be non-metallic like PVC pipe above the rotator for at least 3 feet; you may wish to orient the FM antenna as a horizontal beam to minimize interaction.

Any of our other readers have suggestions for H.L.?

Q. I read with interest of Robert Lonn's use of an audio filter with his shortwave receiver. Could you comment further? (G.M.)

A. There are two primary advantages to a tunable audio filter used with a shortwave receiver. First, you can limit the audio bandwidth to that necessary to understand the communications, voice or CW, and reduce the background clutter on other audio frequencies. Second, a notch filter may be used to punch out an interfering audio note without the need to resort to sharp IF selectivity which reduces the in-

Continued on page 20

Technical Topics

Continued from page 19
telligibility of most audio signals, especially voice and music.

Several prominent accessory manufacturers offer good audio filters; an advanced unit will be announced by Grove Enterprises after the first of the year.

Q. I enjoyed your article, "Teaching Your Scanner to do Tricks" (Sept. MT). Unfortunately, nothing seems to take my BC-210 out of range. Can you help? (H.P., Lauderdale, NC).

A. I wish I could, but so far, no one has come up with an out-of-band program for the popular BC-210. The only thing you can do is to listen to the image of the lower frequency by adding 21.6 MHz to it.

Signal strength will be down a few dB, but a preamplifier like the Grove ANT-4 or PRE-1 will bring it back up, and you may wish to use a tunable notch filter like the Grove FTR-3 to remove unwanted signals on the higher frequency.

Q. Can you provide me with the address of Watkins-Johnson? (T.G., Mt. Vernon, NY)

The CEI Division of Watkins Johnson was responsible for thousands of high-quality surveillance and electronic countermeasures receivers for government and military use. Their popular 900 series VHF/UHF receivers still turn up at hamfest at good prices.

Their most recent address is 3333 Hillview Avenue, Palo Alto, CA 94304.

Q. I wonder how many readers know that they can receive UHF aircraft on a Regency Touch scanner? For example, I receive 311.0 MHz SAC transmissions on 461.15 MHz by the following formula:

$$2 \times 461.15/3 - 10.7 \text{ plus } 10.7 = 311.0$$

(DW, Kent, OH)

A. I sure didn't! Anybody else with comments on this one??!!

Q. What types of coaxial cable can be used with which applications? (V.S., Addison, IL)

A. I probably get more inquiries on this than any other question! First, stay away from RG-58/U cable for any use other than shortwave, CB, and scanner runs of under about ten feet. It is very lossy. Do not be concerned with impedance; that is an important consideration for transmitting, but not receiving.

For shortwave (under 30 MHz) nearly any coax is OK. For VHF (and especially UHF) reception, use the lowest-loss, best shielded coax you can afford. I recommend RG-6/U, often available as spool ends from your friendly local cable TV company at next to nothing. Next, RG-8/U or RG-8/M foam dielectric. Nearly as good, and considerably lower cost is RG-59/U like the Grove CBL-1 (again, low-loss foam dielectric, well-shielded).

Q. Which is better, an indoor preamplifier or mast-mounted preamp? (V.S., Addison, IL)

A. The mast-head variety wins hands down, especially for scanner reception. The trick here is to bring the signal level up to a point where it can not be absorbed by the transmission line. A preamplifier at the scanner may

be too late; often, only the noise is amplified since the signal has disappeared below the noise in its path through the coax.

A masthead preamplifier is capable of increasing the strength of the signal as soon as it is captured by the antenna. (See the announcement of the new PRE-1 Signal-Amp from Grove Enterprises elsewhere in this issue)

Q. I wonder how many Bearcat 100 users know of this hint sent in by Mark Chinsky?

A. Not many, so here goes! The little flexible antenna which comes with the BC-100 simply doesn't have the "pulling power" of a larger antenna, and no provision is made for an external antenna.

Mark suggests attaching an 18" piece of wire under the base of the screw-in antenna, effectively putting a more resonant (at high band) antenna in parallel with the existing one. Good idea.

Another possibility, and one which we did on a trip to Washington, DC this summer, was to solder a 10-32 screw to the base of a small (18") collapsible whip antenna. With this additional length, range was substantially increased.

Q. Would some of your readers be interested in the following scheme to vary the frequency of crystal-controlled receivers or transmitters? (Thomas M. Hansen, Wyoming, MI)

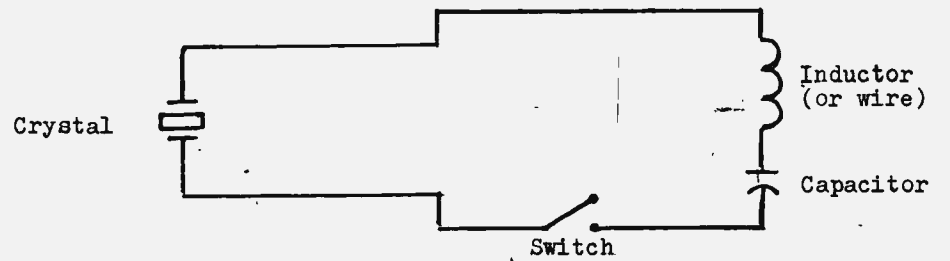
(A. Although we don't recommend tampering with frequency control devices on transmitters, the following short article by Mr. Hanson is interesting from an educational standpoint.)

★ CRYSTAL TUNING ★

Crystal tuning is changing the manufactured crystal frequency to another adjacent frequency. This is done by connecting a series LC circuit in parallel with a crystal. In the receivers and transmitters tested the frequency could be shifted by as much as plus 15 KHz of the original manufactured crystal frequency without change in stability or quality of transmitted or received signals.

Going past 15 KHz causes instability of frequency and poor output of the transmitter. The receivers could go further with less notice of signal drop and instability. The plus 15 KHz crystal flexibility varies from one type of equipment to another.

The values for the inductor and capacitor differ from frequency to frequency. For a 23 Mhz crystal I used a 150 Pfd capacitor and a 12" long piece of 22 gauge wire. Trimming the length of the wire is the quickest way of finding the proper frequency for the LC circuit. It usually takes time and is done on a trial and error basis. The wire doesn't have to be on a core although it may. The wire in my set up was bent around to fit the inside of my cabinet. This crystal tuning comes in handy with fixed crystal receivers or receivers with VFO ability. A switch should also be added to the circuit in order to change back to the original crystal frequency or to start the crystal oscillating if necessary.



Q. Can anyone help me find a miniature broadcaster built about 1931 by an engineer at WPEN, Philadelphia? Operating at 900 kHz, it was called a "WEE", originally owned by the "Tiny Broadcasting Company" and running around 0.04 watts.

"WEE" was a table top station, 52" x 19" with two 24-inch towers with flashing beacons. The battery-powered transmitter utilized type 199 tubes. Many 1935 magazines had articles on the "WEE", acquired by the Crosley Radio Corporation of Cincinnati. (Ernie Rice, 841½ Campbell Ave., Hamilton, OH 45011)

A. Fascinating! Can any of our readers help Ernie in his quest for a piece of history? And let us know...sounds like the basis for a fun article!

Q. The Ontario Provincial Police are switching to microwave, is there any antenna available which can be used with a scanner to hear them? (J.O., Kingston, ONT)

A. If by "microwave" you mean the 800-900 MHz band, several antennas will work. A small Yagi beam with 4" elements (very directional), as well as virtually any UHF TV antenna with elements shortened to that length, including parabolic dish designs. It may be necessary to shorten the distance between the elements in the beam, or between the element and the reflector.

ive surface in other antennas (about 25% or so).

And you must use low-loss coaxial cable. A masthead preamplifier is recommended.

But you still need a receiver capable of monitoring that frequency range. Several manufacturers which can be used with scanners, and others are due to be announced as this portion of the spectrum becomes more populated with radio activity.

Q. Are there any sources of information on satellite RTTY decoding systems? Particularly SATCOM III transponders 12, 14, 16 6.2 MHz sub-carriers. (J.R., Alcorn, QUE.)

A. This portion of the spectrum is one of the most jealously-protected in existence. It is the final refuge for both government and non-government users who have escaped the constant vigil of hobby listeners with scanner and shortwave receivers.

The subcarriers all use upper sideband and share the transponders with commercial TV, public correspondence, common carriers and an endless variety of other users.

Readers with more information are urged to contact the editor of Monitoring Times to help unscramble the new frontier.

CLUB CORNER

BDXC The Benelux DX Club publishes the BDXC Bulletin, a bilingual (Dutch/English) collection of authoritative, well-written articles covering all facets of listening.

Shortwave, FM and TV broadcasting, RTTY and many many other topics are competently presented in one of the best publications we have seen.

Additionally, books and cassettes for the listener are cataloged. A DX calendar of special events on radio is included for the avid SWL.

For a sample copy, send a \$2 International Money Order to: Treasurer, Benelux DX Club, PO box 1306, 6501 BH Nijmegen, Netherlands.

The Association of Cladestine Enthusiasts (**ACE**) is growing. Their latest bulletin is packed with interesting huggermugger (look that one up!) activities.

The writing of several experts appears in the pages, including Lani Pettit (spy/numbers), Scott McClellan (special features), Kirk Baxter (loggings) and John

T. Arthur (QSL's).

For a sample copy send \$.25 and an SASE to: ACE, PO box 452, Moorhead, MN 56560

AMRAD points out the recent FCC decision to allow digital communications above 50 MHz on the ham bands, including 56 kilobaud/100 kHz bandwidth on the 220 MHz band.

Computer contacts using ASCII codes and high speed keying are the new frontier.

The October, 1982 issue of the **AMRAD** newsletter has an interesting article by Hal Feinstein WB3KDU concerning the reception of spread spectrum transmissions.

Feinstein suggests that reception is not that difficult using a receiver with a bandwidth equal to the dispersion of the signal and a directional antenna to concentrate the energy from the source.

For more information about **AMRAD**, the Amateur Radio Research and Development Corporation, write 5829 Parakeet Drive, Burke, VA 22015.

Monitoring In The Big Apple

by Richard Prelinger

Don't forget to bring a scanner when you come to New York City--home of the French Connection, the Yankees, a street vendor and a pothole at every intersection, Son of Sam, and occasionally a Democratic Convention or two.

There's lots to monitor in this city of seven million--about 50 city police channels, half a dozen each for fire and paramedics, five channels used to dispatch and police city subways, and uncountable miscellaneous city agency frequencies. Even the city's own licensing records are said to be incomplete!

Add to these over 20 FBI channels (grouped into five separate systems), a dozen Secret Service channels heard regularly, and numerous frequencies used by local and network news media, and you can imagine that scanner hobbyists have their hands full.

Quality isn't everything, though. New York (especially Manhattan Island) is possibly the interference and intermod capital of the world, with transmitter sites topping almost every prominent structure. VHF high band is strewn with interference from numerous paging transmitters, TV and FM carriers, and uncountable private businesses.

The Grove FTR-3 Scanner Filter can make a big difference here!

UHF is a bit cleaner, except when summer foliage attenuates signal strength. Within the city, there isn't much of interest on low band--city morgue vehicles and a few Greek-speaking taxi radio coops are down there, however, if you want to listen to them.

I was at first overwhelmed with the sheer volume of traffic after relocating here, but soon found myself concentrating on a few oddball stations.

Assembling a comprehensive picture of the action throughout the whole city is beyond me (Broadcast News Service, a freelance video outfit, monitors about 12 radios simultaneously at their base) but I often hear interesting messages.

For armchair and actual travelers, here follow some of favorite NYC-area stations.

Special Operations Division, NYC Police, (470.8375) This citywide channel features bomb squad alerts, hostage situations, all 10-13 calls (Officer Needs Assistance) and all jobs assigned to the elite Emergency Services Squads.

The city Highway Patrol also shares this channel, so that in the middle of a tense hostage negotiation, one is apt to hear a call for an "authorized tow" somewhere in Queens. If you can afford only one crystal, let it be this one.

Communications Division,

NYC Police. (471.1125) This division specifies, installs and maintains all police radio facilities. The department is in the final stages of its move to the T-Band (470 and 476 MHz channels) and is implementing an all-portable program in patrol cars, replacing the mobile radios.

Monitoring this channel informs you of all construction, tests, ongoing system alterations, etc. At one time technicians were monitored as they tested a new scrambler system--in French! (Sounds like a case of redundant security measures.)

Press channels, notably the New York Post (453.000), Action Movie News (452.975 -- shared with Cable News Network), and a private net on 461.650. Every morning the Post serves up its diet of crimes, celebrities, and fires to its readership, and, if you've stayed up the night before, you've heard its photographers racing the competition to the scene.

Few cities in the United States still have competitive daily papers, and even fewer have reporters like those on the Post.

Tone/Voice Paging (notably 454.350, 454.175 and 454.225). This is the urban equivalent of the "smuggler nets" featured in past issues of MT. These paper networks are used by DEA agents, city police brass, narcotics dealers, and "escort services," all using

the same airwaves in true democratic fashion.

Decency and the 1934 Communications Act forbid me from recounting messages verbatim but monitoring these channels is highly recommended.

Empress of Iran--Security Channel (classified, in the middle of the UHF Federal government band). The former Shah of Iran was a New Yorker for a while, and his wife and children still maintain a midtown Manhattan residence.

Their security guards and public-relations consultant may be monitored on a US Government channel, which I recommend as must listening for connoisseurs of "governments in exile."

Rapid Transit Command Centers (158.880--IRT Division; 161.565--IND and BMT Divisions). A trip on the subway is even more fascinating with a well-concealed pocket scanner and earplug. Why has your train suddenly discharged all its passengers in the middle of its run? Perhaps its brakes have just failed!

These frequencies are worth fighting your way through the intermod for--no doubt you will run across others when you visit. If you're fed up with waiting long minutes between dispatches on your local police radio channels, then New York City may be the place for you!

Hi-Tech Progress .. A personal Perspective By Fred Simon

Having written on communications for almost a dozen years for a major newspaper chain..I give a lot of thought to the radio and it's history.

Not too many years ago I visited the USS Arizona at Pearl Harbor. That tomb of hundreds of Americans is still a commissioned U.S. Navy vessel. It will be 41 years ago this December 7, the day that I stood at the intersection of Chicago Blvd. and Linwood Avenue in Detroit. I was selling an edition of The Detroit News. It had banner headlines, that newspaper that announced an event that was to change our lives.....and our nation's destiny. I can still see the headlines in my mind's eye: "Pearl Harbor Bombed," it screamed.

The 11 year old selling newspapers could not really fully understand the impact being made by that "EXTRA!" edition of the NEWS. Now 52, I recall the voice of CBS newsman Bob Trout that would become a great part of that fateful day.

We had no television in 1941. News came to us over a Philco receiver made out of wood that told us of the events that were changing our lives.

Most military communications in 1941 were not much when compared to today's. The 27 MHz

band was to be the prime frequency for battlefield communications. If that 27 MHz sound familiar to those using citizens band radio today, it should--it's the same frequency range you're using in your day-to-day communications.

In 1935 Robert Watson-Watt of Great Britain's National Physical Laboratory proposed that efforts be directed towards development of a method of detecting aircraft by reflected radio waves. Within a year a system was in use that could detect aircraft at a distance of a little more than 40 miles. It was in the early '40s that U.S. Navy scientists were to name this system of bouncing radio waves off of objects "Radio Detecting And Ranging."

It was a top secret project at that time; the public did not become aware of RADAR until an announcement was made in 1943.

War-time also saw a growing recognition of the experiments that had been conducted in semi conductors.

One reason for this was that they were found to be more useful than vacuum tubes in detecting microwave radio systems.

It was after the war that Bell Laboratories did the work that brought us to a new transformation in the field of communica-

tions; transistors have revolutionized communications. We would not have walked on the moon, built a satellite communications system or expanded the wonderful world of computers without them.

LASER communications is a theory that may become a fact in the future of communications. The uses of lasers (Light Amplification by Stimulated Emission of Radiation) are endless. Lasers will add to your safety by allowing a better system of communications. They are becoming invaluable in medicine and are expected to play a very strong role in weather forecasting.

Lasers are mechanisms that focus and intensify light beams through interaction at the atomic level and then release that beam which can carry communications signals with it.

We have seen many changes in electronic data gathering and dissemination in the four decades since those early days of World War II. There is no way we can say anything good comes from world conflagration. I have no doubt that the revolutionary developments in electronics and communications would have oc-

cured without the war. The conflict merely speeded their day of birth.

We have tried today to illuminate the past and throw some light on what the future might hold. We all pray we can continue the advancement of labor-saving, life-saving technology in peace.

Grove To Speak At Stone Mountain Hamfest

Bob Grove, editor and publisher of Monitoring Times, will be the feature forum speaker at the Stone Mountain, Georgia hamfest Saturday, November 6, at 2 p.m.

Bob, a licensed amateur radio operator (WA4PYQ) for 31 years (he got his license at age 13; sharp readers can now figure out how old he is!), is a popular forum speaker at hamfests.

This all-new forum entitled "THE ART OF LISTENING" will highlight listening equipment, antennas and accessories as well as where to listen for things you're not supposed to hear!

... Longwave "Lowdowners" Take Note!

"Beacon Guide" Now Available

by W.R. McIntosh
Technical Editor, LWCA
The BEACON GUIDE, Second Edition, by John Clements and Ken Stryker, is available for US \$7 postpaid in North America from Century Pring Shop, Don Erickson, 6059 Essex Street, Riverside, CA 92504-1599. Overseas shipments are US \$7.50 by Surface Mail, US \$9.50 by Air-mail (no IRCs, foreign stamps, or currency accepted). Only Overseas International Money Orders in US dollars payable

Stock Exchange

Note: Monitoring Times assumes no responsibility for misrepresented merchandise.

SUBSCRIBER RATES: \$1.10 per word, paid in advance. All merchandise must be listening related.

Infotech M-200F, purchased June, 1982. \$450.
Will ship. Certified check or MO only.
KA1ZT, Rev. Ken Araujo (203) 456-1351

Many frequencies to swap in the 30 to 500 MHz from Vancouver to Charlottown including RCMP and border patrol (U.S.). Send list today. US inquiries welcome. Gilles Thibodeau, 3653 Montcalm, Lac-Megantic, Quebec G6B 2H8, Canada

R390A Triple conversion, 0.5 - 32 MHz receiver. \$300.00 Microcraft 8 digit Morse Code reader. \$100.00. Call for information 201-534-9642; P.O. Box 57, Readington, NJ 08870

I am looking for any photos of the Ontario Provincial Police base and mobile and the R.C.M.P. base or mobile and Ontario Electric mobile. Gilles Thibodeau, 3653 Montcalm, Lac-Megantic, Quebec, G6B 2H8 Canada.

Rechargeable Batteries: "AA" Nicad \$2.25 ea., "AAA" Nicad \$2.80 ea., "N" Nicad \$3.50 ea., other sizes available. Free shipping on prepaid orders, otherwise C.O.D. Electronic Products, Inc., 140 North Avenue., Hartland, WI 53029

WANTED--used VHF high band two way radios. I mainly need portable units but will consider anything. All units must be capable of operating on 151.925. R. Grimes, C.S.A. Enterprises, Pontiac, MO 65729

Fanon scanner, 6HLU and charger, 30-50, 146-175, 460-512 MHz, \$55. J. Schwartz, 2701 Sunrise Lakes Drive E., Sunrise, FL 33322.

through US banks, please.)
This BEACON GUIDE has been computer compiled and cross checked from both government and private publications. Also, many personal contacts were made to obtain additional information.

The BEACON GUIDE lists over 5500 Longwave marine, aeronautical, private, and offshore beacons in the frequency range of 191 KHz to 532 KHz plus special Canadian and Foreign beacons in the frequency range of 1550 KHz to 1921 KHz. Beacons identify in slow Morse code. A Time Zone Conversion chart, a Morse Code chart, and directions for using the Guide are included.

The BEACON GUIDE is divided into three sections:

1. DOMESTIC, includes US, Canada, and Mexico.

2. FOREIGN, includes all other Western Hemisphere countries.

3. IDENT to FREQUENCY cross index for both sections 1 and 2.

The BEACON GUIDE covers the Western Hemisphere from Asia and Australia to the Azores, and from Alaska to Antarctica. The editors feel that even though beacons change frequently, over 99% of the beacons heard will be in the Guide or in its Updaters. Update information plus other

general and technical Longwave information are published in the LOWDOWN, the monthly bulletin of the Longwave Club of America, 45 Wildflower Road, Levittown, PA 19057. Send an SASE for further information.

If you take a good look at your favorite DX receiver you will probably find that the Longwave frequencies, below 540 KHz (below the Am Broadcast Band), are not on it. In the case of some recent solid state receivers, you may find about half of the Longwave region from 160 KHz to 400 KHz available. Such receivers are probably portables. They won't do a very good job of receiving the Longwave beacons because of these receivers are not well enough shielded to keep strong local BCB stations from interfering with Longwave reception. Better solutions to Longwave reception would be to use either:

1. A heavily shielded Military Surplus receiver built specifically for Longwave, or

2. Add a Longwave-to-Shortwave frequency converter onto the front end of a good Shortwave Communications or Ham Band receiver. Such a converter is available from Palomar Engineers, Box 455, Escondido, CA 92025.

Best results on Longwave

reception are usually obtained with a separate antenna (not a built-in ferrite loopstick) that is tuned and/or trapped to keep out strong BCB stations. These BCB stations can cause mixing spurs, images, overloading, and intermod problems. If you are using an untuned longwire, inverted L, Windom, or short preamplified whip antenna then an antenna tuner/preselector such as the Grove Mini Tuner TUN-3 will give good results in removing BCB difficulties.

The reason local BCB stations can cause so much trouble is because they are so powerful, delivering up to 50,000 watts. Longwave beacons in the Western Hemisphere are in the range of 10 to 3000 watts, with the average around 100 watts. Even so, good receiving equipment, even in noisy metropolitan areas, can receive Longwave beacons for several hundred, even a few thousand miles. A DXpedition with battery-powered equipment to remote or mountaintop areas can yield even better results.

HCJB, The Voice Of The Andes

One of the omnipresent voices heard on the international bands is that of HCJB, a mission station established more than half a century ago by two pioneers, Dr. C.W. Jones and Dr. Reuben Larson.

With a potential audience of six radio sets in Ecuador in 1931 to some 500 million worldwide now, HCJB broadcasts non-stop in 16 languages, all year 'round!

HCJB can broadcast up to 72 program-hours per day --3 programs simultaneously on different frequencies-- with its 11 transmitters.

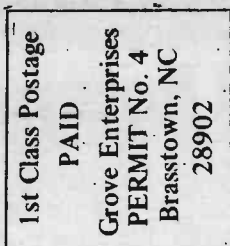
Intended broadcast areas include the Caribbean, Central and South America, North America, Europe, the Soviet Union, Japan and the South Pacific.

The dominant world language are present in the broadcasts, as are 17 dialects of Quechua, the native language of the remnant tribes of the once-mighty Inca nation, devastated centuries ago by the empirical exploitation of a form of Christianity not imposed by the benevolent missionaries now in the Quito area.

Progressive, HCJB engineers have constructed two hydroelectric plants to power the dynamic installation. Programs are beamed by microwave to the top of Mt. Pichincha, 24 kilometers east of Quito, the capitol of Ecuador.

Frequencies commonly used for broadcasts to North America include 6095, 9745, 11740, 11915, 15115, 17880, and 17890 kHz.

Interested listeners may wish to write for more information to: HCJB-USA, Box 3000, Opa Locka, FL 33055.



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