



MONITORING TIMES

Volume 2-Number 6

BRASSTOWN, NORTH CAROLINA 28902

November/December, 1983

ANOTHER MT EXCLUSIVE!

MONITORING THE MEN AND WOMEN FROM MARS

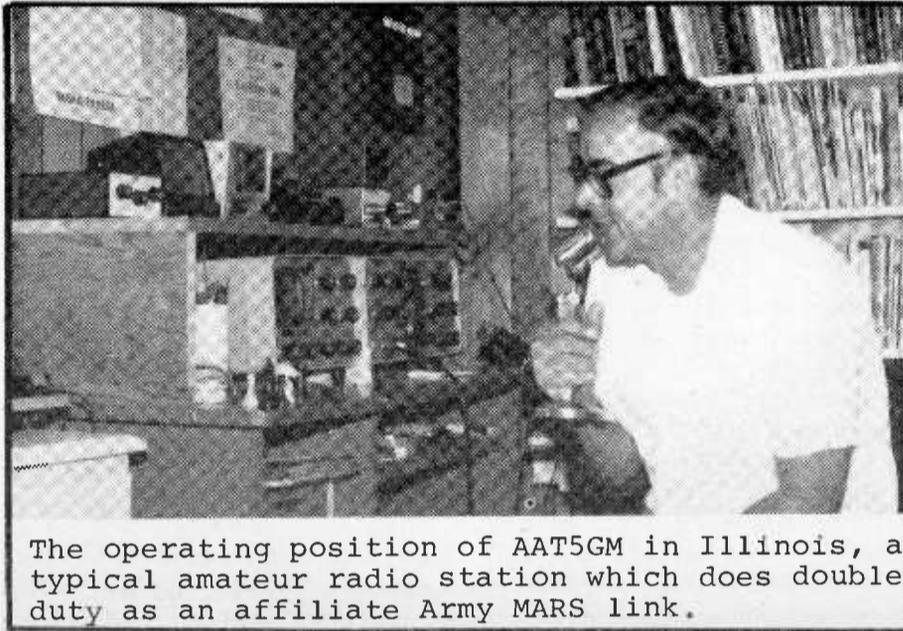
This special Monitoring Times feature is the most exhaustive insight into the daily operations of the Military Affiliate Radio System worldwide available.

It was made possible by the thorough research of a MT reader who wishes to remain anonymous to protect his sources. We are indebted to our correspondents who supply such excellent material to share with fellow listeners so that we may all have a better understanding of the usage of the radio spectrum.

ARMY MARS HISTORY

The Army Amateur Radio System (AARS) was initiated by the United States Army Signal Corps in 1925 and continued until World War II. The activities of AARS were suspended until 1946 when Army Amateur Radio was allowed to go back on the air.

From 1925-1942, the AARS operated as an extra-curricular activity of the U.S. Army Signal Corps. As of December 7, 1941, there



The operating position of AAT5GM in Illinois, a typical amateur radio station which does double duty as an affiliate Army MARS link.

were 60,000 FCC licensed Amateurs within the U.S. and its possessions. 5,600 of those Hams were members of the Army Amateur Radio System.

The U.S. Army recognized the great importance of reactivating the AARS to

train vitally-needed communications personnel at a relatively inexpensive cost to the government.

In 1946, the Army Amateur Radio System was reactivated and operated as such until the creation of the Military Amateur Radio Sys-



tem in 1948, later renamed the Military Affiliate Radio System (MARS).

At first, MARS was available in the Army and Air Force, but in 1963 the Navy and Marine Corp also established MARS in their services. MARS has grown in all of the services throughout the world as we now have over 50,000 volunteer members.

MISSIONS

Basically, the purposes of each MARS PROGRAM are:

A. Provide Department of Defense sponsored emergency communications on a local, national, and international basis as an auxiliary to normal communications.

(continued on page 13)



LISTENING IN ON PEACE-KEEPING FORCES IN LEBANON

by Vito A. Echevarria

While attempting to monitor some of the military transmissions coming from the UNIFIL and the multinational peace-keeping forces stationed in Beirut and Southern Lebanon for over six months, I was fortunate to intercept communications for Italcon in Beirut this month.

My friend, Fabrizio Magrone of Play-DX club in Milan, Italy, has recently sent me more detailed information concerning these transmissions coming from Lebanon. According to Fabrizio's as well as my observations, these transmissions are mainly heard from 0600 to past 1600 GMT.

Italian troops: Presently, there are two places in Lebanon where Italian troops are currently on duty. The Beirut-based

troops (code-name Italcon) are part of the multinational peace-keeping troops stationed there with the American & French troops on duty.

Italian troops are also stationed in El Naqura, located in Southern Lebanon less than five km from the Israeli border.

These troops (code-name Italair), where helicopters are stationed, are part of UNIFIL (United Nations Interim Force in Lebanon) who have been there since 1956.

Both Italcon and Italair are in contact with Italy on USB and their call-signs are IED22 (Italair) and IED26 (Italcon), often shortened to "Delta 22" and "Delta 26."

The stations they are in contact with are IED 21 (CIF Rome) and IED 24 (CIF Milan); (CIF means Centro

Inter-forze).

Frequencies heard in use so far are 19327, 19420, 19445, 19520, 19540 and



Manpack provides short range radio to soldiers in Lebanon (photo courtesy Time Magazine).

19592 khz. These frequencies are operated by Italcable (Italy's national telecom company), while troops stationed in Lebanon have their own local low-powered transmitters and ground-plane antennas; signals heard here are usually weak.

Irishbatt: Although their Lebanese station in Harris Base is in an unknown location in Southern Lebanon, the station in Ireland (code "0"), is presumed to be operated by the Department of Operations, Army Headquarters, Dublin.

As indicated in the Sept/Oct issue of MT, Irishbatt (part of UNIFIL) comms were heard on 19710 khz; they have also been reported on 19560 and 19780 khz in USB and RTTY.

Norbatt: No new frequencies from Norbatt yet...

Continued on page 32



MONITORING TIMES

Bob Grove.....Editor

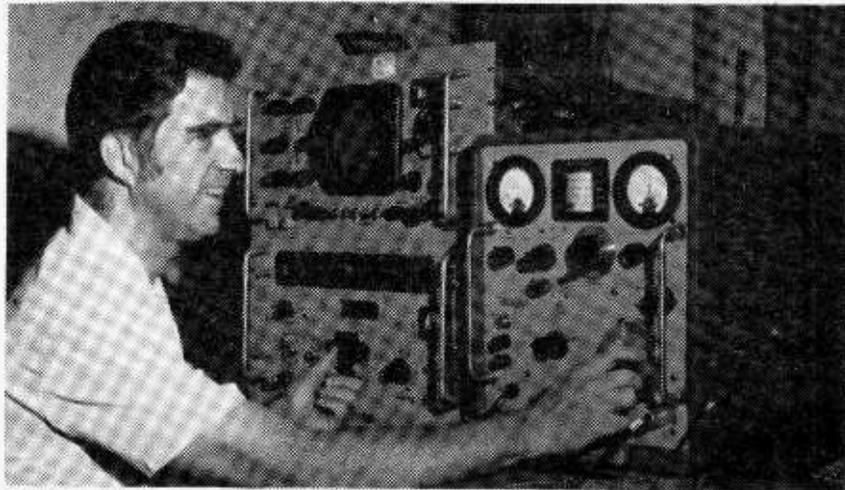
Judy Grove.....Publisher, Advertising

Mitzi McCoy.....Circulation

Rachel Thomas.....Subscriber Services

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FROM THE EDITOR



Where have the RF engineers gone?

by Bob Grove

Possibly never in the history of technology has an advanced civilization witnessed the wholesale migration of high technology to a science as has ours, in yielding to the throne of the computer.

Digital circuitry with its irresistible charm of two-bit logic has seduced virtually all engineering students, guided by the bandwagon sway of grants, foundations and commercial interests who see no end in sight for computer-oriented education.

Interestingly enough, the swell of qualified computer specialists could be genocidal; a crescendo of concerted talent dedicated to computerizing the world could eliminate the very jobs which they now occupy.

Sadly, the popular appeal of computer design has caused a mass abandonment of conventional analog and RF circuitry, just when microwave technology and satellite communications have come of age.

A recent discussion with a graduate radio frequency design engineer confirmed a dreaded suspicion; manufacturers and research

organizations alike are begging for competent RF design engineers.

Grove Enterprises discovered the unavailability some months ago when their engineer retired. A followup announcement in Monitoring Times expressing an interest in finding a replacement resulted in not one single resume!

It would seem that this would be an ideal time for career-oriented young readers to consider RF design as a lucrative future profession!

Need a VLF receiver?

The very low frequency end of the spectrum may not be quite so popular as shortwave and VHF/UHF regions, but there are interesting things to be heard.

At the present time, no one is offering a VLF-only receiver; some general coverage receivers (like the new Bearcat DX-1000) cover that range, but only as a secondary consideration.

Is there an interest among our readers for a 1-500 kHz, low cost experimenter's receiver? Let us know and if interest is high enough, such a product could be developed through Grove Enterprises.



VIEWPOINT

Thanks for running my info wanted in the July/Aug 1983 MT. I now have two addresses to send about having my Tennelec scanner repaired. I have included them so you can have them on file for any other Tennlec owners.

Huttco Data Management Systems
1409 Magnolia Ave. #4
Knoxville, TN 37917
(615) 522-7516

Hi-Tex Labs Inc.
113 Saunders Ferry Rd.
Hendersonville, TN 37075

Eugene D. Krolak, Jr.
Carleton, MI
> > > < < <

Mike Edelson's "Brief History of Computing" in the July/August issue needs some revision. Since people will read it and perhaps quote from it, the presentation should be as accurate as possible.

I take issue with Edelson's statement, "some men of vision." It should read "some men and women" or, if you like, "some persons of vision." The reason is that women, individually and collectively, have had a role in the development of mechanical computing.

Charles Babbage's Analytical Engine, and knowledge about it, would have been much less important were it not for the contributions of Augusta Ada Byron, Lady Lovelace, the daughter of the English poet, Lord Byron. Augusta Byron developed problems for the Engine, corrected Babbage's errors, and edited papers describing its merits. She was a mathematician of no mean skills. The computer language, Ada, memorializes her achievements.

I imagine that the upcoming installment might discuss the development of contemporary high-level computer languages and their standardization. If so, Navy Captain Gracy Hopper, the oldest person on active duty, is a prime candidate for mention. Her contributions to COBOL have been widely recognized.

Finally, for better or worse, it should be noted that the U.S. Census tabula-

(continued on page 32)

TABLE OF CONTENTS

Monitoring Mars.....1
Peace-keeping Forces.....1
From the Editor.....2
Viewpoint.....2
Millimeter Waves.....3
Scanning.....4
Listening Post.....5
Broadcasting.....6
Listener's Log.....7
Tune in Canada.....9
High Seas Radio.....10
Transmission That Sent America to War.....10
Signals from Space.....11
Los Numeros.....12
Tales of the China Clipper14
Portable Sat Terminal.....16
Deadly Cloak of Secrecy...19
Nuclear Weapons Locations.20
RTTY/FAX
Alden Weather Recorder.21
Weather Birds.....21
BITS.....22
Behind the Dials.....23
New Arrivals.....23
Library Shelf.....25
Getting Started.....26
Experimenters Workshop...27
Technical Topics.....29
Helpful Hints.....30
Club Corner.....31

REMEMBER!

"S.A.S.E."

We at Monitoring Times constantly receive letters from readers which begin, "Please send me everything you have on..."

As much as we would like to help, we are not a public library service. Letters received with a Self-Addressed Stamped Envelope will be answered.

And as always, my telephone line is open for pre-paid calls weekdays 1-5 pm Eastern (704-837-2216)...Bob

THE STAFF OF MT AND GROVE ENTERPRISES WISH YOU A JOYOUS HOLIDAY SEASON!

Mitzi Bob Angie Rachel Judy

MILLIMETER WAVES : this end up

(Part I)
 by Larry L. Ledlow, Jr.
 179 Stone House Vill. Ct.
 Sykesville, MD 21784

(A BRIEF INTRODUCTION OF THE AUTHOR)

My interest in radio has been present almost as long as I can remember, but I began medium wave listening in about 1969 and followed suit with a serious SWL effort in 1971.

For the longest time my big interests were the broadcast stations. Then I purchased a copy of the first edition of SPEEDX's Utility Guide in the mid-70's, and the utility bug really bit me hard, and it is still with me.

My interest in utilities was enough to inspire me to learn Morse code, and I picked up my extra class ham ticket (NA5E) along the way.

I started writing when I was a freshman in college--poetry was my bag then. I combined radio and writing when I worked on the editorial staff of the Newark News Radio Club from 1977 until it was declared defunct in 1982; I then transferred my efforts to the editorial staff of the Association of DX Reporters.

I resigned from the latter several months ago, and about the same time I began to work on several articles for the Monitoring Times.

On occasion, I have been referred to by profession as an electrical engineer. However, I take great exception to that label, because I am a physicist by virtue of my academic training. Engineers and physicists have a very special relationship, much in the same way cats and dogs have a special relationship.

While studying physics in college I became a teaching assistant, and I discovered my talent and interest in teaching.

I hope you readers take the time to think about topics you wish to learn more about. Please forward these ideas to me, because your questions are my pleasure to answer.

))))))))
 In previous columns we have dealt with extremely low frequency (ELF) radio waves. Here we are going to examine the other end of the radio spectrum--millimeter waves.

The millimeter wave (MMW) frequency range is from 30 to 300 GHz (that is,

GHz = gigahertz - billion cycles per second). In this frequency range, wavelengths are from 1 to 10 millimeters (25.4 mm = 1 inch).

Other standard definitions exist just as the definitions of the ELF range vary, but it is probably best to keep things simple. So the term millimeter wave brings to mind wavelengths of less than a centimeter but greater than 1 millimeter.

Recall that at ELF we were talking about wavelengths on the order of 10,000 km, so at millimeter wavelengths we have entered a world 10 billion times smaller!

Needless to say, millimeter waves have their own special properties and problems. They are similar in some aspects to conventional microwaves while other characteristics remind us of the infrared (IR). On the other hand, at times they seem like a breed all their own and, indeed, they are!

After World War II a lot of work was put into furthering the developments in microwaves and infrared which came about because of the war. Millimeter waves were an outgrowth of pushing microwave tubes to higher and higher frequencies.

Yet, by the early 1960's infrared devices showed much more promise than MMW to military applications. Therefore, virtually all of the impetus for MMW research was removed, and resources were diverted to IR research.

Keep in mind that almost all of the funding for US research in these areas came from the Defense Department.

For almost 20 years MMW research in the U.S. had undergone a hiatus. New spectrum requirements have

recently developed, as have advances in tube and solid state technology. Subsequently, a considerable amount of research and development in MMW technology is being supported by DOD once again.

The microwave (1-30 GHz) is, believe it or not, already a crowded part of the spectrum. Communications satellites, for example, are becoming more and more numerous, and bandwidth requirements are increasing as the amount of information we wish to communicate amongst ourselves increases.

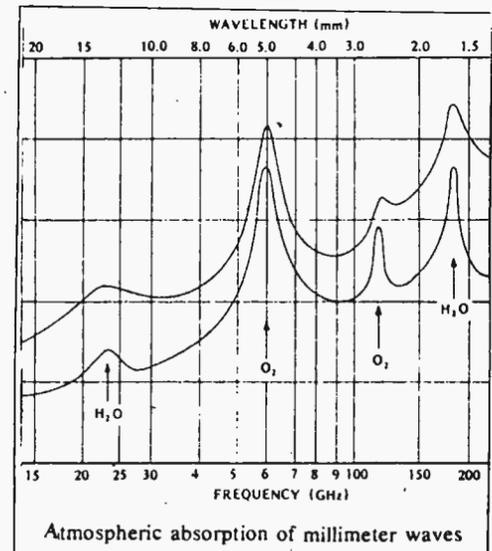
When we consider that the MMW part of the spectrum has nine times the bandwidth of ALL of the radio spectrum commonly used today (1 to 30 GHz), there is a great attraction to move frequency coverage into this relatively unused part of the radio spectrum.

Another reason for exploring the MMW region is that for a given antenna size, the beamwidth is smaller and the gain is higher than at microwave frequencies. These are desirable characteristics for "spot beams" from satellites, reducing radar clutter, reducing adjacent transmitter interference, and the overall miniaturization of radar and communications systems.

Further, the entire millimeter wave range interacts with the atmosphere differently than most other RF bands. Some frequencies, for example, are rapidly attenuated so that there are severe distance limitations placed on MMW systems. These distance limitations can be used to advantage, especially when short range, interference-free systems are desired.

And it turns out that MMW systems are generally better suited for operation

in a "dirty" environment (such as a smoke- and dust-filled battle-field or construction site) than are optical or infrared systems. Millimeter waves are not as severely scattered or attenuated by particles in the air, and penetration of a thick cloud of dust can be quite good.



The areas of most application of MMW are missile guidance, radar, remote sensing, and radio astronomy.

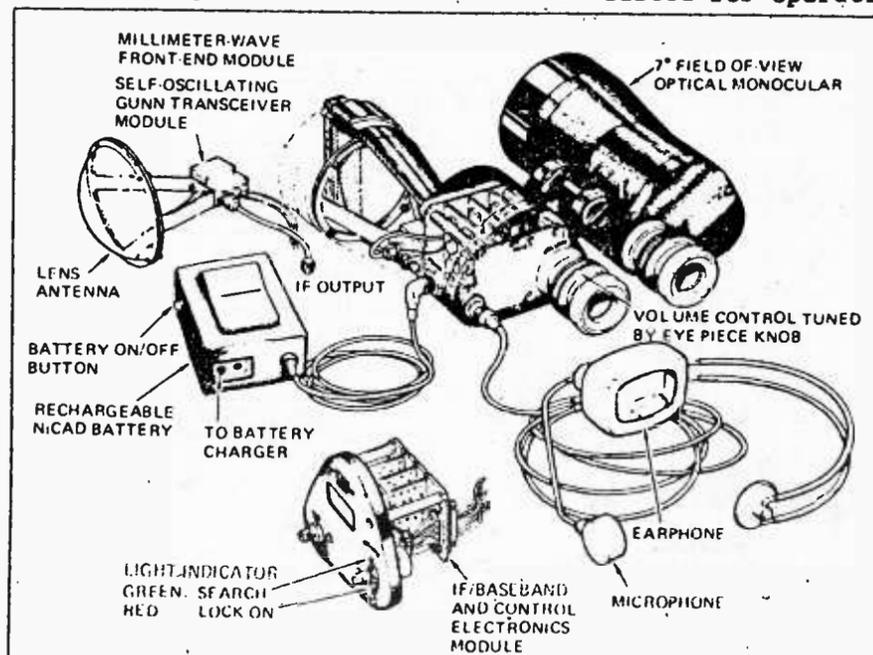
In missile guidance, perhaps the area of greatest research activity, MMW systems are decidedly preferable over present day TV and laser guidance systems. The latter are adversely affected by nighttime or poor weather conditions.

Radar applications which find MMW frequencies useful include battlefield surveillance and moving target indication (MTI). With regard to MTI, keep in mind that the doppler shift of a radar reflection from a moving object is proportional to the frequency of the radio frequency being used. Therefore, a MMW radar would have a much easier time detecting creeping targets than, say, a 3 GHz radar because the doppler shift would be so much greater.

Another area of MMW radar activity is in scale modeling, wherein MMW radar returns from scale model tanks, aircraft, etc., are used to simulate returns from the real objects at microwave frequencies.

Radiometry is the passive sensing of radiation, and advancements in MMW receiver technology in recent years have made radiometry at these frequencies very successful. In the late 1970's NASA developed advanced radiometric techniques for remote sensing.

The Nimbus 6 satellite carried five superheterodyne radiometers and covered roughly 20 to 60 GHz. These



70 GHz binocular radio details.

(continued on pg 4)

— SCANNING —→

LIBYAN AIR FORCE FREQUENCIES

While not receivable in the United States, the following list of Libyan Air Defense Command channels is of interest to those avid frequency collectors.

We would like to thank Robert Kelty and James Zuchelli of the Golden Gate Communications Association for this information.

BASE	CH.	FREQ. MHZ
Tobruk	1A	416.350/411.350
	1B	418.625/411.350
Benghazi	2A	417.725/412.725
	2B	416.925/412.725
Tripoli	3A	418.625/413.625
	3B	416.925/411.925
Wattia	4A	416.925/411.925
	4B	418.625/411.925

METEOR BURST FREQUENCIES

Digital bursts provide a frequency- and time-economical medium for sending information. Recent experiments in using highly-ionized (electrically-charged) portions of the upper atmosphere to reflect radio waves have proved encouraging.

When micrometeorites continually impact the atmosphere they leave a layer of electrically-charged particles which enhance the reflective characteristics, enabling signals to be bounced back to earth hundreds or even thousands of miles away.

Particularly useful are the low band frequencies (30-40 MHz); recently, Meteor Dat Inc. has filed a formal application to allow meteor burst communications in Alaska.

Specific frequencies to be used are 42.40 MHz (central station) and 44.10 MHz (subscriber station).

Some resistance to the application has been noted from the land mobile services which pointed out the possibility of skip interference. The objection has not been sustained by the FCC, however, and the pathway for the system seems clear.

LOW BAND SPECTRUM WASTED

A recent report (Ad Hoc 184) from the Interdepartmental Radio Advisory Committee (IRAC), the spectrum controlling arm for federal government users of the spectrum, revealed that much of the low-band region is

virtually abandoned.

The following frequencies have fewer than 100 transmitters in use:

31.00, 31.10, 31.12, 31.18, 31.50, 31.58, 31.62, 31.70, 31.74, 31.78, 31.86, 31.94, 31.98, 35.62, 35.68, 37.60, 42.06, 42.86, 42.90, 42.92, 43.68, 43.74, 43.80, 43.84, 44.32, 44.38, 44.50, 44.52, 44.56, 44.60 MHz.

600 MHZ LAND MOBILE?

One of our readers informed MT offices that the Greensboro, NC area had a mobile telephone service on 621.625 MHz, and that the 611-664 MHz range was involved in other land mobile services.

Our FCC data base shows no general allocations available in the range except for UHF TV broadcasting.

Can any of our readers clear up the mystery of this unusual allocation?

LISTENING IN ON HAM SATELLITES

The new launching of the latest amateur satellite, "OSCAR 10" (officially AO-10) has caused a flurry of interest among listeners to the VHF spectrum.

A recent letter from Dr. John Champa, senior vice president of AMSAT (Radio Amateur Satellite Corporation), a non-profit research and development organization (PO Box 27, Washington, DC 20044; telephone 301-589-6062) had some additional details to share with fellow MonitoringTimes readers.

Apparently, several common frequencies are developing an interest for listeners. 145.865 MHz is becoming a RTTY channel; 145.888 MHz is often occupied by slow-scan television (SSTV); and 145.810 is often heard with bulletins on both CW and RTTY.

We appreciate John's sharing this timely information with our readers and look forward to hearing more from this progressive organization.



COMING IN JANUARY!

LIBYA AGGRESSION ON THE AIR

WAVES from page 3

radiometers were used to map atmospheric temperatures at various altitudes for a variety of geographical and climatic conditions. Such temperature profiles are useful for meteorological studies, such as forecasting storms.

There is also a good deal of work being done in MMW radio astronomy. This has come about due to large, accurately finished antennas being relatively economical these days. Such antennas up to about 50 meters in diameter are possible, and they are good for work up to 150 GHz or so.

Solar system astronomy has been enhanced thanks to recent MMW brightness temperature studies of the sun, moon, and planets. Also, by studying other MMW radiation a great deal of new information about the constituency of the material in the vast spaces between the stars has been obtained.

Millimeter waves offer a great deal of advantages to certain types of communication systems. As a matter of fact, it is DOD interest in MMW satellite communications that has spurred so much research in this area.

As the amount of information being exchanged increases, the need for greater spectrum usage increases accordingly. At MMW frequencies, very high signal bandwidths are possible, thereby making communications satellites with information capacities hundreds of times greater than present day satellites a very real possibility.

Around 1970 NASA was experimenting with two Applications Technology Satellites (ATS-5 and ATS-6) using a 30 GHz ground-to-satellite communications link. Satellite-to-satellite communications links at 60 GHz were designed also because this frequency is very severely attenuated by the atmosphere and would provide good isolation from interference from ground stations.

In 1976 Lincoln Labs at MIT began operation of an experimental satellite-to-satellite link at 37 GHz. Each satellite in the system had a steerable antenna with a beamwidth of less than 1.5 degrees. Transmitter outputs were about 0.5 watts.

The system worked very well and was an excellent test of the practicality of MMW satellite systems.

The near future will, no doubt, see the implementation of very high gain (say, 75 dBi) MMW ground station antennas passing

traffic through satellites at several hundred million bits per second.

Next month we will take a look at terrestrial MMW systems.

BEHIND DIALS from pg 23

/"Music" tone switch and small speaker);

The 2001 could be programmed and stepped in one kilohertz intervals from 150 kHz-30 MHz (the 2002 allows only 5 kHz increments, requiring very touchy thumb-wheel fine tuning between; Some oscillator pulling was noted on strong signals);

The 2001 had an LED bargraph signal strength indicator (the 2002 has a single LED set for some factory-adjusted level);

AC adaptor optional (supplied with 2001);

Shorter antenna than on the 2001 results in less signal capture.

These comments may seem rather critical considering the new entry is designed to sell for \$100 less than the older model; the 2002 does offer significant improvements over the discontinued ICF-2001:

Extremely lightweight, compact;

Very stable on AM/SSB (with slight oscillator pulling on strong signals);

No antenna peaking required;

Ten memory channels; Built-on whip disconnected when external antenna used;

Superior IF selectivity for adjacent-frequency rejection;

Automatic 9kHz/10kHz stepping for shortwave broadcast tuning.

In the final analysis the new ICF-2002 is unquestionably the finest pocket portable general coverage receiver ever manufactured. While not intended for serious DX-ing, this receiver does provide outstanding AM performance for its size and cost (\$239 including shipping and insurance from Grove Enterprises; available also from other MT advertisers).

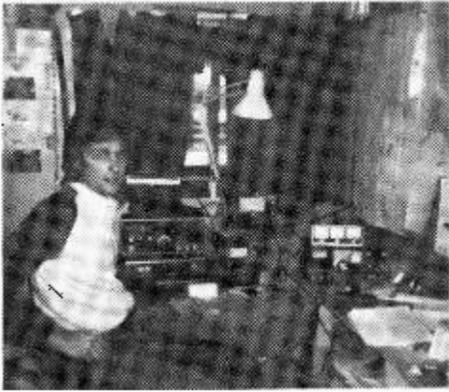
DON'T MISS

SPECIAL REVIEW OF ALDEN WEATHER CHART RECORDER

ON PAGE 21



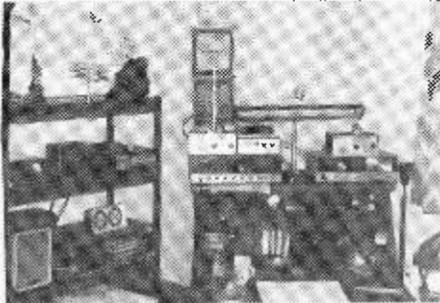
LISTENING POST



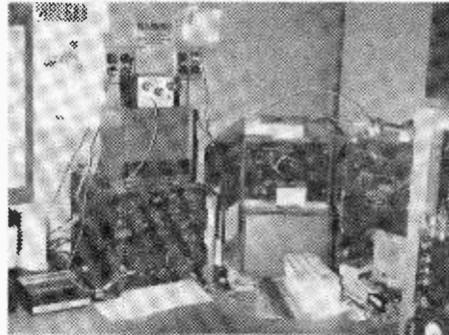
Lyndel Thiesen
Bozeman, MT



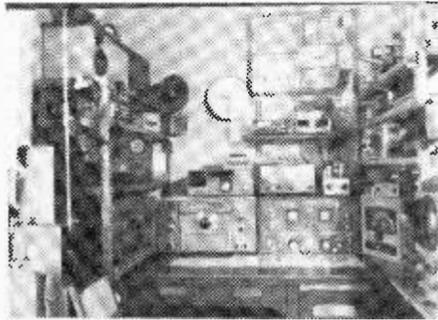
William C. Willmot K4TF
Merritt Island, FL



Jack R. Osborne, Sr.
Kingston, Ontario



Stewart Mackenzie
Huntington Beach, CA



BITS from page 22

AMATEUR COMPUTER NETS ON THE AIR

NAME	FREQ MHZ	DAY	TIME	NET MGR OR NCS
Apple Computer Net	14.329	M	0100	WB7TRQ
East Coast Apple Net	7.260	SA	1400	W1UKZ
HAMNET	14.300	SU	2100	W8GRT
So. Cal. Am. Radio Computernet	144.76/5.36	T	0200	WA6WZO
TRS-80 Users Nets				
Central	7.293	SU	2100	W9LFO
E. Coast	14.342	SU	2200	N1ACA
W. Coast	14.060	SU	0100	VE6AMW
"	14.342	SU	1900	WA6YKH
West Coast Apple Net	7.230	SA	1700	

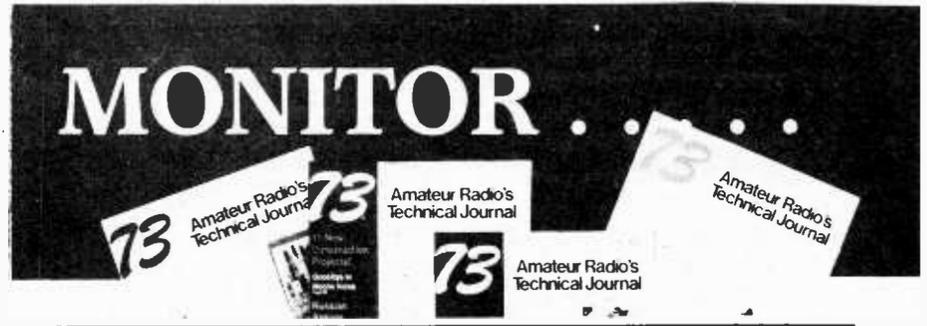
(courtesy American Radio Relay League)

TRS-80 (models 1 and 2)	FREQ KHZ	DAY	TIME	NET MGR OR NCS
	14342	SU	1800-2100	WA6YKH-Bill N1ACA-Jose W9LFO -Rich
TRS-80 Color Computer	14342	SU	2000	WB3EBA-A1
Timex-Sinclair Eastern Net	7240	SU	1600	KQ2F-Bob
Commodore VIC-20 Net	7156	SA	1330	K4EVY
	14240	SU	1800	W6HJE - (RTTY Bulletin on 7095)

(courtesy Bill Turner, KB2LH)

Telephone Computer Nets

Organization	Location	Phone Number
AMRAD	Washington, DC	703-734-1387
CBBS	Pittsburgh, PA	412-822-7176
Communitree	San Francisco, CA	415-928-0641
DX Trading-Post (K1VYQ)	Danbury, CT	203-438-3117
Forum-80	Albany, NY	518-355-1826
HAMNET	Columbus, OH	via Compuserve
Remote CPM	Los Angeles, CA	213-541-2503
So. Cal. Amateur Radio Club	San Diego, CA	714-534-1547



Do it yourself and save. Why pay for someone else to have all the fun? 73: Amateur Radio's Technical Journal publishes more easy-to-build construction projects than any other ham magazine. Every issue is packed with simple articles that will put your soldering iron to work.

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736RMT

73: Amateur Radio's Technical Journal, PO Box 931, Farmingdale NY 11737

SECRECY from page 19
MOST GUARDED SECRET
FOREIGN OFFICE SECRET

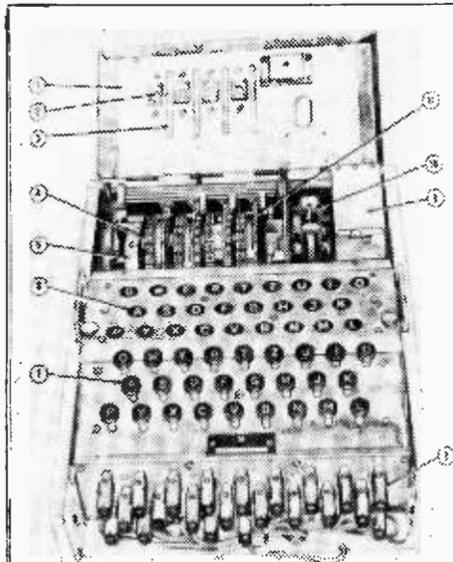
For our part, the most stringent precautions are taken by all custodians of codes and ciphers, as well as other documents.

On this particular matter I have nothing in mind, but pending investigation please wire back any concrete instances or details which may turn up.

Translated 5/6/41



Nazi General Guderian and his crypto team with the infamous ENIGMA machine (lower left).



Detailed look at the fabled ENIGMA machine, the capture of which by British intelligence brought doom to the Nazi war machine.

Japanese Security Classifications:
KIMITSU - TOP SECRET
GOKUHI - SECRET
HI - CONFIDENTIAL

Further background may be obtained by reading the following:

- Kahn, David. The Code-Breakers. New York: Macmillan Co., 1967.
- Holmes, W.G. Double-Edged Secrets. Annapolis: US Naval Institute Press, 1979.
- Van Der Rhoer, Edward. Deadly Magic. New York: Scribner's, 1978.

BROADCASTING

Shortwave Topics

In The Bush With A Guide

Clandestine Close-up

by Hank Bennett

(BUSH HOUSE THAT IS)

by John Santosuosso

As a lot of our DX'ing friends know, the hobby recently mourned the loss of Roy Waite of Ballston Spa, New York. For years Mr. Waite had operated the SWL QSL Bureau with the assistance of the American Radio Relay League. Many QSL cards that had been received by Mr. Waite just prior to his death have been left undelivered and Nathan Rosen, Society Hill North, 23 Lafayette Court, North Brunswick, New Jersey 08902, has stepped in, at least temporarily, to help get all the cards delivered.

A very large percentage of these cards were addressed simply to WDX Monitor Registration holders, a lesser amount to old WPE callholders, and others simply to name. Your editor has supplied Mr. Rosen with most of the WDX addresses and shortly will be sending him the WPE addresses.

If you have reason to believe that Mr. Rosen might be holding cards for you, please drop him a note - with return postage - and inquire.

We have cards for four persons whom we are unable to locate. They are WDX4EY, WDX6RS, WDX7UZU, and WDXODH. These calls are probably self-assigned and we can't deliver them if we have no address. If you can help with these four, please contact your editor. We hope to have news shortly of someone who will be taking over Mr. Waite's duties.

Have you heard the new Radio Impacto yet? It's on 6150 kHz and their address is Box 497, San Pedro, Costa Rica. Bill Flynn in California logged it at 0515-0525 in Spanish with disco music and a recorded ID featuring a slide whistle.

Nathan Murff in New Mexico added it to his log at 0700-0830 in English and Spanish IDs were bilingual; they are requesting reports and the remainder of the program was in Spanish with U.S. pop music.

Lastly, Ruth Hesch in White Plains, New York, heard it in Spanish at 1028 with both male and female announcers; many IDs, both spoken and sung; and ballad-type songs.

Another new station, or perhaps an older one with a

(continued on page 8)

by Ruth M. Hesch

During the EDXC Conference in London, England in May of this year, I was treated to a tour of Bush House, the BBC External Services headquarters.

The group was taken from the Hotel Forum by chartered bus and upon arrival had a short meeting with Andrew Piper of the BBC staff. He has an excellent sense of humor as evidenced by his stating the tour "will give a fair picture of Bush House, which is impossible."

Our first stop was the newsroom, home of the famous World Service News. Next we visited the control room where lines from the studios link up with the various transmitters. There is not much to see in the control room as it is computerized.

The third place we visited was the World Service Continuity Studio where all the programs are linked.

When Mr. Piper led us to the newsroom we saw an office crowded with people and desks, and noisy with conversations.

We learned that the news is written in English and translated into various languages written into computer screens.

Mr. Piper stated the

newsroom operates 24 hours a day; news sources are tapes from news bureaus like Reuters, and from Caversham Park, where the BBC Monitoring Service is located.

Many news stories start from something overheard on another radio station. These are sorted out and it is estimated that a million words a day are thrown out.

Part of this room is Radio Newsreel which includes in its programming the voices of correspondents. We were brought into an adjacent studio which had an announcer at the desk. Here, the announcer "puts himself on the air" to read the World News.

Usually, another announcer follows with news about Britain. "Sometimes it is the same announcer but usually it is two, and they put each other on the air and take each other off," explained Mr. Piper.

A question was asked if tapes are used here. "No. The news is always live like Big Ben." We learned that after the reader comes into one of these rooms, "he has only half a bulletin as the rest is still being written."

We proceeded to the continuity studio where two

(Continued on pg 27)



The Listening Room at Caversham. 50 languages from 120 countries are monitored around the clock

LA VOZ DEL CID supposedly lost its Radio Maximo Gomez service in August when the government of the Dominican Republic put a halt to Cuba Independiente y Democratica's use of the facilities of Radio Clarin. In recent months most of the programming on Radio Clarin had been furnished by CID, whose publication "Radio Broadcasting to Cuba" claimed ten hours a day was being relayed by the Dominican station.

However, there are some interesting things to hear on 11700 these days. A recent monitoring session produced no IDs other than those for Radio Clarin, but the interval signal employed was not Clarin's distinctive bugle. Instead it was that used by CID for its Maximo Gomez programs and other stations in its network. One of the programs heard was entitled "Desfile Musical," the name of an old CID Spanish popular music show. The news provided was decidedly anti-Communist, quite similar in style to that often heard on CID programs.

The close working relationship between CID and Clarin raises some questions about Radio Clarin itself. Who really owns and runs the Dominican station? We understand from one reliable source that definitive answers to those questions are impossible to obtain.

RADIO SOBERANIA NACIONAL is the newest in the growing number of Central American clandestines. Unlike well known Radio Venceremos and several others, this one is favorable to the present government of El Salvador. It may be a black operation sponsored either by the authorities of that country or the CIA. The frequencies presently in use (but of course subject to change) are 6960 and 7075 kiloHertz. There is a morning transmission around 1205 GMT and an evening one at 0005 GMT. An evening broadcast was recently heard here on 6960 signing off with the National Anthem of El Salvador at 0027.

THE VOICE OF PEACE, in international waters, has been reactivated. This ship-based station off the coast of Israel, was a few years ago about the most popular

(continued on page 8)



Listeners' log

163.4625	Fire/crash	130.70	-man-Rayn Field) BR
(supporta	Albuq. Inter. Air)	131.75	Eastern Airlines
163.4875	Security police	146.61	Republic "
163.0000	" "	146.64	2 Meter Amateur Rad
149.175	Command post/Base	146.64	" " "
	Commander	146.73	" " "
150.345	Hospital/Ambulance	146.76	" " "
150.195	Disaster preparadns	146.82	" " "
		146.94	" " "
164.125	Sandia Base (Nu-	147.00	" " "
	clear Defense) Kirtland Se-	147.03	" " "
	curity Police	147.06	" " "
		147.09	" " "
		148.00	" " "
LOUISIANA STATEWIDE FRE-			
QUENCY LISTINGS			
Contribued by David Fuller			
	Bogalusa, LA	148.150	Civil Air Patrol
		149.475	US Navy
		150.935	AAA Auto Club(Ch 1)
			New Orleans, LA
29.73	Int'l Paper, Ray-	150.965	" " " (Ch.2)
	ville, LA	151.215	LA Forestry Dept.
30.58	Construction, LA	151.235	" " "
31.02	Wildlife&Fisheries	151.235	" " "
31.06	State Forestry	151.325	" " "
33.06	Orleans Par. Fire	151.355	" " "
	Alara	151.445	" " "
33.70	Jefferson " " "	151.685	Cottons Pest Contrl
33.72	Tangipahoa Fire D.		(BR:KQB738)
39.12	EBR Par. D.A.	151.835	Sullivan Vo-Tech
	(Crime Lab)		(Bogalusa)
39.16	Covington PD	151.895	The Automatic Music
39.18	Mandeville PD		Co (BR:shared freq)
39.20	LSP Troop A	152.005	Bogalusa Comm Med
39.28	" " B		Ctr. (paging)
39.30	" " L	152.09	Paging (Radiofone;
39.34	Slidell PD		Bogalusa Paper Mill)
39.40	EBR Par. SO (Ch.3)	153.17	Crown Zellerbach
	Substations		(Bogalusa Paper Mill)
39.42	Ponchitoula PD	153.77	Hancock VFD
39.50	LSP Mutual Aid/	154.19	St.Tammany Fire D's
	Interagency Net	154.355	W.Monroe Fire D.
39.54	EBR Par. SO (Ch.2)	154.415	" "
	Primary dispatch	154.575	Exxon Chemical Co
39.56	Morehouse Par. SO		KTP760
39.64	Bogalusa PD	154.710	Covington PD/Covin-
39.72	St.Tammany Par. SO		gton SO(shared frq)
39.74	Quachita " "	154.830	Tangipahoe Par. So.
39.76	Livingston " "	154.965	La. Dept. of Cor-
39.84	Franklinton PD		rections;Hunt Cor-
39.88	EBR Par. SO (Ch. 4)	154.980	rectional Unit
	Detectives		" " "
39.92	Narcotics (BR)	155.0100	Monroe P.D.(base
41.05	Fort Polk Tower/		repeater)
	Fort Polk, LA	155.160	Bastrop PD(Ch2)/
43.12	Construction-Brown		American Red Cross,
	& Root, LA		New Orleans
45.28	CD's HQ's (BR)	155.175	Washington Par. am-
45.60	Bogalusa CD		bulance service(ASD
45.92	Miss. St. CD Net		-Bogalusa)
46.06	Bogalusa & Frank-	155.235	Riverside Med. Ctr.
	linton Fire Depts.		Franklinton,LA
46.08	Quachita Fire Dept.	155.295	Acadian Ambulance
46.12	Rayville VFD		Service
47.28	La. Dept. of Hwys.	155.340	Bogalusa Com. Med.
47.30	" " "		Ctr/Wash. Par.
47.32	" " "		Ambulance Serv.
47.38	" " "	155.535	Bastrop PD (Ch.1)
47.40	" " "	155.580	Hammond PD (Pri-
47.42	American Red Cross		mary Ch. KDC336)
	(New Orleans)	155.690	St.John the Baptist
47.66	Earl Long Hosp.(BR)		Parish SO
47.94	Intex Gas Co. (bog)	155.715	Rayville PD
48.50	Justiss Oil	155.790	W. Monroe PD
49.14	Penrod Oil, Hunt	155.925	LA Dept of Correc-
	Oil, Placid Oil		tions/Wash. Parish
	Ch.112(Ryan Field -		SO
116.50	BR)	155.985	" " " "
118.30	Flight Intentions	156.030	Hammond PD (Ch.2
	(Hrs. 6-11)		car/car)
120.50	ATIS(Automatic Ter-	156.21	Covington PD
	rninal Info Service)	156.725	Offshore crews, LA
	Lafayette	156.800	USCG, Marine Emerg.
122.80	Petroleum Helicop-		(Ch. 6)
	ters/Bogalusa Uni-	156.975	Offshore crews, LA
	com (Airport)	157.100	WSCG, Work Channel
122.85	" "	158.730	Slidell PD
123.45	Offshore helicop-	158.975	S.E. Univ(Security)
125.20	ters/Industrial "		
	NOTAM(Notice to Air		

WHITEHORSE, YUKON TERRITORY
contributed by Ron Tull

All freq. MHz

>Airport: 118.300 121.600
126.270 132.100

>Trans North Turbo Airlines:
118.500

>Taxis: 152.150 155.580
162.230 170.470

>Ambulance: 155.160

>Fire Dept: 153.830

>RCMP: 155.480 155.670
155.790

>Radiophone (NW Tel):
152.540 152.630 152.720
152.810 157.800 157.890

>D.O.C.: 166.110 442.600

>White Pass Yukon Rail:
160.170 160.305

TAMPA/CLEARWATER RAILROADS
contributed by Joe Lewis

Chessie

Ch 1 Road 160.23

Ch 2 Crews 160.32

Ch 3 Yard 160.53

Ch 4 Yard 161.16

R.R. Police 160.875

Conrail/Amtrak NEC.

Ch 1 Road 160.800

Ch 2 Crews 161.070

Ch 3 Yards 160.86

R.R. Police 160.56
161.220

Amtrak Police 161.295

" Handhelds 161.205

Southern

Ch 1 Road 160.92

Ch 2 PBX 160.245

Ch 3 Yard 161.49

Seaboard Coastline

Ch 1 Road 160.59*

Ch 2 Crew 161.100

Ch 3 Tampa yrds 161.400

Tampa yards 161.46

Systemwide yards 160.29
161.04

*(most active)

Amtrak Los Angeles & R.R.
Police are on 462.900

TAMPA BAY AREA SECURITY
contributed by Dick Ferreira

Compton, CA

461.200--KKM-637 Bay area
investigators, Largo

154.540--citizens security
patrol, Largo

151.625--Globe security,
Tampa airport

461.275--Kane security, St.
Pete

461.925--same

31.000--KYI-976 metro
security, Tampa

464.500--Secrex security,
Tampa

461.375--KAP-386 security
control, Tampa

462.000--KUN-925 Wackenhut,
Tampa

461.800--KNCG-312 Wells
 Fargo security, Tampa

461.550--KVE-315 Honeywell
alarms, St. Pete

461.700--WYF-587 Electro
Protective, St. Pete

35.960--same, Tampa

NORTH CAROLINA STATEWIDE
contributed by
J. Eugene Ward
Route 1, Box 122
Old Fort, NC 28762
(Eugene would like to know
frequencies of DOT on Mt.
Mitchell; can readers help?)

>Medical

155.280 Fire/Rescue
Intersystem

155.340 Hospitals

452.725 Repeater Control

452.775 " "

452.825 " "

452.875 " "

462.950 Repeater Output
(Med 9)

462.975 Repeater Inter-
system (State 10)

463.00 Repeater (MED 1)

463.025 Repeater (MED 2)

463.05 Repeater (MED 3)

463.075 Repeater (MED 4)

463.100 Repeater (MED 5)

463.125 Repeater (MED 6)

463.150 Repeater (MED 7)

463.175 Repeater (MED 8)

>Police

154.875 Mutual Aid (Westrn)

155.190 Intercity

155.970 Mutual Aid (Eastrn)

457.350 Highway Patrol Re-
peater (Mt.Mitchell)

>Forestry-Conservation

159.285 Wildlife Commission
repeater (Mt.Mitchell)

172.775 State Forest Serfce

173.335 State Forest Serfce

>Transportation

47.140 DOT Ch B (car/car)

47.260 DOT Ch A
(Base/base/mobile)

ALBUQUERQUE, N.M. MONITORING
contributed by G.F. Keith

City Police

155.25 155.49 155.67

155.85 155.815

City Fire

154.40 154.16

Ambulance 462.95

FBI 163.9875

Kirtland AFB, NM

165.06 Law enforcement

SW TOPICS from pg 6

new slogan, is Radio Earth (via R. Clarin) in Santo Domingo, Dominican Republic. Stewart MacKenzie in Huntington Beach, California; John Wilkins, Wheat Ridge, Colorado; and several others are reporting it on 11,700 kHz at 0330-0445 in English.

News headlines with Rudy Espinal, relays of taped programs from the Netherland Antilles, tourist information, interviews, pop music, and other features are also heard.

It has also been heard in Spanish with the slogan "Radio Maximo Gomez" with the program "Cuba para Los Cubanos" with patriotic music on the La Voz del CID Network.

Robert Brossell in Pewaukee, Wisconsin, has recently logged these goodies: 15,245 kHz 2110-2200 La Voix du Zaire, with French announcements and African music.

7225 kHz 0540-0600 Radiodiffusion-Television Tunisienne, Tunisia, with an all-Arabic music and chanting show.

5950 kHz 1020-1043 Guyana B/C Corp., Georgetown, with a mailbox and pop music.

3958 kHz 0930-1008 Falkland Islands B/C Service, Stanley; pop music and news.

3295 kHz Southwest Africa B/C Corp., with music and talks in Afrikaans at 0430-0500; this one had heavy QRN after 0500.

Mr. Brossell would also like help in obtaining QSLs from Algeria, Tunisia, Mauretania, Somalia, Sierra Leone, and Mozambique. He's had no luck whatever with these stations.

If you have any tips or hints, please write directly to him at 274 Meadowside Court, Pewaukee, WI 53072.

We have a new schedule for Radio Polonia, Warsaw, Poland, thanks to Amadeo Anthony Calviello of Brooklyn, New York.

Service to North America in English and Polish is at 1130-1225 on 17,865, 11,840 and 9525 kHz., and at 0200-0355 on 15,120, 11,815, 9525, 6135, and 6095 kHz with news, commentaries, a mailbag, language courses, and culture and DX programs.

Mr. Calviello says that his best reception of the station is at 0200-0230.

Does anyone know who might be handling repairs on Lafayette equipment? We've had several inquiries lately and our best suggestion at present is to try to have it done locally by a reputable radio serviceman - if you can find one.

Another schedule sent in by Mr. Calviello is for Radio Taipei, Taiwan (Voice of Free China). Daily transmissions in English are as follows:

0100-0200 on 15,345 (BED49) and 11,825 kHz (BED69)

0300-0400 on 5985 kHz (WYFR, Florida, relay)

0300-0355 on 17,800 (BED32), 15,345, and 11825 kHz.

0610-0710 on 5985 kHz (WYFR relay)

2140-2240 on 17,800 kHz.

Program highlights include news, commentaries, Life in Free China, Chinese culture, language lessons, folk, pop, and classical music. Mr. Calviello closes with a request for a vertical trap antenna that really works.

Some scattered items from members of the Association of DX Reporters:

15,495 kHz at 2040-2047 R. Kuwait. You shouldn't have much trouble identifying this one with their distinctive "Huna Kuwait" ID.

15,225 kHz at 0630-0800 Sfax, Tunisia, with Arabic music to 0645, a speech followed by more music, and Arabic news at 0700.

13,797 kHz at 1931 Reykjavik, Iceland with piano tunes and in Icelandic.

Try these not-too-easy South Americans in Spanish transmissions:

5015 kHz 0919-0935 Radio Moyobamba, Peru; woman DJ with program of Andean flute music and long talks.

4760 kHz 1055-1130 Radio Tingo Maria, Peru; man and woman announcers with commercials, time checks, a community calendar of events, a long talk, and Andean instrumental music

4760 kHz 1015-1025 Radio Frontera, Tachira, Venezuela; Latin American pop music, commercials, and IDs, with a man DJ.

From the blue waters of the Pacific Ocean comes the sounds of Super Rock, KYOI, Saipan, Mariana Islands, on 11,900 kHz at 1129-1230 with a Japanese and English transmission of rock tunes and a scattered commentary, and on 9670 kHz at 1605 with much the same programming.

Low frequency loggings from the southwest Pacific include:

4775 kHz 1130-1200 Jakarta, Indonesia, with easy-listening music and some talks; there is home news at 1258; all in Indonesian.

3905 kHz 1059-1105 Radio New Ireland, New Guinea, in Pidgin and English with instrumental music; a gal has an ID featuring five puffs on a conch shell and drums, then into news.

2450 kHz 1145-1200 Radio Western Highlands, New Guinea, in Pidgin and English with pop music and an ID at 1149; news is given on the hour.

2340 1107-1130 Radio West New Britain, New Guinea, with national news, a trumpet fanfare, then local shipping news. This is in Pidgin.

2376 1136-1148 Radio Chimbu, New Guinea, has local music and this, too, is in Pidgin.

While these latter few loggings may be fairly easy to West Coasters, they may well prove to be good DX catches for us listeners in the East.

In his periodic USSR High Frequency Broadcast Newsletter, publisher Roger Legge, Box 232, McLean, Virginia 22101, lists many USSR transmitter sites that can now be QSL'ed for English and some other language programs (but not Russian), if program details are included in the report. Roger has times and frequencies included and all of this can be yours if you'd care to subscribe to his service. For eight issues it's three bucks in North America, or \$4.00 elsewhere, and it's well worth it, especially if you are a QSL hunter.

We'd sure like to hear from our readers out there and it's easy to get your information to us: Hank Bennett, Monitoring Times Broadcasting, P.O. Box 3333, Cherry Hill, New Jersey 08034.

CLANDESTINE from pg 6

radio voice in that country, and it could be heard quite well in all parts of the nation. After closing down for awhile, apparently because the ship's condition had deteriorated to the point it was unsafe, the Voice of Peace has now returned with programming on 6240.

Unfortunately, power is only a few hundred watts, so this one may not be easy. There are also conflicting reports about the schedule. The station may sign off around 0000 GMT some nights but remain on the air with a 24-hour format other days.

BLACK CHINESE CLANDESTINES are being logged on 9267 and 7524. Similar stations sponsored by the Soviet Union and located on its soil, have been around since the days of Mao Tse-tung's Great Cultural Proletarian Revolution. Currently at least two appear to be operating on these frequencies. They are Radio Station Sparks and Radio October Storm.

According to David Crawford, who has monitored Chinese clandestines extensively, Sparks signs on with a choral version of the "Internationale," while Storm uses an instrumental one. Transmissions are brief, running from about eight to twelve minutes, but there are several each hour. Look for these operations between 0900 and 1200 GMT.

LA VOZ DE ALPHA 66 has been busted again by the FCC, according to information just received from Steve Reinstein. Steve says that agents raided a transmitter site in the Allpattah section of Miami. Although they were refused entry, a \$2000 fine has been levied.

RADIO CONFUSION, one of North America's most popular pirates, plans to return soon. We heard from Crazy Roger a few weeks ago, and he and all the rest of the famous, zany Radio Confusion gang expect to be back in the near future. Confusion has always been noted for its excellent programming, and now Crazy Roger tells us the station's technical quality has been greatly improved. For obvious security reasons Confusion is not releasing any schedules or frequencies, so you will have to look around for this one.

THE WINTER EUROPIRATE SEASON will be upon us soon. That means the opportunity for some superb DX and the chance to hear places such as Scotland which have no licensed shortwave broadcasters. Last winter Scotland's Weekend Music Radio did make several tests to North America, as did other Europirates. Most likely there will be similar tests again this winter beginning in late November or in December and running through February or early March. Best time to try will be GMT Sundays after 0400. Check the "pirate bands," such areas at 6220 to 6300 kilohertz and 7350 to 7450 kilohertz, although other frequencies are also in use.

WE ARE LOOKING for contributions from Monitoring Times readers. Probably many readers have useful information on pirates, clandestines, and other unusual transmissions. Why not share it with other readers of this column? Send it to me in care of Monitoring Times. Any restrictions on its use or requests for anonymity will be strictly honored.



TUNE IN CANADA

by Norman H. Schrein

The mailbag has been pretty full of requests for information on Canadian frequencies this month, and I have received several phone calls requesting a closer look into frequencies for various areas around Canada.

At Mount Seymour, BC (near Vancouver) the Emergency Health Services Commission operates on 143.395/138.405, 149.400, 149.680 and 414.1875 MHz. All stations have the call sign XMW 979.

Also located at Mount Seymour are Columbia Bitulithic, Ltd. operating station XNC 898 on 460.025/465.0375 as well as the British Columbia Department of Recreation and Conservation which operates station XMW 376 on 155.220.

Finally, the Co-ordinated Law Enforcement unit operates station XMW 551 on 143.955/148.915 MHz.

The following frequencies can be found in Nelson, BC:—

148.285	XMV 445/446	BC Ministry of Highways
148.585	XMV 445/446	BC Ministry of Highways
148.795	XMV 445/446	BC Ministry of Highways

In Castlegar, BC you will find the following stations operating:—

152.510/157.770	CFW 37	BC Telephone Company
161.175	CZA 777	Canadian Pacific, Ltd.
161.475	CZA 777	Canadian Pacific, Ltd.
30.580	VE9 EBQ	Selkirk College
49.440	VE9 EBQ	Selkirk College
154.490	VE9 EBQ	Selkirk College
460.950	VE9 EBQ	Selkirk College
465.9625	VE9 EBQ	Selkirk College
118.900	VFU 5	Department of Transport
121.500	VFU 5	Department of Transport
121.900	VFU 5	Department of Transport
122.100	VFU 5	Department of Transport
122.200	VFU 5	Department of Transport
122.600	VFU 5	Department of Transport
122.700	VFU 5	Department of Transport
243.000	VFU 5	Department of Transport
286.600	VFU 5	Department of Transport
414.0375/419.025	VFU 5	Department of Transport
460.225/465.2375	VCG 572	Canadian Broadcasting Corp.
162.300	VGH 789	Castlegar Plumbing & Heat
165.810	VGJ 721	Cheveldave, Alex
161.115	VGK 450	Canadian Pacific, Ltd.
161.175	VGK 450	Canadian Pacific, Ltd.
161.475	VGK 450	Canadian Pacific, Ltd.
161.535	VGLK 450	Canadian Pacific, Ltd.
162.870	VGK 729	Kal Mun Holdings, Ltd.
159.630	VGK 770	Marklin Bros. Contracting
153.620	VGK 791	Canadian Cellulose Co., Ltd.
153.560	VGM 500	Canadian Cellulose Co., Ltd.
166.680	VGM 575	Century 21 Big Rock (1981) Ltd
129.900	VYZ 82	Pacific Western Airlines, Ltd.
130.900	VYZ 82	Pacific Western Airlines, Ltd.
155.910/155.040	XJI 333	Castlegar Fire Dept.
155.160	XJJ 647	Castlegar Public Works
138.650/139.410	XJL 39	RCMP
138.825/139.560	XJL 39	RCMP
139.080	XJL 39	RCMP
139.185	XJL 39	RCMP
149.290	XKD 318	Castlegar & District Hospital
150.815	XKD 318	Castlegar & District Hospital
163.335/164.025	XLW 61	BC Dept Lands, Forests & Water
163.830	XLW 61	BC Dept Lands, Forests & Water
163.890	XLW 61	BC Dept Lands, Forests & Water
148.285/143.295	XMV 448	BC Ministry of Highways
148.795/143.445	XMV 448	BC Ministry of Highways
122.400	XMW 201	BC Dept Lands, Forests & Water
163.215/164.085	XMW 201	BC Dept Lands, Forests & Water
158.160	XNF 696	GLS Electronics, Ltd.
165.000	XNX 452	Boundry Electric Castlegar, Ltd
157.470	XOK 366	BC Hydro & Power Authority
165.300/165.930	XOK 366	BC Hydro & Power Authority

Following is the frequency list for Trail, BC —

148.795/143.445	XMW 923	BC Ministry of Highways
153.290	CJY 922	Kootenay Broadcasting Co.
172.890	CJY 922	Kootenay Broadcasting Co.
455.700	CJY 922	Kootenay Broadcasting Co.
161.115	CZA 752	Canadian Pacific, Ltd.
161.175	CZA 752	Canadian Pacific, Ltd.
161.475	CZA 752	Canadian Pacific, Ltd.
160.140	VGC 921	Dawe, Lionel Albert Charles
463.2625/468.2625	VGF 673	Cominco, Ltd.
164.760	VGH 792	Century 21 Vision Realty, Ltd

167.490/163.710	VGK 457	B.A. Benson & Sons, Ltd.
160.140	VGK 463	Roy Ewing Heating, Ltd.
155.550/154.740	VGK 705	Cominco, Ltd.
167.490/163.710	VGK 764	Trail Appliance Repair Shop
464.6125	VGK 780	Cominco, Ltd.
463.6125/468.6125	VGK 780	Cominco, Ltd.
153.410	VGM 526	W. Kootenay Power & Light
154.130	VGM 526	W. Kootenay Power & Light
463.200/468.200	VGM 552	Cominco, Ltd.
464.0875	VGM 562	Cominco, Ltd.
454.500/459.500	VGN 806	Cominco, Ltd.
463.7875/468.7875	VGN 892	Cominco, Ltd.
463.2625/468.2625	VGN 893	Cominco, Ltd.
463.9375/468.9375	VGO 731	Cominco, Ltd.
463.6875/468.6875	VGO 737	Cominco, Ltd.
138.675/139.410	XJB 35	RCMP
139.945	XJB 35	RCMP
139.080	XJB 35	RCMP
139.140	XJB 35	RCMP
155.070	XJF 57	City of Trail, BC
155.400	XJF 57	City of Trail, BC
27.640	XJJ 82	Trail Public Works Dept.
167.490/163.710	XJJ 82	Trail Public Works Dept.
169.290	XJJ 82	Trail Public Works Dept.
149.110	XMW 608	BC Emergency Health Svc.
149.680	XMW 608	BC Emergency Health Svc.
162.960	XNC 241	Bryans Transfer, Ltd.
151.565	XNH 670	Korpak Cement Products Co.

—Skipping across the country, one will find the following frequencies assigned in the Gananoque, Ontario area:—

160.665	CZA 221	Canadian National RR
160.785	CZA 221	Canadian National RR
161.205	CZA 221	Canadian National RR
161.405	CZA 221	Canadian National RR
27.520	VCS 410	Webb, David Harold
162.870	VCS 410	Adams Taxi, Ltd.
29.740	VCS 437	Griffin Bros., Gananoque, Ltd
156.350	VCV 948	Gananoque Boat Line, Ltd.
168.870	VCY 316	Gilbert, William
42.060/42.220	XJB 219	Ontario Provincial Police
142.695/138.675	XJF 591	Gananoque Police Dept.
142.770/138.750	XJF 591	Gananoque Police Dept.
154.070	XJF 317	Gananoque Fire Dept.
154.430	XJF 317	Gananoque Fire Dept.
148.315/414.5375	XKD 840	Jack French, Ltd.
39.600	XOH 60	Gananoque Light & Power, Ltd
45.000	XOH 60	Gananoque Light & Power, Ltd
165.270/159.270	XOH 60	Gananoque Light & Power, Ltd
150.100	XNY 525	Ontario Provincial Ambulance
167.160/163.500	VCO 388	Hastie Towing

The preceding frequencies are in answer to requests from Monitoring Times readers. If you wish information for your area, do not hesitate to contact me.

I am pretty slow in answering letters, as I have a limited amount of time to do the research for these as well as for the Fox "Scanner Radio Listings" books. I will answer your letters as soon as possible, however.

If you see your information listed in this column, but have not gotten a letter, then something must have happened to it in either the U.S. or Canadian mails.

This next section is a list of frequencies around the Niagara region, specifically the Regional Municipality of Niagara. I had finished the Fox "Scanner Radio Listings" for the area recently, and these frequencies have since been identified and are not in that listing. So here goes:

159.390/154.665	CHC 253	Canadian Marconi Co. Niagara F
164.550/168.570	CHC 253	Canadian Marconi Co. Grimsby
160.845	CJT 345	Toronto/Hamilton/Buf RR -
		Smithville
161.070	CJT 345	Toronto/Hamilton/Buf RR - "
160.845	CJT 349	T/H/B RR - Welland
161.070	CJT 349	Toronto/Hamilton/Buf RR - "
161.265	CJT 349	Toronto/Hamilton/Buf RR - "
161.505	CJT 349	Toronto/Hamilton/Buf RR - "
162.420/159.360	CJT 727	Trans Canada Pipelins-Fonthill
169.560	XJF 576	Niagara Falls Pollution Contrl
141.270	XMJ 238	Canadian Customs - Ft. Erie
141.270	XMJ 239	Canadian Customs - Niagara Fls

I also want to thank those of you who sent in 10 codes. As I mentioned before, but probably did not make clear, I would like to have public safety (police, fire, etc) 10 codes and signals from everywhere, not only in Canada.

If you wish to write to me, the address is 1107 Sharewood Court, Kettering, OH 45429. The telephone number is 513 298-5746



Maritime Medical Radio Network

by James R. Hay

One of the problems faced by the crews of ocean going ships, is obtaining medical help when there is a problem. While deck officers are trained in first aid, they are not able to treat serious ailments or injuries which require the attention of a medical doctor, and very few freighters carry a doctor on board. If there is a problem which requires medical advice, help can be obtained through the nearest coast radio station.

There is one station in Europe which is set up expressly for the purpose of handling messages to and from medical authorities: the Centre International Radio Medical which operates station IRM in Rome, Italy. This station provides medical advice to ships anywhere on the high seas by radio.

Well respected medical authorities, such as senior medical officers of hospitals, nursing home directors, etc. are consulted, and the ship will receive advice with the least possible delay.

Should it be necessary, the C.I.R.M. can arrange for transportation of patients from ships on the Mediterranean to hospitals on shore. Arrangements may be made to allow transportation of patients by air by French, Dutch, Danish, Norwegian, and Egyptian authorities.

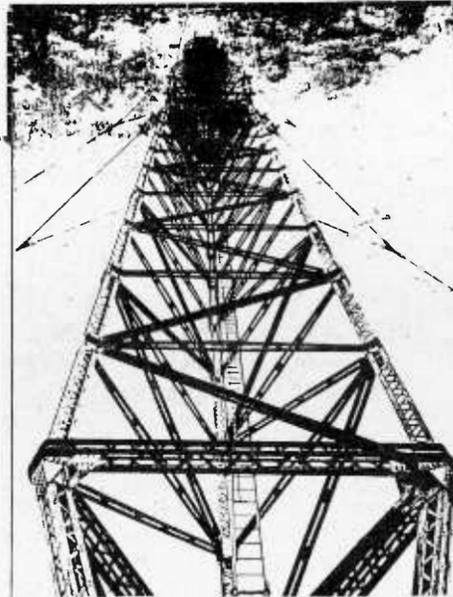
IRM operates on nine frequencies, using Morse code: 4342.5, 4350.5, 6365.0, 6420.0, 8685.0, 12748.0, 12760.0, 17105.0, and 22525.0 kHz. An automa-

tic marker transmission gives the frequency being guarded on each band.

If it is not possible for a vessel to communicate directly with IRM, it is possible to contact the C.I.R.M. via IAR on cw, or Rome Radio on phone. Messages are then sent to the C.I.R.M., or telephone calls placed to them without any charge to the calling ship.

The following frequencies can provide some interesting listening, as IAR and Rome Radio also handle domestic traffic, as well as medical and other emergencies. All frequencies are in kHz.

IAR		
4292.0	6435.5	16895.3
4320.0	8530.0	17005.0
6409.5	8669.9	17160.8
6418.2	13015.3	22372.4
		22378.0
Rome Radio		
8778.6	17239.1	22599.1
8796.4	17248.4	22627.0
13125.6	17304.2	



The Tuckerton Wireless as it appeared in the early 1930's. Photo by Charles Nash.

the direction of its German manager, was being used for military purposes, thus violating American neutrality and evading efforts to censor its operations.

Although there were several minor violations of the government's restrictions, a much more serious one probably occurred in October of 1914. While the evidence is not conclusive, the Tuckerton Wireless appears to have sent orders to a German Pacific fleet to move toward the southern coast of Chile.

On November 1, near Punta Arenas, the Germans caught up with a British fleet and were successful in sinking three cruisers with heavy loss of life. The defeated British admiral went down with his flagship. Britain would get revenge about one month later, but Germany had won the war's largest naval engagement fought outside European waters.

From an American point of view, far more serious was another event in which the Tuckerton Wireless played a major role. Despite early attempts by President Woodrow Wilson to keep the country neutral in fact as well as theory, increasingly American sentiment was swinging toward Britain and France and away from Germany.

The chief reason for this was the destruction caused by German U-boats in their pursuit of unrestricted submarine warfare. By the time America entered the war some 226 of her citizens had died as a result of German submarine attacks. Of these 122 would perish in a single catastrophe, the sinking of the British passenger liner, the Lusitania, on May 7, 1915.

Probably the ship was carrying contraband, and the German government had warned Americans not to sail on her, but that did nothing to stop the outrage. It was almost inevitable after the destruction of this ship that America would enter the war.

And what did WGG have to do with all of this? They cannot prove it, but area residents swear that from Tuckerton, New Jersey, on May 7, 1915, went a fateful two-word message to a German U-boat commander. It was the German equivalent of "Get Lucy!"

Supporting their claim is the fact that in 1917 when the United States government did occupy the station its entire operational staff were discovered to be members of the German Army.

After the eviction of the Germans, the Tuckerton Wireless would see a less glamorous life. RCA acquired the facility and operated it as a coastal station until 1949.

In the mid-1950's, now no longer needed, the magnificent tower was finally torn down and sold for scrap.

Only 25 miles to the north is AT&T's busy coastal operation WOO Ocean Gate Radio. Monitoring its SSB voice communications is rather easy, and in the past it has been a good verifier.

In recent months WOO has been reported on 4385.3, 4388.4, 8740.6, 8749.9, 8796.4, 13128.7, 17291.8, and 17325.9. Other frequencies are also in use. You might also be fortunate enough to hear its sister station, WAQ, on 2558 kHz.

Ocean Gate Radio is not engaged in any foreign intrigue, but when you monitor it you might remember the echoes of the transmission that sent America to war!

THE TRANSMISSION THAT SENT AMERICA TO WAR

by John Santosuosso

At night as a boy on Long Beach Island, New Jersey, I could easily see the lights on that mysterious tower seven miles away. There always was something eerie about it. You could not help but ask questions. Everyone for miles around referred to it simply as the Tuckerton Wireless.

However, if you sought out the old timers they could tell you stories about that steel stick. It was not just another radio station; it was the station that dragged America into a world war.

Details of the station's construction and operation can be found in Charles Nash's "The Lure of Long Beach" and William McMahon's "South Jersey Towns." Construction of the tower began in May of 1912, just two years before World War I began. It was the brainchild of the brilliant German scientist Rudolph Goldschmidt and financed entirely by the German High Frequency Machine Corporation for Wireless Telegraphy.

While local workers were used for the erection of the tower, its components were actually manufactured in Germany, and the supervisors were all German. At the same time that the tower

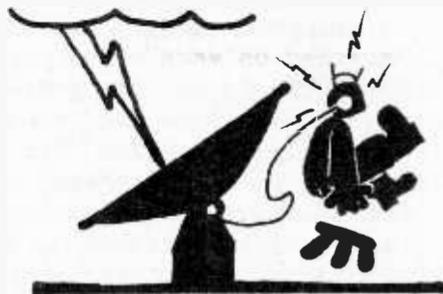
at Tuckerton was under construction a similar one was built in Eilvese, Germany.

The wireless was finished less than three months before World War I erupted. However, there still was no fighting when the project was completed, and in 1914 America was determined to stay out of Europe's quarrels. The United States government quietly inspected the station and then assigned it the call letters WGG.

It was quite an engineering feat. There rising above the Jersey marshlands was a structure some 853 feet high (later reduced to 778 feet), at that time the second tallest tower in the world. Supposedly, WGG used the highest voltage of any radio station in its time. Traffic was in CW at speeds up to 100 words per minute, making it necessary to record messages on a special paper devised for that purpose.

For a brief period of time WGG, whom local residents always called the Tuckerton Wireless, functioned as a routine point-to-point and coastal operation. However, when war did start in Europe rumors began to circulate that all was not as it should be at the station. In fact, several of the European powers protested that the station, under

SIGNALS FROM SPACE



SATELLITE TV SCRAMBLING --

a status report

by Fred Hopengarten

(Mr. Hopengarten is President of Channel One, a Waltham, MA company selling home satellite TV systems, SMATV services, and downlink rental.)

The recent NCTA Show, in Houston, TX, offered an opportunity to chat with many programmers in one place. With interest running high on the question of scrambling, there was a lot to be learned.

Scrambling Today

The Oak Industries ORION system is the world's first commercially available satellite security system, widely used in scrambled pay-per-view and teleconferencing transmissions. Requiring unclamped video, not immediately available on every satellite receiver, but not a difficult modification either, the ORION system is commonly used by Oak affiliates, Oak Media Development and Videonet.

Oak claims outside orders for 3000 units have been received from Catholic Telecommunications Network of America (CTNA); BizNet, a subscription television service of the United States Chamber of Commerce; and Canadian Satellite Communications, Inc. (CANCOM). Viewers who would like to see what the ORION system looks like, can find it regularly on ANIK D, at 104.5 degrees west longitude, transponders 8, 14, 18, and 22.

The ORION system has also been selected for use by Blue Max, and is reportedly available for sale with an annual rental fee for Blue Max programming.

ESPN has also used the Oak system on one occasion, for a pay-per-view event, but has no interest in scrambling its regular Satcom F3R feed.

The one time that ESPN was involved with scrambling, it lost money. It was a pay-per-view joint venture with ABC Video Enterprises of a four-bout boxing card including a Larry Holmes and Tim Witherspoon matchup.

Though carried by over 100 cable systems with 1.5 million potential subscribers, the event is reported to have lost \$3.2 million.

Scrambling Tomorrow

With so many questions surrounding the announcement of Home Box Office that it plans to scramble immediately, some research proved interesting.

HBO handed out an "HBO Satellite Scrambling Fact Sheet." In its copyrighted statement, HBO writes: "West Feed affiliates who are in good standing will be provided with descramblers for earth stations prior to June 1, 1983."

Industry sources have said that this simply didn't happen. In the same pamphlet, however, indeed in the immediately preceding paragraph, HBO wrote: "During the fourth quarter of 1983, HBO affiliates who receive the West Feed (will receive) shipment of descramblers."

Inquiries of an HBO engineer, who asked not to be named, produced the following calendar:

*August 1983: Prototype testing of F3R, Transponder 13.

*September 1983: First shipments to West Coast affiliates and testing through November.

*End of 1983: West Coast feed scrambled.

*End of First Quarter 1984: Completion of West Coast descrambling.

This same engineer then volunteered that a similar time frame for scrambling the East Coast feed of HBO would begin immediately after the completion of the West Coast project, indicating that the East Coast might not be fully scrambled until the end of 1984.

Asked about scrambling of their Cinemax service, heavily promoted at this show, HBO representatives replied: "We don't know yet."

The HBO system employs the National Bureau of Standards' Data Encryption Standard, or DES, which is the highest level of non-classified encryption approved by the U.S. Government. Sources within the industry say that this system, made by M/A-

COM's Linkabit, and known as VideoCipher, is not impossible to defeat, but it is just not worth the effort.

Some engineers familiar with it have described the VideoCipher as expensive today, but highly effective.

Scrambling: Maybe Never

Speaking for the Movie Channel, a service scheduled to merge with Showtime, Chief Engineer Andy Setos commented that due to the impending merger, TMC hasn't "thought about this for a year." Nonetheless, Setos thinks "that there should be a combination of locks and laws." As of today, TMC has no plans to scramble.

On the other hand, Showtime's Stephan Schulte, Vice President for Operations, wanted to know the audience for which he was speaking before he replied: "Showtime will scramble its signal in the near future because it wants to protect its rights as a program supplier."

On the other hand, Schulte also commented that Showtime has been looking at the question of scrambling for 2-1/2 years now.

"I've heard of no plans to scramble," said USA Cable Network representative Jim Bennett. "The chances are slight (that USA would do so). We're barely making money now, and would not jeopardize that by scrambling."

This was confirmed by Barry Kluger, USA Cable's Director of Public Relations who stated flatly: "We have no current plans to scramble." It is interesting to note that the distribution of USA Cable Network is handled by HBO.

Representing a point of view held by programmers who do not charge cable affiliates for the use of their signals, CBN Cable Network's Tim Robertson, Group Vice President, commented: "Since we're a basic, free service, our whole purpose is to get as many viewers as possible. So, for us, scrambling is not an issue. It defeats our purpose of being a wide scale network."

His remarks were echoed by Kathryn Creech, departing Vice President of Affiliate Relations for ABC/Hearst's Daytime service (she is leaving to work with the Consortium for Cable Information): "No. It doesn't make sense for us (to scramble) unless it gets real cheap."

The Bottom Line

After all the brouhah, particularly with the attention paid to the subject in the popular press, many earth station dealers have adopted a "So what?" feel-

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COUSTEAU'S "CALYPSO"

ON MISSISSIPPI

Jacques Cousteau's famous oceanographic research vessel, the Calypso, is scheduled to spend the remainder of the year near the headwaters of the Mississippi River according to a Monitoring Times informant.

The Calypso is one of the best equipped research vessels in the world with an enormous communications capability for both direct and satellite-relayed radio.

Listen for the Calypso on inland waterways channels (a complete list is found on P. 151 of Bob Grove's Short-wave Frequency Directory).

ing. With two, five, or even 10 signals scrambled, what does it matter?

At the end of June, Satellite TV Week was listing 155 transponders as currently active, or soon to be activated with video; and 124 transponders which routinely carry a known programmer; or 90 channels which have regularly scheduled programming.

Given that type of variety, few dealers believe that currently-known plans for scrambling should have any effect on earth station sales at all.

"Los Numeros"

32444 69213 88816 52196 63811 94216

Havana Moon



by Havana Moon

THE INTERCEPTS

Another frequency change to report: The 3090/4100 kHz 5-Digit Spanish circuit now active on the hour with a repeat at 15 past the hour on 3090/4030kHz. This latest change came just shortly after the last issue of Monitoring Times was in your hands.

Here's another of those unknown type transmissions that was first reported by SPEEDX and later monitored at this site around 0200Z on numerous dates: J3R with marker tape on 8920 kHz. Any ideas?

Maintain watch on 7540 and 8805 kHz around 0400Z. You should hear a YL in English with alpha characters in groups of 5. Monitored on numerous dates.

And finally, this curious intercept on 8217 in English at 0100Z on 9/20: OM with alpha-numeric characters in groups of 5. Heavy Spanish accent.

THE POSTMAN RINGS

From a reader in Ft. Walton Beach, Florida the following: "Wed. Aug. 31, 2030 hrs. a female announcer was reciting 5 number groups in German language. Thought to be a native speaking because "finif" was used for "fünf" (5) as with German radio ops. Recitation terminated at 2051 hrs. with a chime sounding "A." Frequency 14.622.6 USB..."

That's just the kind of report this column solicits. How about the rest of you guys and gals out there in monitoring-land? Anonymity is guaranteed.

THE VOA(?) AGAIN

At 0112Z on 9300 kHz, what appeared to be a VOA news feed with deep fades. Monitored on 9/20 with abrupt off at 0121Z. Not a published VOA feeder/relay frequency.

A POSSIBLE ID

Remember the "oh-so-slow" CW intercepts as reported in the last issue? It could be that these transmissions are coming from our very own vigilant Navy!

On 9/20 at about 0200Z, a station using a 3-element alpha-numeric call and sending alpha characters in groups of 5 was noted. Speed and sound was same as previous "oh-so-slow" CW inter-

cepts. US Navy often uses this type alpha-numeric call. Traffic header contained precedence indicator, time of origin, date and group count.

PRIVILEGED DIS (?) INFORMATION

Ever wonder what the Feds have to say--off the record of course--about those 5-digit Spanish transmissions? Here's what one Fed had to say some 4-years back: "...those responsible for these (the 5-digit Spanish) transmissions know that they are being monitored." "...their security people have taken steps to prevent sites from being located..."

And more recently, one FBI official had this curt comment: "The NSA is very interested in 5-digit Spanish transmissions."

This official abruptly turned to finish his drink and would say no more.

THE RUSSIAN ON VHF-AERO

While on a recent business trip behind the Conch curtain (Key West, FL) I managed to find ample time to put my Realistic Pro-2020 to very good use. The frequency of 123.7 MHz proved to be most active with Aeroflot position reports while enroute to and departing from Havana's Jose Marti International.

Aeroflot 333 was most active during one 20 minute period with position reports and lots of numbers that really didn't fit in with position reports.

One position report was from near AUTEK (Atlantic Underwater Test & Evaluation Center) sites. Wonder if Aeroflot has replaced the trawlers?

In light of the tragic and horrifying downing of KAL 007, did you know that Aeroflot was once involved in over-flights of Pease AFB and other sensitive Air Force facilities? All of this as recent as late 1981.

Not once were interceptors of the U.S. Air Force scrambled to fire upon these "cloak-and-dagger" pilots. It's not the American policy to fire on stray aircraft.

Aeroflot passenger planes are also reported to carry lens-shaped bulges on outside fuselages. It's long been known in official circles that the entire transport capacity of Aeroflot and other East bloc airlines

have military uses.

CUBAN AERO FREQUENCIES

Boyeros Radio: 123.7/128.8/128.7 MHz. In addition: 135.1 MHz was active with both Cubana and Aeroflot in contact with Marti approach. All Aeroflot transmissions were in English.

Aero monitors along Florida's South coast as well as the Keys might well maintain watch on these frequencies. As these aircraft are often reporting from altitudes in excess of 32,000 ft., reception distance should exceed 200 nautical miles.

APOLOGY

The inviolate cryptosystem will not be presented in this issue. An unexpected business trip has caused this article to be rescheduled for the January issue of M.T.

THE RADIO BUOY

Recent press reports indicate the U.S./Danish defense teams have recovered a radio buoy used by Soviet subs to communicate with their home bases.

A spokesman for the Danish defense staff said that its Greenland command has confirmed that a 7-foot-long cylindrical device was recently found by a fisherman on a beach near Nuuk.

It's said that bouys of this type are used by the Soviets to communicate with their bases while submerged. These devices float just below the surface of the sea where they can transmit and receive over long distances without being seen.

YOALKY-PAHLKY

That's just one of the many phrases contained on the KAL 007 incident tapes that were released by our intelligence community. A colleague with many years as a linguistic expert has a slightly different translation of this Russian phrase than the one that was released by NSA.

My colleague says that this word or phrase is not comparable to "fiddles-ticks." The literal translation offered by our intelligence community was "Christmas trees and sticks," a phrase used to express great joy.

I fail to see joy in the barbaric slaughter of 269 innocent men, women and children. My mentality is not that of a Soviet fighter pilot.

TOO MANY REVELATIONS?

In the aftermath of KAL 007, some intelligence veterans think so. Others think not. Rest assured that electronic eavesdropping by NSA is hardly a secret to the KGB and GRU.

And don't think for one

minute that transcripts from other U.S. intelligence sources will be made public. You've heard just about all you're going to hear.

Do not be surprised, however, if the Soviets release tapes of some U.S. transmissions. You'll be hearing of KAL 007 for a very long time.

MORE MISINFORMATION

Remember that statement just a few days after the KAL 007 incident in regards to Soviet codes and ciphers being changed after this shoot-down? The fact is that the Soviets change codes and ciphers on a 24-hour basis, sometimes on a 12-hour basis. The longer a code or cipher is used, the more vulnerable it becomes.

RED ROUTE 20 AND SOVIET ELECTRONIC MISINFORMATION

In the next issue you'll read about Soviet radio transmitters and radars that are used solely for bogus transmissions. Find out how American computers are used in this massive Soviet misinformation project.

A SOLICITATION

Information is sought from M.T. readers in regards to any unknown-type transmissions as well as all so-called "spy-numbers" transmissions.

Help M.T. and "Los Numeros" grow by sharing your information. Requests for anonymity will be honored.

I am in urgent need of 5-digit Spanish transmission reports from California. Am very interested in time periods of 12, 13 & 1400 hrs.

HAVE A MOST HAPPY HOLIDAY SEASON AND ON CHRISTMAS MORNING MAY YOU FIND A NEW ICOM OR ONE OF THE NEW REGENCY OR ELECTRA PRODUCTS UNDER YOUR TREE. MAY YOU HAVE THE VERY BEST OF EVERY THING TO COME DURING THE MONTHS OF GEORGE ORWELL'S 1984.

Time now for a Tecate and . . .

Adios,
Havana Moon

INTERESTED IN SPY NUMBERS? PIRATES?

If you are among the thousands of curious browsers of the HF spectrum who are puzzled by the notorious spy numbers transmissions, you may wish to subscribe to "A.C.E.", the newsletter of the Association of Clandestine Radio Enthusiasts.

Even more prevalent in the publication are schedules of pirate broadcasters.

For a sample of their monthly bulletin send \$1 to the Association of Clandestine Radio Enthusiasts, P.O. Box 452, Moorhead, MN 56560.

B. Provide auxiliary unclassified communications for military, civil, or disaster relief officials during periods of emergency.

C. Handle morale and other authorized communication traffic for Armed Forces and U.S. Government civilian personnel stationed throughout the world.

ARMY:

Army MARS is directed and managed by the U.S. Army Communications Command world-wide. It is comprised of both military and civilian personnel who communicate on military allocated frequencies. U.S. Army MARS' main net control station is at Fort Meade, Maryland. Three full-time radio gateway stations serve 38 military station sites throughout the Continental U.S.: Fort Meade, Maryland, Fort Sam Houston, Texas, and the Presidio of San Francisco, California.

Nearly 6,000 active civilian affiliates participate in 750 state or regional networks.

Commonly-Used U.S. Army MARS Frequencies (kHz)

7313.5(1sb)	4018.5(cw)
7405.0(1sb)	2259.5(cw)
4030 (usb)	4025 (1sb)
7315 (usb)	7311 (usb)
6997.5(1sb)	3237 (cw)
3289 (cw)	3245(RTTY)
3347 (RTTY)	2258(RTTY)
2220 (1sb)	2813.5(cw)
VHF(MHz FM)	
49.93	143.99 148.01

CODE PRACTICE

For some cw practice at 18wpm, listen to the WAR (Pentagon) broadcast every Tuesday, at 0030 utc on 6997.5 or 14,405. Speed starts at 18wpm down to 15wpm.

What You Will Hear

On January 20, 1980, our Presidential Inauguration, 52 American diplomats were released from their hostage drama in Iran. Army MARS networks became alive with U.S. residents sending "welcome back" messages to the freed hostages upon their arrival at our air base in Wiesbaden, West Germany. Our Chicago radio station used MARS to send a message to them notifying them that they should expect several Chicago style deep pan pizzas being sent to them air express. Even the Chairman of the Senate Foreign Relations Committee, Senator Charles Percy of Illinois, jumped on the bandwagon, sending his congratulations!

Most messages are routine--messages to and from homesick military personnel, morale boosters for enlisted

men and their families.

AIR FORCE

The main regional operation is HF single sideband voice, 16 hours per day, 7 days per week; RATT (Teletype) is the backbone system.

More than 100 VHF repeaters are deployed throughout the United States for inter-communications between local stations.

Transcontinental Nets

Voice:

This network is run by AGA3HQ located at Scott AFB, Illinois. This upper sideband network operates daily - 24 hours: TCON calling frequencies daytime: 7540.0 KHz Charlie Delta, 13993.0 KHz Charlie Echo. Nighttime: 3311.0 KHz Charlie Bravo, 4590.0 KHz Charlie Charlie. TCON traffic frequencies: 4560.0 KHz Tango Four, 4602.5 KHz Tango X-ray, 4765.0 KHz Tango Mike, 4832.0 KHz Tango November, 4842.0 KHz Tango Oscar, 7527.0 KHz Tango Quebec, 7545.0 KHz Tango Romeo, 7632.0 KHz Tango Sierra, 13977.0 KHz Tango One, 13996.0 KHz Tango Uniform, 20740.0 KHz Tango Victor.

Transcon CW:

The net control varies and operates daily on the following frequencies: 3311.0 KHz, 3347.0 KHz, 4876.5 KHz, 6995.5 KHz, 11621.0 KHz, 13997.5 KHz, 14528.0 KHz, 20961.5 KHz, 27995.5 KHz. You can listen to special cw training at 12 wpm on Saturdays, 2100-2230 zulu on 4876.5 KHz and 13997.5 KHz.

Phone patch nets - Atlantic Phone Patch Network: European, daily 0000-2359z; Azores, daily 1700-0100z; Central and South America, daily 1215-0200z. Frequencies: Europe, 11407.0 KHz, Alpha Charlie Alpha; 14390.5 KHz, Alpha Charlie Echo; 20118.5 KHz, Alpha Charlie Golf. Azores, 7633.5 KHz, Alpha Charlie Juliet; 13927.0 KHz, Alpha Charlie Bravo; 14606.0 KHz Alpha Charlie Foxtrot. Central and South America, 13977.0 KHz, Alpha Charlie Charlie; 27978.5 KHz, Alpha Charlie Kilo. Alaska phone patch net (run by AGA5MC at McCord AFB, Washington) operates daily, 1500-07000z. Frequencies: 7938.0 KHz, Alpha Kilo Two; 9047.0 KHz, Alpha Kilo Three; 9224.0 KHz, Alpha Kilo four; 13985.0 KHz, Alpha Kilo One; 15712.0 KHz, Alpha Kilo five; 19200.0 KHz, Alpha Kilo Six; 24573.5 KHz, Alpha Kilo Seven.

Hawaii Inter-Island Net

Wednesday and Friday, 0530-0630z; 7360.0 KHz Hotel India One.

In the continental U-

nited States, each region makes use of its own frequencies, including 3315.0 KHz, Romeo Alpha; 4593.5 KHz, Romeo Bravo; 7324.0 KHz, Romeo Charlie (net control is station AIR at Andrews AFB, D.C.) 3299.0 KHz, Romeo Delta; 4577.0 KHz, Romeo Echo; 7313.5 KHz, Romeo Foxtrot (run by AGA2LA Langley AFB, VA.) 3308.0 KHz, Romeo Golf; 4517.0 KHz, Romeo Hotel; 7305.0 KHz, Romeo India (run by AGA3HQ, Scott AFB, IL). 3296.0 KHz, Romeo Papa; 4575.0 KHz, Romeo Quebec; 7457.0 KHz, Romeo Romeo (run by AGA6TR Travis AFB, CA).

Also listen to 143.450 MHz FM if you are near a military facility.

The military call signs in the United States consist of the letters "AGA" and a number 1 through 6 denoting the MARS region in which the station is located; the two letters after the numeral indicate the first two letters of the Air Force base.

Overseas military unit call signs consist of AGA, a number 7, 8, 9 or 0 denoting the appropriate overseas MARS region, and two alpha digits in the manner similar to the U.S. stations.

Affiliate Station Call Signs

These are single operator call signs consisting of AF, a letter A through Z and

number 1 through 0, and two suffix letters--AA through ZZ.

State MARS Directors will have two letter suffixes denoting the state; for example: AFF2 NC is director of North Carolina.

NAVY-MARINE CORPS

Background:

The USN MARS System consists of a combination of 21 USN and USMC stations worldwide, 11 of which are in CONUS (Continental United States). The MARS Director is assigned to the Naval Telecommunications Command, Washington D.C. Six CONUS Regional Directors staffed by volunteers and the State Volunteer Director report to him. Of the 11 CONUS stations, Cheltenham, Maryland is the only "ashore" USN station; the remaining 10 are USMC.

There are 3500 volunteer affiliates in this MARS program.

Operation:

The Navy MARS station at Cheltenham, Maryland is capable of accessing the Army and Air Force MARS Systems and the Naval District Washington Emergency Radio Net worldwide. There are two Navy construction battalion stations and mobile emergency communication

(continued on page 16)

NRD-515

JRC *Japan Radio Co., Ltd.*



The JRC NRD-515 offers more features and performance than any other receiver in its class. Exceptional selectivity and stability make this an excellent radio for RTTY and FAX reception. Designed for the serious DXer who demands the best!



NRD-515 Receiver .1-30 MHz.
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NCM-515 Keypad Controller
\$149.00

NVA-515 External Speaker
\$ 39.95

Call or write:
Universal Amateur Radio
Fred Osterman - SWL Dept.
1280 Aida Drive
Reynoldsburg, Ohio 43068
Phone: 614 866-4267



TALES OF THE CHINA CLIPPER

by Rick Ferranti, WA6NCX

Crash! A white bolt split the thick air; Sam's face was flashlamped for an instant as the windows of the airship lit up from the lightning. "That was close," he thought to himself as he continued transmitting his weather information to a ground station in the Pacific.

"Zulu alpha november foxtrot niner five echo," he spoke into the carbon mike, straining to hold down the mike button as it slipped from his sweaty fingers in the stifling humidity.

A second later the plane shook from wingtip to tail as the rumbling roar of thunder raked the fuselage. "Real close," shuddered Sam.

But he didn't have time to continue his coded transmission--a deadening thump and bright arc greeted his syllables, and Sam found himself stunned speechless some five feet from the BC-610 transmitter.

Regaining his balance, he moved to the operating position and noticed a strange phenomenon--the mike had been knocked out of his hand, but the receiver was dead silent and the transmitter still seemed to be keyed on.

A quick glance inside the rig revealed that the vacuum antenna relay had been welded in the transmit position, a lucky coincidence which saved his AR-88 receiver from a blown front-end coil.

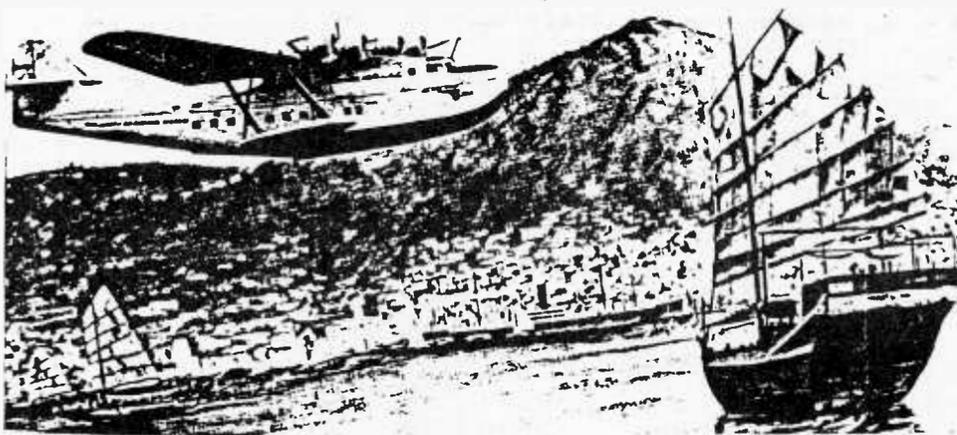
He shoved the spare ARC-5 radio set into position and hoped that the trailing wire antenna hadn't been fried by the lightning strike.

Within a few minutes the Martin M-130 flying boat--better known as the China Clipper--was in wobbly contact again with the Pacific island station, this time on CW as the ARC-5 modulator never worked well to begin with.

It was July, 1943; Sam was flying as a radioman for the third time to an island somewhere just outside the reach of the Japanese in the South Pacific. His ham radio background--licensed in the 1930's in San Francisco as a teenager--made him immediately valuable for these supply flights to the Pacific.

Now Sam had to encode some other weather information for transmission to the next island station in radio range.

"Damn code wheel," he muttered, hanging on the



plane's footholds while the craft buoyed up and down in the turbulence. "How can they expect a half-air-sick ensign to get that little pick inside this infernal machine and encode the next message?"

He struggled with the object for a while, hoping to get all 26 letter sequences right, each time pushing a little tool into a hole, clicking wheels around until the correct code appeared in the tiny window.

One mistake threw the whole thing off--you simply sent garbage to your bewildered ground station. And they changed the code every three hours--sometimes five times in a flight. It was a damnable invention.

But Sam remembered back when all this was different. He was stationed on Palmyra Island, now known more for its DXpedition fame than for its part in the island hopping campaign of the second World War, and had been assigned to be a radio operator for air to ground traffic and the coordination of landing operations.

One of the most important pieces of traffic handled over these circuits was the current weather conditions, crucial for successful landings and always subject to the whims of tropical Mother Nature.

The Navy had an awkward and clumsy encoding system for these messages--before the infernal code wheel came along--involving books of codes and a complex updating system.

Pilots and airborne radiomen were sometimes confused by the information sent to them, and its slow decoding process had disastrous results. In fact, the Army finally gave up using any encoding system at all, sending weather transmissions in plain English!

But Sam had a better idea, rapidly adopted by all the pilots in the area who flew in and out of Palmyra. He simply used the telephone prefixes of San Francisco Bay Area exchanges, coupled with a short string of numbers indicating wind speed

and direction, altimeter, sky conditions, and other pertinent information.

The all-important weather transmission sounded like an old-fashioned California telephone number being given over the air: "Davenport 4-1537" told as much about the weather as anything the Geniuses at military HQ could think up.

The prefixes would be changed every few hours as the key to the rest of the coded sequence, an elegant (but hopefully baffling to the Japanese) system indeed.

The island's chief communications officer, however, thought otherwise. He was on board a plane which was attempting to land in brutal weather, and was listening as the strange new radio code was relayed to the aircraft from Sam's station.

Amazed and incensed, the officer failed to notice how efficiently and smoothly the aircraft touched down despite the winds and rain.

"Ensign Samuelsson!" Sam reeled around from his post and snapped to attention. The communications officer, glasses still steaming from the rain and humidity, had just marched to the radio hut from the airplane.

Sam, for his part, had to pull himself out of a two year war daze as he heard his civilian (and official Navy) name once again. None of his buddies called him by his real name, Eric Samuelsson--perhaps it sounded too German, and so he was always "Sam" to everyone at war. Everyone except this representative of Naval officialdom.

"Samuelsson, what was the strange radio code I heard you give the operator in our aircraft?"

"Well, sir," Sam was expecting some kind of official reaction after so many months of using his plan, "the Navy code was too long and cumbersome, and pilots were missing important information and losing time because of the confusion."

He went on to explain the elegance of his system,

but could tell that all was lost on the officer.

"Do you think, Ensign, that your system is superior to the one developed by the United States Navy? Do you presume to challenge a code method instituted by the greatest intelligence officers of the war?"

"Sir, the Army got so fed up with their system that they are giving weather information in plain English." Sam's defense was weakening.

"That," said the officer disdainfully, "is the Army. We are the Navy, and in the Navy we do things by the book. Is this understood, Ensign?" Sam nodded. "Then do it by the book--and expect to hear more on this from a higher command."

Glasses still comically fogged, the steamy officer marched out, leaving poor Sam to contemplate whatever the "higher command" might say or do.

A few minutes later, the pilot of the same aircraft strode into the hut and slapped Sam on the back, pumping his hand repeatedly. "The Admiral was really impressed with my landing through that lousy weather," said Fred the pilot, "Just wanted to thank you for the weather info you got to us so quickly--couldn't have done it without you."

Sam was happy for the pilot--and his efficient code system--and then it hit him about the Admiral Fred had just mentioned. "Admiral? Admiral who?" asked Sam excitedly.

"Halsey, Sam, Admiral Halsey was on that flight. Just wanted to thank you..."

Sam interrupted, "Look, Fred, our friendly communications officer just came in here and chewed me out for my weather code system. Said I'd be hearing from the higher ups about the breach of rules, and all that crap. Could you do me a favor..."

This time Fred broke in, "Sure, Sam--I'll mention it to Halsey somehow...let's see, something about how efficient our island radio op was in relaying the weather...that'll make our old comm officer look pretty bad if he complains!"

They parted shaking hands, both thankful for their cleverness.

"It must have worked," thought Sam as he now bounced around in the flying boat, "because it's been months now and never a peep out of any 'higher command.'"

He was still faced with the stupid code wheel, a

(continued on page 18)

LIBRARY SHELF from pg 25

returned under a new format and by a new publisher.

Included are comprehensive listings of U.S. AM stations by frequency, by call letters and by location. Similar lists are provided for U.S. FM stations as well as Canadian AM and FM stations.

A final section lists by frequency worldwide shortwave broadcasting stations.

An excellent ready-reference handbook for the AM broadcast listener.

CIPHER MACHINES, CRYPTO PUBLICATIONS AND COMMUNICATIONS MANUALS

The recent rash of "spy numbers" reports has prompted many readers to investigate further how encryption is done. Quite possibly the most famous historical use was the commercially-designed German "Enigma" machine, the bane of our allies during World War II. This marvel of engineering, copied by the Japanese before the war, was smuggled piecemeal into England toward the end of the war as part of project "Ultra."

Several variations of the Enigma are on display in the National Museum of American History, Smithsonian Institutions, Washington DC. Additional information may be obtained there by writing to the Division of Mathematics (zip code 20560).

Selected references on cipher machines include:

Ball, W. Rouse. Mathematical Recreations & Essays. Rev. ed. New York: Macmillan, 1960.

Calvocoressi, Peter. Top Secret Ultra. Pantheon, 1981.

Gaines, Helen F. Cryptanalysis: A Study of Ciphers & Their Solutions. New York: Dover, 1939.

Garlinski, Jozef. The Enigma War. Scribner's, 1980.

Good, I.J. "Early Work on Computers at Bletchley." Annals of the History of Computing 1 no.1 (1979): 38-48.

Kahn, David. The Codebreakers. New York: Macmillan, 1967.

Kullback, Solomon. Statistical Methods in Cryptanalysis. Rev. ed. 1976.

Rohwer, Juergen. The Critical Convoy Battles of March 1943: The Battle for HX.229/SC122. Translated by D. Masters and A.J. Barker. Annapolis: Naval Institute Press, 1977.

Sacco, Luigi. Manual of Cryptography. (Reprint). Aegean Park Pr. 1977.

Shulman, David. An Annotated

Bibliography of Cryptography. Garland, 1975.

Sinkov, Abraham. Elementary Cryptanalysis: A Mathematical Approach. New Mathematical Library No. 22. 1975.

Weber, Ralph E. United States Diplomatic Codes & Ciphers, 1775-1938. Precedent, 1979.

CRYPTO PUBLICATIONS

Reader William J. Neill of San Antonio advises Monitoring Times of several modern sources of excellent cryptological information:

Cryptologia (Rose-Hulman Institute of Technology, Terre Haute, IN 47803; \$28 per year);

Signal (Armed Forces Communications and Electronics Association, 5641 Burke Centre Parkway, Burke, VA 22105; \$21.25 per year);

Naval Cryptologic Veterans Association Newsletter (restricted to present or former members of NSA, NSG, USASA, USAFESC/SS; contact Jack Pickrell, 3065 Olive Street, Denver, CO 80207);

Military Affairs (Eisenhower Hall, Kansas State University, Manhattan, KS 66506);

Military Intelligence (Superintendent of Documents, Washington, DC 20402; \$9.50 per year)

Additional manuals are available from the Naval Education and Training Center, Pensacola, Florida and US Army AG Publications Center, 2800 Eastern Boulevard, Baltimore, MD 21220.

MILITARY MANUALS

While several vendors offer military communications manuals for sale, quite a savings can be realized by writing directly to the agency's publications center who will sell them at cost.

Army manuals are available from the US Army AG Publications Depot, 1655 Woodson Road, St. Louis, MO 63114. The purchaser must include the particular TM number. The appropriate number may be found in a directory, DA PAM 310-4, available from the Baltimore address listed earlier.

The US Navy will also sell manuals, but there is much red tape. Try writing them at the Naval Publications and Forms Center, ATTN: Code 1051 "Cash Sale", 5801 Tabor Avenue, Philadelphia, PA 19120, again stating the stock number.

LOOKING FOR SATELLITE TV INFORMATION?

Many MT readers are considering investing in a TVRO (television receive-only) earth terminal and

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don't know where to turn for good information.

A number of excellent periodicals are now available at an annual subscription cost which should help fill that void.

SATELLITE CHANNEL CHART (bimonthly, \$19 from WESTSAT Communications, PO Box 434, Pleasanton, CA 94566). An up-to-date listing of the satellite transponders and their lessees. A quick glance will tell you where to look for religious, musical, sports, movie, weather and other informational or entertainment programs.

SATELLITE TV MAGAZINE (bimonthly, \$29.95, PO Box 2384, Shelby, NC 28150). Eighty-some pages of slick magazine, packed with tutorial and technical information about satellite reception.

Nice cross section of ads to familiarize the reader with available home TVRO equipment and systems.

SAT GUIDE (monthly; \$48 from ComTek Publishing Co., PO Box 1048, Hailey, ID 83333). Directed toward satellite cable companies, this trade magazine emphasizes legal and business aspects of TV program distribution along with information on transponder leases.

Home users would do

better with a sister publication, SATELLITE ORBIT which contains a programming guide for the various satellites.

SATELLITE COMMUNICATIONS (monthly; \$19.95 from Cardiff Communications, 6430 S. Yosemite St., Englewood, CO 80111).

Directed toward the entire satellite industry, this excellent trade publication is loaded with information about all aspects of satellite communications, domestic, foreign and military.

Each issue is virtually a crash course in what's up there and an annual March issue traditionally contains a fold-out chart of major satellites and characteristics.

COOP'S SATELLITE DIGEST (monthly; \$50, PO Box 100858, Ft. Lauderdale, FL 33310). Broad-based for the home TVRO enthusiast, Bob Cooper's publication contains equipment evaluations,

program forecasts and discussions, technical and non-technical articles and a host of ancillary aspects.

COMING!

READING
RUSSIAN RTTY

MARS continued from pg 13

vehicles for low power HF voice and radio teletype facilities.

The main traffic modes for the program are RTTY and voice phone patching between shore activities and more than 230 ships afloat.

The backbone of NAVMARCORMARS for overseas and regional connection is the teletype system. During the hurricane season, MARS resources can be activated for hurricane watch nets in response to a Naval district requirement.

The afloat program is a system developed by Navy-Marine Corp MARS by which fleet ships in international waters may utilize MARS assigned frequencies from ship to shore phone patches.

The repeater system has been established to respond to the requirements of providing tele-communications support during disaster control operations. There are more than 90 VHF FM stations in operation in the U.S. Some stations can link up with the telephone system (Autopatch).

Area and region nets use cw, ssb, rtty, and slow scan TV. Typical Navy-Marine MARS frequencies in use are: 2025 KHz, 4040 KHz, 7365 KHz, 13975 KHz, 14385 KHz, 20998.5 KHz, and 4016 KHz.

Call signs always begin with - "NNN."

Army MARS USACC, Fort Huachuca, Arizona 85613.

Navy-Marine Corp MARS, 4401 Massachusetts Ave. NW, Washington, D.C. 20390.

Air Force MARS, HQ-AFCC, Scott AFB, Illinois 62225.

☆☆☆☆☆☆☆☆☆☆☆☆

**U.S. ARMY MARS
MILITARY INSTALLATION
STATIONS WORLDWIDE**

AREA CALL SGN LOCATION

EASTERN *AAA3USA FT MEADE MD
CENTRAL *AAA6USA FT SAM HOUSTON TX
WESTERN *AAA9USA PRESIDIO OF SAN FRAN
WESTCOM *ABM6USA SCHOFIELD BKS HI
EUROPE *AEM1USA PIRMASENS GERMANY
PACIFIC ABM1US CAMP ZAMA JAPAN
ABM2WS ZUKERAN, OKINAWA
*ABM4USA CAMP COINER KOREA (SEOUL)

*Gateway/Relay Station

**EASTERN
CALL SIGN LOCATION**

AAR1USA FT DEVINS MA
AAM2USA FT MONMOUTH NJ
AAR2USA FT DIX NJ

AAR2USB FT DRUM NY
AAR3USA FT BELVOIR VA
AAR3USD CARLISLE BARRACK PA
AAR3USE FT MONROE VA
AAR3USF FT EUSTIS VA
AAR3USG FT STORY VA
AAR3USH FT LEE VA
AAR3WCQ TOBYHANNA PA
AAR4USB FT BENNING GA
AAR4USC FT BRAGG NC
AAR4USA FT MCPHERSON GA
AAR4USD FT JACKSON SC
AAR4USE FT MCCLELLAN AL
AAR4USG FT KNOX KY
AAR4USH FT CAMPBELL KY
AAR7USF FT RUCKER AL
AAT4USA FT GORDON GA

CENTRAL AREA

AAR5USE ROCK IS ARSENAL IL
AAR5USF FT BEN HARRISON IN
AAT6USC CORPUS CHRISTI TX
AAT6USD FT SILL OK
AAT6USE FT HOOD TX
AAT6USF FT BLISS TX
AAT6USG FT POLK LA
AAT6USH PINE BLUFF ARS. AR
AAT7USC FT LEONARD WOOD MO
AAT7USD FT RILEY KS
AAT7USF FT LEVENWORTH KS

WESTERN AREA

AAR5USB FT LEWIS WA
AAR0USC SILVERTON OR
ABM6EPV ARMY RESERVE HILO
ABM6EQO SCHOFIELD BKS, HI
ALM7USA FT RICHARDSON OK
AAR8USB FT CARSON CO
AAR8USC OGDEN UTAH
AAR8USD LAKEWOOD CO
AAR8USE GOLDEN CO
AAR8USF DENVER CO
AAR8USH DUGWAY UT
AAR8USI CHEYENNE WY
AAR9USB FT HUACHUCA AZ
AAR9USC YUMA PROV GRNDS AZ
AAR9USD FORT ORD CA
AAR9USE MESA AZ
AAR9USF PHOENIX AZ
AAR9USG SANTA ROSA CA
AAR9USH ALAMEDA CA
AAR9USI SAN JOSE CA
AAR9USJ SAN MATEO CA
AAR9USK CAMP PARKS CA
AAR9USL SPARKS NV
AAR9USM CARSON CITY NV
AAR9USO GENOA NV
AAR9USP SEBASTAPOL CA
AAR9USQ PETALUMA CA
AAR9USR SIERRA AD CA
AAR9USS SACRAMENTO AD CA
AAR9UST CHICO CA
AAR9USU SANTA BARBARA CA
AAR9USV FT IRWIN CA

EUROPE

AEM1AB ASCHAFFENBURG GER
AEM1AC WURZBURG GER
AEM1AGG ANSBACH GER
AEM1AH WIESBADEN GER
AEM1ASA AUGSBURG GER
AEM1BPM BAUMHOLDER GER
AEM1CC WORMS GER
AEM1CLA LUDWIGSBURG GER
AEM1DR STUTTGART GER
AEM1DZ MAINZ GER
AEM1EO GEISSEN GER
AEM1EWA FRANKFURT GER
AEM1FHZ FRIEDBURG GER
AEM1HKE SCHWABISCH GMUND GER
AEM1JY HANAU GER
AEM1KFD DARMSTADT GER
AEM1KP KARLSRUHE GER
AEM1KZ NECKARSULM GER
AEM1LT LANDSTUHL GER
AEM1MAN NELLINGEN GER
AEM1OV PIRMASENS GER
AEM1QF BERLIN GER

AEM1TX GARLSTEDT GER
AEM1US HEIDELBURG GER
AEM1USA LOHNSFELD GER
AEM1XL MANNHEIM GER

PACIFIC

ABM1AD SAGAMI JAPAN
ABM1AF YOKOTA AFB JAPAN
ABM1CC CAMP ZAMA JAPAN
ABM1FC ATSUGI JAPAN
ABM1YP YOKOHAMA JAPAN
ABM2QW TORI(SOBI)STA OKINAWA
ABM4AC USASG-JSA (PANMUMJON) KOREA
ABM4BC CP PAGE (CHUNCHON) KOREA
ABM4CA CP AMES TAJON KOREA
ABM4CC CP CARROL WAEGWAN KOREA
ABM4CG CP RED CLOUD (UIJONGBOU) KOREA
ABM4CH CP HUMPHRES KOREA (PYONGTEK)
ABM4EB CP MERCER (KIMPO) KOREA
ABM4DL CP LONG (WONGU) KOREA
ABM4GO CP GARY OWENS KOREA
ABM4IH CP CASEY KOREA (TONGDUCHON)
ABM4SI SIHUNGNI KOREA
ABM4ST CP WALKER
ABM4TE 38TH ART BDE KOREA
ABM4TW CP STANLEY KOREA
ABM4UF HAILEAH (PUSAN) KOREA
ABM4VF CP HOWZE (MUSAUNI) KOREA
ABM4WI SEOUL KOREA
ABM9AJ JUSMAG BANGKOK THAILAND

**PORTABLE
SATELLITE
TERMINAL**

In an on-going effort to encourage use of the NASA ATS-3 satellite by the private sector, General Electric has combined efforts with Ames Research Center to develop a remote communications system which fits inside two suitcases.

The erected terminal can be used to communicate with any ground terminal in North or South America and Atlantic or Pacific Ocean.

Messages can be typed into memory, then sent in a packet-type informational burst. Voice communications (FM) are also used. Similar systems were used during the Mount Saint Helens emergency.

The portable station can be set up within two minutes.

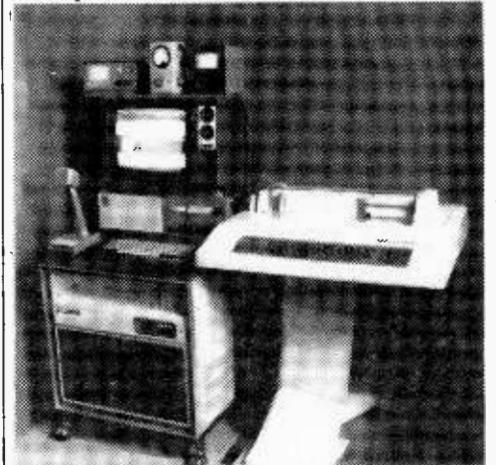
The fixed-base station consists of a keyboard, color video display monitor, hard-copy printer, PDP-11 computer, phase-shift keyed modulator/demodulator, transceiver and large-aperture antenna.

A series of systems demonstrations was recently performed in Miami for the Drug Enforcement Administra-

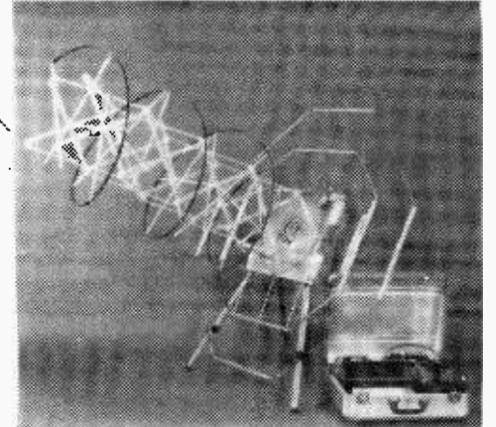
tion, now receiving considerable beefing-up from the Department of Justice as part of George Bush's war on crime.

ATS-3 is presently maintained at 105 degrees west longitude at an orbital inclination of 9.5 degrees. Monitoring Times has previously published the complete frequency up and down links, but readers will recall that the satellite is most frequently heard on 135.575 MHz.

The ATS-3 and ATS-1 (Pacific) satellites are maintained by Goddard Space Flight Center in Greenbelt, Maryland.



This fixed-base station, receives signals from suitcase-sized communications equipment capable of transmitting from anywhere in North and South America and most of the Atlantic and Pacific oceans.



This portable remote communications system fits into two suitcases and can be carried onboard an airplane. An operator can use the terminal from anywhere in North or South America and most of the Atlantic or Pacific oceans to communicate at any time with a fixed earth station.

Photo credit: NASA



**JANUARY MT
HEAR
CORDLESS PHONES**



ALDEN from page 24

formation of storm fronts and attendant wind patterns meticulously traced out on the transmissions.

Fishermen and pleasure boaters alike can find the pictorial representations informative and, in some cases, life saving.

Hams and shortwave listeners alike can use the wide area maps to help predict radio propagation.

Farmers, campers, gardeners, travel and hiking clubs, construction and commodities investors...the list seems endless.

But for the consummate radio enthusiast, copying radiofacsimile is yet one more way to open his listening horizons.



A FEW HOURS ON A SATURDAY AFTERNOON NETTED THESE FAX STATIONS

FREQ KHZ	CALL	DESCRIPTION
8080	NAM	Satellite photo
8185	FPI88	Paris meteo.
9047		Weather map
9203	GFE22	Brecknell meteo.
9876	AOK	USN Spain; Fleet meteo.
10555	AXI34	Darwin, Aust. meteo.
9890	CFH	Canada weather
10250		Madrid weather
10387		Nairobi Weather
10865	NAM	Weather map
10980	RDD78	Moscow weather
11030	AXM34	Canberra, Aus. weather
13510	CFH	Canada weather
13366		Weather map
14510		S. Africa weather map
14737	RX072	Russia weather
15785	WFM55	UPS-NY news-photo (not copyable)
17437	WFK67	NY weather
18664		Newsphoto (not copyable)
18509	WFR38	UPI-NY news-photo (not copyable)
20799	WFN20	NY-UPI " (not copyable)
22072		Weather map
23075	WFN23	AP-NY news-photo (not copyable)

MAJOR FAX TRANSMITTER SITES & FREQUENCIES



SWL HEADQUARTERS

ELECTRONIC EQUIPMENT BANK THE NAME IN SHORTWAVE LISTENING

NEW FROM KENWOOD

Kenwood R-2000 VC-10 VHF Converter

Now you can extend the R-2000 frequency range to cover the VHF bands 118 to 174 MHz with this new VC-10 VHF converter. Easily installed in your R-2000 or EEB will install it for you with R-2000 VC-10 purchase.

VC-10 **\$149.95**

Kenwood R-2000* \$499.95

List \$599.95



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- 10 Memories (Memorizes Mode)
- Memory Backup
- Memory Scan
- Programmable Band Scan
- 24 Hour Clock-Timer

Option 1—Mechanical Filter **\$95**

Option 2—RIT modification **\$35**

*Free 90 day extended EEB warranty

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Yaesu FRG-7700* \$499.95* Limited Quantity



FREE MU-7700 12 Channel Memory
FREE FRT-7700 Antenna Tuner

EEB's best buy now only \$499.95 with FREE MU-7700 and FRT-7700 tuner—a \$707 value.

*Free Extended 90 day EEB warranty.

Kenwood R-600*

AM-SSB-CW Modes, noise blanker, 30 bands 200KHz to 30 MHz wide/narrow I.F. Filtering. Excellent performance at a budget price.

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Sale \$329.00

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A new generation receiver. The best features of the famous ICF-2001 PLUS!



- Less than 1/3 the size of 2001
- Low battery drain (4) AA cells (2) AA cells for memory/clock
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- Synthesized PLL tuning—most accurate, drift free method known
- AM, SSB, CW 153KHz to 30MHz
- FM 76 to 108MHz

\$249.95

ICOM R-70*

Special Purchase \$599.00

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You have read the details on this revolutionary receiver. It's getting rave reviews.



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- Notch Filter
- Fully Synthesized
- AGC Control Fast/Slow/Off
- Noise Blanker Wide/Narrow

The Best just got Better

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*Option 2— 2.3KHz Mechanical Filter. Replaces ceramic SSB filter to give much sharper skirt selectivity, wider dynamic range. \$95 installed

*Option 3— 8 Pole Crystal Filter. Replaces 2.3KHz ceramic SSB filter—allows you to experience the full potential of this fabulous receiver. \$179 installed

(*Option 1 required for use in the AM mode)

All EEB modified R-70's are realigned for optimum performance.

*Free 90 day extended EEB warranty.

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- World Power 120/220 V 50/60 Hz
- DC operation from internal batteries

• EEB test results show this receiver to be superior to many selling up to \$250. Physical layout and electrical specifications similar to the popular Panasonic RF-2900.

World Radio TV Handbook

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ARMY TESTS SILENT POWER GENERATOR

The Electronics Technology and Devices Laboratory in Adelphi, Md., is developing a family of silent, light-weight power sources that operate on the principles of thermoelectric energy conversion.

Known as Silent Light-weight Electric Energy Plants (SLEEP), this family of power plants will be needed to operate communications equipment, command posts, visual and infrared illumination devices, maintenance equipment, and ground surveillance radar, to charge batteries, and to permit combat vehicles to remain combat-ready even when their main engines are

off. There are no moving parts in the heart of the generator, its thermoelectric converter. As a result it requires no lubrication or regularly scheduled maintenance. Furthermore, it is nuclear hardened and inaudible at 100 meters and beyond.

It can run on petroleum or synthetic fuels, diesel fuels, gasoline, kerosene, alcohol or any mix of these substances.



TALES from page 14

device later introduced independently of the Palmyra incident, and he wasn't going to push his luck by reinstating the telephone number system.

His mind once again sped back to the time when he was net control for a Pacific island radio system. The U.S. military was never known for contracting good CW receivers--the BC-348 had a crystal filter but it attenuated the signal badly.

The TCS and ARC-5 receivers were even worse, with broad if's and no crystal filtering at all. Occasionally an SX-28 would find its way into service, but Sam saw only one of those and never got to use it. He had to contend with receivers vulnerable to near-frequency interference.

Often his CW net would meet at the same time that a Japanese commercial marine station--still in operation during the war--would send CQ for its merchant fleet. The station was tremendously strong and only 20 kHz down from Sam's net, so Sam would spin his vfo down there and send "J--, QRX QRX QRX de JXR."

The Japanese station would patiently stand by for a few minutes until it got tired of waiting, while Sam zoomed up the band and held a QRM-free net with his Pacific islands!

The ruse worked so well that he often repeated it, making up a new phony "J" call each time. Sam shuddered as he thought of the consequences of his trick had he been caught--"Communicating with the enemy" would have been the charge, and a dim brig his fate!

Another time Sam was supervising two junior radio ops and stopped in late one night to see how the radio watch was going in the early morning hours. He stopped short of the door to hear high speed CW blasting away in a heated QSO.

Sam could copy about 35 wpm, but this stuff was closer to 45, a speed he knew only about one percent of Navy men could copy. These kids, new recruits in their late teens, were whipping along with a distant island buddy and talking about sports, girls, and things back home.

Sam was about to break up this nonsense when he considered that no one else in the whole Pacific could copy it, and anyway, the only other recreation on the base was gambling and booze. Sam walked quietly away from the door.

"Speaking of which,"

thought Sam, "I'd better lay in a stash of booze myself." He was not intending to drink the stuff, but to use it as trading material with the big warships when they came to the island.

Getting a new final amplifier for the island's transmitters (usually a nightmare of bureaucracy and months of waiting) was a much easier matter once a little alcohol was traded to dissolve the Naval red tape. A bottle of rot-gut whiskey never failed to net a new 'spare' 813 from the ship's radio room!

A more serious matter occurred when a storm knocked out all the teleprinter and landline communications between Sam's radio hut and the airfield located some miles away on a bluff overlooking the water. Sam received a message on his usual air to ground frequency that the Japanese were on their way, probably to bomb the field.

There was no way to reach the pilots at the site except to move to an air-to-air frequency he knew the airmen were monitoring. Sam's station was hardly air-borne, being nailed down to an island, yet he had no choice but to break the rules and call the field on the air to air channel.

The action saved the planes from attack and Sam, thankfully, never got reprimanded for stretching his transmitter off his assigned frequencies. At least he didn't call the Japanese this time!

"Sam! Roll in the trailing antenna--we're getting ready to land." The shout from the cockpit woke Sam out of his musings and brought him back to the realities of his very-much-airborne Martin M-130. He knew that the antenna had to be reeled in on an electric winch so that the plane could be landed safely.

Reaching for the winch control, he pushed the button, expecting a whirr and gnash of gears from below. Nothing happened. He tried again--still no results. "Damn lightning strike," muttered Sam, "must have frozen up the gearbox or something."

He climbed forward from the belly of the aircraft to tell the cockpit crew. "Antenna's stuck--won't reel in. If we try to land with it out there, that big weight on its end might bounce off the runway and fly into the fuselage or one of the engines. What'll we do?"

"Ah know," retorted the co-pilot, a big Texan from Dallas, "open the hatch door

and ah'll blast the varmit offa there." He began to unholster his service-issue.

Everyone who's ever fired one of those .45 auto-matics knows that unless the target is three feet away or closer, you're better off throwing the darn thing at it. Sam could just imagine this guy blasting away at a coffee-can sized weight swaying around at the end of a 150-foot wire while the plane lunges up and down at 90 mph! Not only would the attempt to shoot off the weight be wholly useless, but a stray bullet might hit a civilian down on the island.

"I'll call the tower and see what they think," replied Sam nervously. The tower recommended that the big aircraft come in low for a pass and let the weight strike the ground, most likely breaking it off from the wire and bounding harmlessly away.

After reassuring co-pilot Tex that he could have easily shot the thing off, but that they had orders to try it the Navy way, the plane swooped low and the weight came off in some bushes by the side of the runway. Then the pilot brought the China Clipper around for a successful landing.

By the way, Sam was soon relieved of that dumb code wheel he struggled with during the flight. Five months after its introduction, a memo circulated instructing all personnel to stop using it.

No official reason was given, but Sam found out that the northern European inventor of the infernal device had sold plans for his machine to just two countries: the U.S.A.--and Germany! By this time, though, Sam had already thought up a new and simpler weather code system based on ham call letters...

CIPHERS & SECRETS

Basic Codebreaking
by Bob Russ

Ciphers are almost as old as any of man's methods of writing down his thoughts. Once written, these thoughts might fall into the wrong hands. So secret writing began.

But it can't be too secret. The purpose of language is to carry ideas to other people, other places. Someone has to be able to read the secret message.

So, a basic part of the system must be a method of unlocking the secret; this method we call the "key."

Probably the oldest

method of enciphering is that which professionals know as a "slide" or "simple substitution."

Jeremiah used a slide cipher several times in his poetry, probably because it was politically fatal to call a spade a spade!

A little later, Roman generals used the same idea, this time with the Latin language.

For slide encipherment all you need is a slip of paper and a pen. Write your alphabet (Hebrew, Roman, Greek, or English) down in normal sequence, then write a second alphabet directly above--starting with the letter you want to stand for "A". When you reach "Z" in that second sequence, continue with "A".

There is a simpler way discovered by the rabbis of the Talmud: write down half of your alphabet, then write the other half above it.

But all this is so simple that a sharp ten-year-old can easily solve these ciphers. The next step was to move the alphabets, in relation to each other, during the enciphering.

As the competition among trading cities grew, a small band of cipher professionals developed and they invented machines that helped them to keep track of which letter came next.

The simplest device is a slide rule with several sets of number and letter sequences on its slides.

An adaptation of this slide was the cipher wheel. Some of you more ancient readers may have known "The Little Orphan Annie Secret Encoder," which you got for sending in two seals from Ovaltine boxes.

This is a large disc with a second, smaller disc mounted in its center. Both discs have an alphabet inscribed near their edges. The inner disc can be turned.

This two-disc device is about 500 years old and has served kings, merchants, and generals well. In the version used by the U.S. Army, the inner alphabet was reversed.

Those of you who like to wrestle with ciphers can make one from two discs of stiff paper and a bent tack. To let it do double duty, you might add a row of numbers to one or both of the discs.

A little playing with a slide or wheel can show you how complex a multiple-slide can be. Or, you might tackle an unknown cipher to see if it might be cracked.

Rotsa ruck!

A DEADLY CLOAK OF SECRECY

Exclusive to MONITORING TIMES by Havana Moon

The interception, decryption and translation of Japanese military and diplomatic service radio traffic before and after Pearl Harbor constitutes one of the most spectacular intelligence triumphs of all time. These were--without question--the finest hours of the American Intelligence Officer.

The intelligence extracted from this traffic, designated MAGIC, was cloaked in the utmost secrecy. It was guarded by methods that--on occasion--bordered on the bizarre. It would be safe to say that this Communications Intelligence (COMINT) secrecy rivaled that of the Manhattan Project. Only a select group of highest-level United States officials was allowed to examine the contents of these intercepts.

Some of the traffic that was included in MAGIC was between the Foreign Office in Tokyo and the Japanese Ambassador in Washington.

Now, thanks in part to recently liberalized (?) American security policies and Executive Order #11652, it's possible to present to the readers of MONITORING TIMES a select few of the most closely-guarded secrets of World War II.

We wish to thank the U.S. Department of Defense for making this previously-classified information available to our readers.

FROM: Washington TO: Tokyo
April 1, 1941 #193
For the past several days, we have encountered considerable difficulty in hearing the general intelligence broadcasts, due to static. The interference finally increased to such a point as to make reception an impossibility today. Please, therefore, give consideration to changing the existing wave length.
Translated 4/4/41

FROM: Tokyo TO: Singapore
April 21, 1941 #106
Time (Japan time) and frequencies for broadcasts in English or French as follows:
(Time and stations)
A.M. 7:40 JUP
8:30 JUP
10:30 JUP
11:00 JUP
P.M. 2:40 JUP
4:30 JUP

8:00 JUP
8:30 JAUZ
9:00 JUO
A.M. 0:00 JUP
1:30 JUO
Frequencies: JAP-11,980 kc
73,275 kc ... JUO-9,430 kc
Translated 4/29/41

FROM: Washington TO: Tokyo
April 21, 1941 #245
The reception condition of Domei's* general broadcast over JUO and JUP is as follows: Sensitivity extremely weak and reception impossible due to interference. General information listened to at this office, JUP, 13065 ""A"" at 4:30 a.m. and 8:30 a.m. (local time) suffers from greater frequency instability than heretofore and reception is possible on the average of only three days out of a week. However, due to feeble sensitivity reception is very difficult. On the other hand we find both the sensitivity and frequency stability excellent for Domei's general broadcast, JAU, 27327.5 "A" at 4 a.m. to 7 a.m.

Therefore, please change to this frequency. Receiving sets used are ACR, Philco, 1937, type 116, and 1940 Hammarlund super pro. Translated 4/22/41
*Japanese News Agency

FROM: Tokyo TO: San Francisco
January 11, 1941 #004
Please purchase for the use of Section 5 of the investigation bureau of this office 1 short wave receiving set - Hallicrafter Make, Dual Diversity DD, and one set of spare tubes; and send by the hand of the purser of the earliest ship sailing. The price, with discounts, will be about \$600. Will send by dispatch as soon as you advise us.
Translated 1/14/41

FROM: San Francisco TO: Tokyo
February 7, 1941 #020
The Hallicrafter DD---has been discontinued and is no longer manufactured. Therefore I have secured an SX 280 in place of it, and will send in care of the purser of the Kamakura Maru leaving here the 13th. The National is now on order and I expect to get it in time for the Yawata Maru leaving ---- February.
Translated 2/14/41

FROM: Tokyo TO: Shanghai
March 3, 1941 #140
As this department has installed various powerful receiving systems, it is no

NRD-515

JRC Japan Radio Co., Ltd.



The JRC NRD-515 offers more features and performance than any other receiver in its class. Exceptional selectivity and stability make this an excellent radio for RTTY and FAX reception. Designed for the serious DXer who demands the best!



NRD-515 Receiver .1-30 MHz.
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\$224.00

NCM-515 Keypad Controller
\$149.00

NVA-515 External Speaker
\$ 39.95

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1280 Aida Drive
Reynoldsburg, Ohio 43068
Phone: 614 866-4267



longer necessary for your office to carry on intercept activities. Please return your receiving sets together with all accessories.
Translated 3/5/41

Some traffic was of a more sinister nature as evidenced by the following:
FROM: Berlin TO: Tokyo
May 3, 1941 (SECRET)
(Name deleted) called on me this day (evening?) and stating that this request was to be kept strictly secret, he said that Germany maintains a fairly reliable intelligence organization abroad (or --"in the U.S.?"?) and according to information obtained from the above-mentioned organization is quite (or--"fairly"?) reliably established that the U.S. Government is reading Ambassador Nomura's code messages, and then asked that drastic steps should be taken regarding this matter. There are at least two circumstances substantiating the above (suspicion). One circumstance is that Germany is reading our code messages-----.

Regarding this, during my previous residency here, they were known to have a large scale cryptanalytic organization. (Last two-thirds this intercept not available. THIS IS POSSIBLY DUE TO SECURITY REASONS.)
Translated 7/5/41

FROM: Tokyo TO: Berlin
May 5, 1941 #370
Please express our appreciation to (name deleted) for the information in question and ask him if it is not possible to give us the authority for the statement that it has been fairly reliably established that the U.S. Government is reading our code messages, so that we might take appropriate action.
Reply requested.
Translated 6/5/41

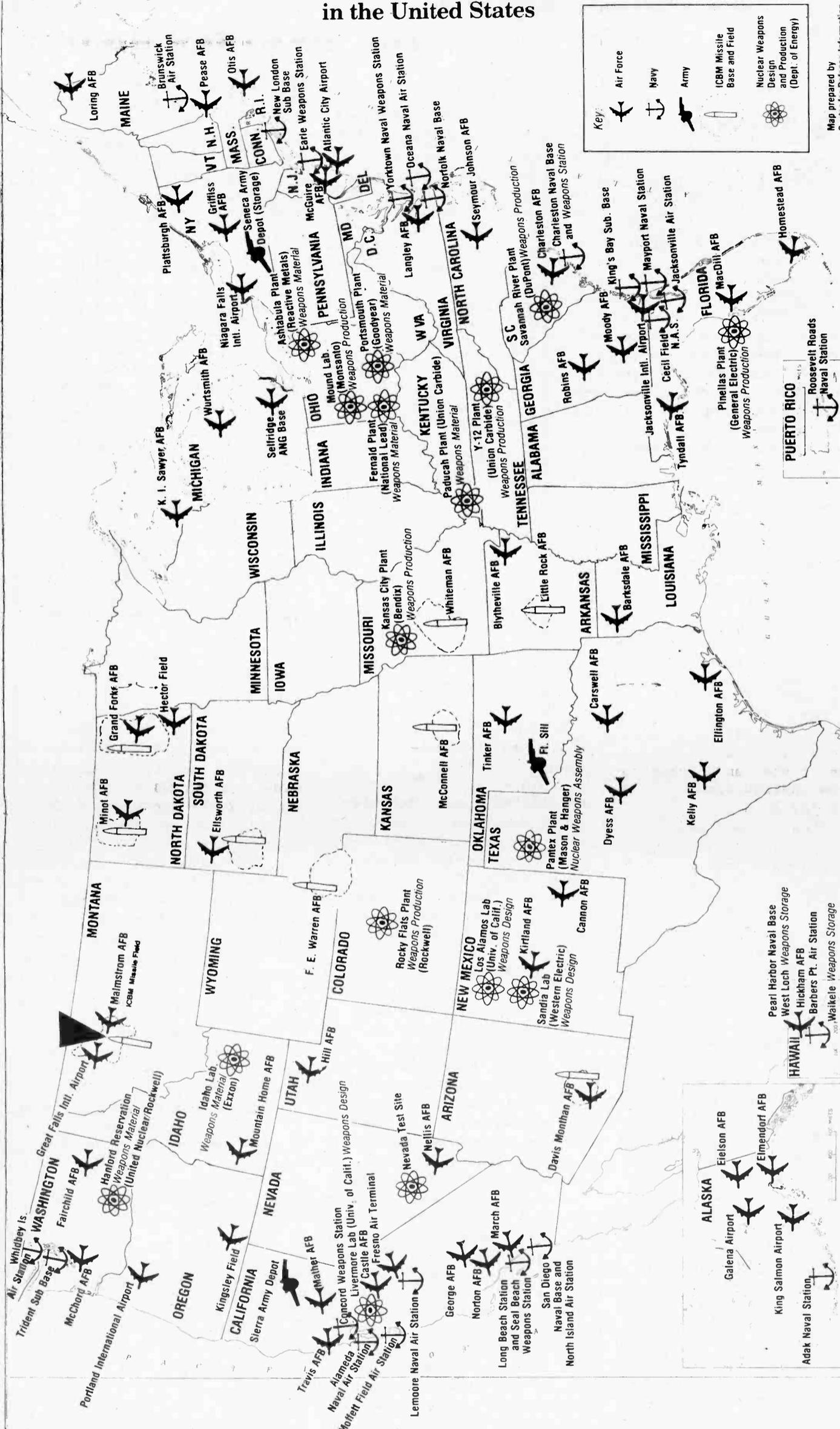
And finally:
FROM: Washington TO: Tokyo
May 5, 1941

21873	21873	改メ
89894	89894	改メ
89772	89772	改メ
89463	89463	改メ
89894	89894	改メ
23079	23079	改メ
86553	86553	改メ
82844	82844	改メ
36657	36657	改メ
79748	79748	改メ
35043	35043	改メ
73839	73839	改メ
66726	66726	改メ
78985	78985	改メ
23322	23322	改メ
45279	45279	改メ
13752	13752	改メ
21471	21471	改メ
86732	86732	改メ
35016	35016	改メ
13404	13404	改メ
99747	99747	改メ
38949	38949	改メ

Portion of a page from a Japanese code book. Note 5 digit groups on left that correspond to Japanese phrases or characters.
(National Archives Photo)

(continued on page 5)

Nuclear Weapons Locations in the United States



Map prepared by Center for Defense Information

J.I.L. ALIVE & WELL

AND LIVING IN CERRITOS

In the September/October edition of Monitoring Times we made the statement that "Apparently J.I.L. is out of business." (To paraphrase the immortal Mark Twain, "Reports of my death are greatly exaggerated!")

A call from the main office of J.I.L. where inquiries were being received about the notation in Monitoring Times were quick to point out that they had moved from their previous offices in Compton, California to a new address (17120 Edwards Road, Cerritos, CA 90701).

The original conclusion drawn by Monitoring Times that the company was no longer in business was based upon over 1-1/2 years of unanswered correspondence, unreturned telephone messages and finally a recorded disconnect message at their old telephone number.

We are advised that J.I.L. will introduce a new wide-frequency-coverage scanner, the SX-400.

NEW NAVIGATIONAL WARNING BROADCASTS

The International Maritime Organization (IMO) has proposed a worldwide automated broadcast to mariners on 518 kHz. The transmission will include both an urgent Navigational Warning to Mariners and Notice to Mariners (NOTAM) message.

The US Coast Guard has tentatively endorsed the global system and tests are slated to begin imminently.

Would You Like Your Aurora Stimulated?

One of our MT readers from Alaska has informed us that the Office of Naval Research is conducting pulse transmitter experiments at the Chena Valley Radio Facility near Fairbanks.

The two-megawatt bursts on 4.905 MHz are intended to activate the aurora borealis ("northern lights") to enhance communications.

Monitoring Times will present more on this interesting government installation and its experiments in a forthcoming issue.

For many years furious debate has loomed on the floors of the United States Senate and Congress over military superiority. For most of us the rhetoric is meaningless.

Communications Command and Control is the backbone for coordination of these weapons systems and their deployment. Monitoring Times presents herewith a detailed listing of nuclear installations for military purposes nationwide.

All portions of the radio spectrum from VLF through microwave are used to maintain a readiness status among these facilities. Frequencies in use are reported in the pages of Monitoring Times and in reference publications like the Shortwave Frequency Directory by Bob Grove.

We would like to thank the Center for Defense Information for their preparation of this map.

SPECIAL REVIEW!

RTTY/FAX

MONITORING

THE WEATHER BIRDS

THE ALDEN 9321

WEATHER CHART

RECORDER



For many, many years copying radiofacsimile weather charts off the air has been a frustrating, disillusioning effort for most hobbyists.

Available machines were often archaic Western Union Telefax drum machines, complete with burnt-paraffin-paper images, or enormous surplus outfits with expensive photographic paper.

While plain white paper facsimile units are also available, they still suffer the indignities of size, weight, age, expense, or all four!

Now, Alden Electronics (Washington Street, Dept. MT, Westborough, MA 01581) has released a revolutionary machine--quiet, small, goof-proof, and affordable to the serious listener.

To keep the cost down, Alden has provided the unit as a semi-kit intended for the consumer at half-price

savings under the usual \$2000 cost for the assembled machine!

But what about the kit? Is it difficult to put together? Hardly. The circuit boards are already factory-assembled and tested. Only the mechanical assembly of the instrument is left to the end user.

Some hand wiring is required; the switches on the control panel for instance. But once again, instructions are thorough. In any case, count on spending the better part of a weekend on the assembly project.

The assembly manual is superbly written--well documented with illustrations, parts lists and easy-to-follow instructions.

LET'S TRY IT OUT

Once assembled, the unit is ready to go. Installation is simple:

(continued on page 24)

by Tom van Kuiken

Receiving a live weather satellite picture can be of great interest not only to those who are weather watchers, but anyone that monitors the airwaves. Most people probably feel that the task is too difficult and costly. Neither is really true.

Currently, the United States maintains two polar orbiting Weather Satellites. The orbits are planned so pictures can be obtained from passes in the morning, afternoon, and evening.

In addition, the Soviets have their Meteor series of satellites that pass over North America. Equipment built to receive our NOAA satellites can generally be used with the Soviet birds.

VHF BIRDS

The NOAA satellites transmit a VHF frequency-modulated signal (FM) on 137.50 and 137.62 Mhz. The Russians use 137.300 and 137.85 Mhz although other frequencies have also been monitored in the 137-138 Mhz range.

The rf signal from the satellites is circularly polarized. The antenna used to receive this signal can really be quite simple. I have found that a simple crossed dipole (see photo) with a good mast-mounted preamplifier will work fine on an overhead pass.

From my location in Michigan the satellite is first heard over the Gulf of Mexico and continues all the way up to Hudson Bay.

With a little work a dipole can be constructed from the Radio Shack FM antenna (part no. 15-1639). (See picture.) A Grove Scanner Beam should also work or you could buy a 2 meter Oscar antenna used with the amateur satellites. The latter two choices will require rotors for tracking the satellites but a stronger signal will result.

Radios can be purchased to receive the satellite band for around \$200.00 or you can use a scanner with a converter. One problem does exist with the scanner--the bandwidth of the radio is not as wide as the satellite transmission combined with doppler shift. This will cause some signal loss at times.

I use a Bearcat 160 with a converter and some signal dropout does occur,

but the pictures still print out with only a few lines lost.

So far we have talked about acquiring the signal, but what about a picture? You may think that any equipment for that purpose must cost a small fortune. The answer really depends on how fancy you want to get.

Radio facsimile recorders can be found on occasion for sale in the back of radio amateur magazines. Some radio outlets also specialize in good used FAX equipment that can sell for around 200-300 dollars. This is quite a reduction in price since many of these machines would cost in the thousands of dollars if bought new.

The NOAA satellites transmit a 240 line per minute multiplexed signal. This means half of the data is the visual channel and the other half IR (infrared) data. Many of the used Fax machines work at 120 scans per minute although the 240 line rate can be found.

On a 120 line machine you would most likely end up with two pictures side by side, the visual data making up half the picture and the IR portion on the other half.

Pictures can also be displayed with the aid of a computer. I use a 32K Radio Shack Color Computer. The computer can be used to do all kinds of things that would have filled a room with radio gear a few years ago.

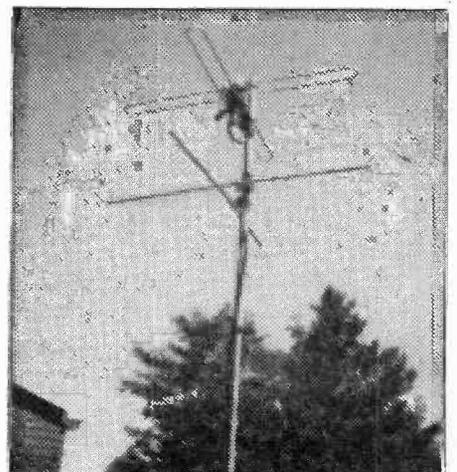
To process the satellite picture with the Color Computer you will need an interface. I use one built by Stinson Southwest. This is really an amazing toy if you're interested in the weather.

The little box allows your computer to draw H.F. radiofacsimile weather maps,

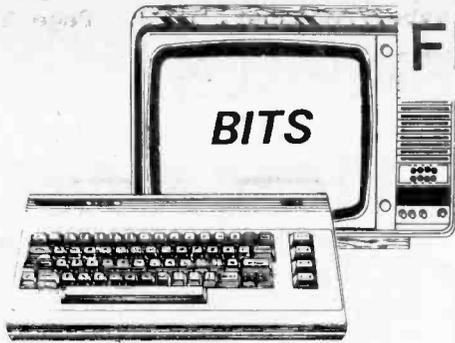
Continued on page 30



This weather map was received on 8080 kHz at Grove Enterprises while testing the new Alden recorder.



Turnstile antenna used for satellite reception



by Mike Edelson

FLOWCHARTING

```

900 IF ANS="NO" THEN 1060
1000 IF ANS="N" THEN 1060
1010 IF ANS<>"YES" THEN 1020
1020 IF ANS<>"Y" THEN 1030
1030 IF ANS<>"NO" THEN 1040
1040 IF ANS<>"N" THEN 300
1050 REM NEXT LINE CONVERTS
      FROM KHZ TO MHZ
1060 VAL=VAL/1000
1070 VAL2=300/VAL
1080 PRINT VAL@
1090 END
    
```

We will now compare the flowchart to the program. The numbers alongside the the flowchart symbols are present only to help equate the program and flowchart.

After we start the program we request a VALUE. This value can be a frequency in MHZ or KHZ or a wavelength in meters. Next the value is entered into the system.

The system then asks what type of input this is in a format requiring a yes or no response. This response is taken as input and checked for response, action and correctness using a series of GOTOs.

If the flow happens to cause the system to reach statement 1040 then it is assumed that the data was not of a correct type and the system returns and requests the data again, a yes or no response (Y or N is also a valid input).

Lines 700 and 800 direct the flow of the program to calculate the wavelength of a frequency in MHZ or a frequency in KHZ for a given wavelength. If the frequency is in KHZ the answer should be NO; this sends the flow to line 1060 for conversion to MHZ.

The last four lines (1010-1040) verify the data entered for the YES/NO response. Finally, the output value is printed (or displayed) and the program is terminated.

It should be noted that if a wavelength in meters is entered, the frequency given will be in MHZ.

The annotation block (comment) that appears on line 1050 in the program is outside of the flowchart and is preceded by dashed lines because when the program is executed and compiled by the computer and COMMENT (in BASIC this is a REM statement) is disregarded by the system (it sees the word REM and knows that no action is required).

From this we see how the flowchart and program match up. If the flowchart is incorrect, the program will also be incorrect. A good flowchart can save debugging time, run time, and the number of runs. This

would save the user from many agonizing weeks without that needed program.

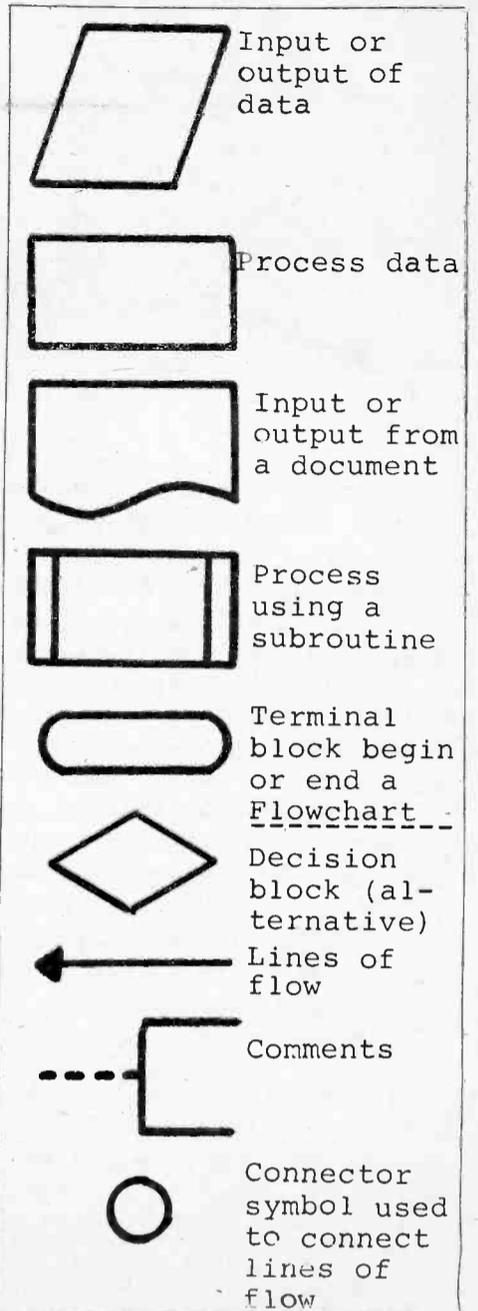
Flowcharts are a legitimate form of program documentation. As written, this article demonstrates another form of documentation. Next month we'll look at documentation after program development and how it can help to update a program, and make it easier for others to use your program and understand it.

On a final note, there are templates sold at most graphic arts stores or in college bookstores for flowcharting. The best and most complete template is sold by IBM as product GX20-8020-1 U/M 010. Just ask for the Flowcharting Template.

If the local college bookstore doesn't have it, try your local IBM office. They usually cost under \$3.00 and they can be a real timesaver. If anyone cannot get it, let me know and I will see what I can do.

I hope this article and those to come will be helpful. I look forward to hearing from my readers. I would like to know what systems, peripherals and languages you are using. As always, you may write me at P.O. Box 203, Roselle Park, NJ 07204. If you wish a response, please include an SASE.

(continued on page 5)



```

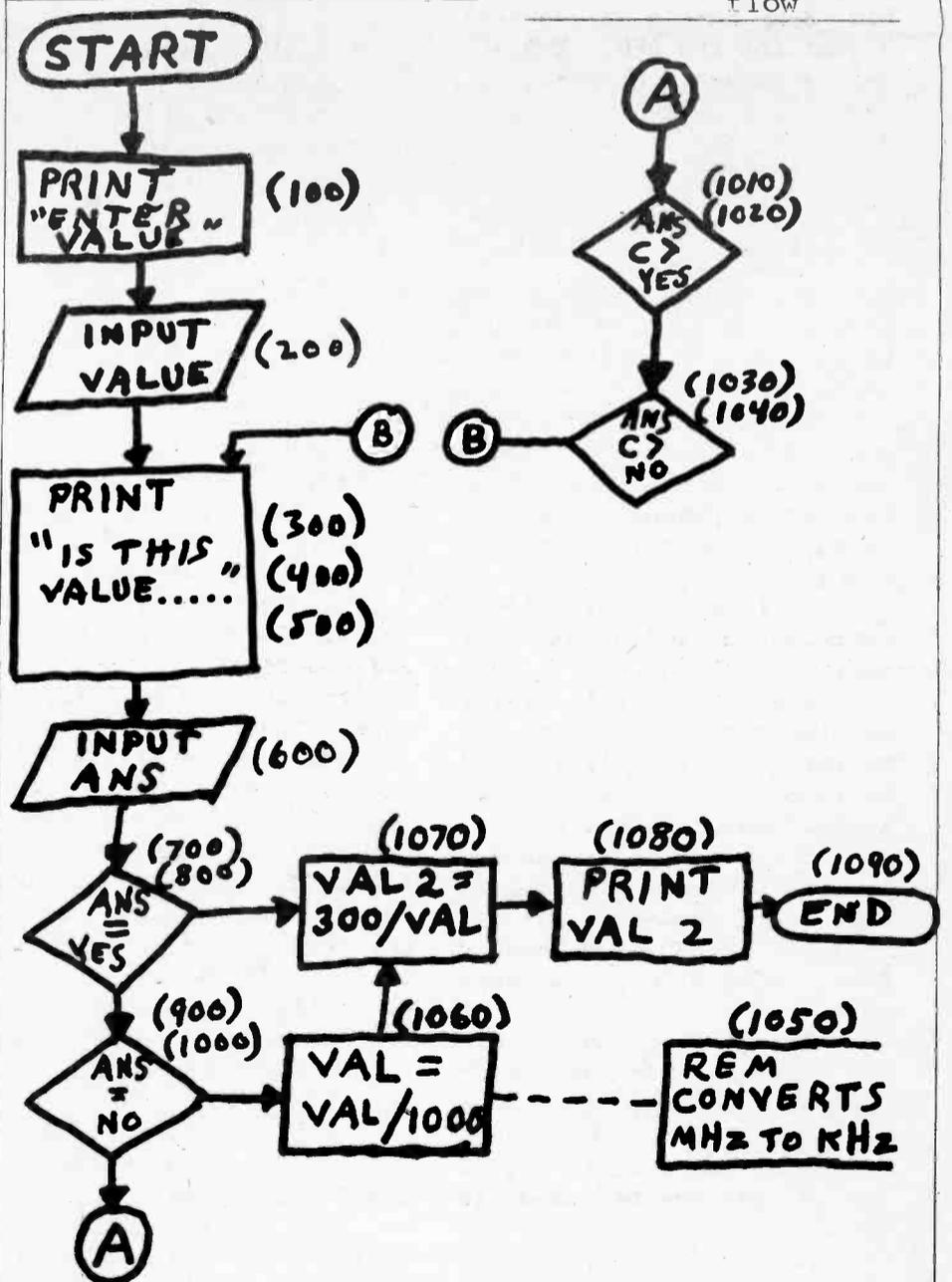
10 REM FREQUENCY/WAVE-
    LENGTH CONVERSION PRO-
    GRAM
20 REM BY MICHAEL EDEL-
    SON---JUNE 13, 1983
30 REM FOR MONITORING
    TIMES ARTICLE.FLOW-
    CHARTING
40 ***REMOVE BEFORE USE***
100 PRINT"ENTER VALUE"
200 INPUT VALUE
300 PRINT"IS THIS VALUE A
    FREQUENCY IN MHZ"
400 PRINT"OR A WAVELENGTH
    IN METERS?"
500 PRINT "IF FREQUENCY IN
    KHZ, ANSWER NO OTHER-
    WISE ANSWER YES"
600 INPUT ANS
700 IF ANS="YES" THEN 1070
800 IF ANS="Y" THEN 1070
    
```

**GOVERNMENT
AUTHORIZED-
TO USE SHIP**

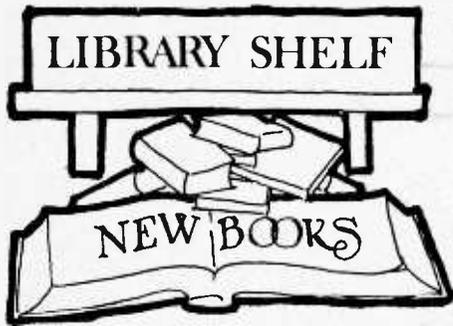
CHANNELS ON LAND

FCC regulations require that ship channels be used only by vessels while actually in the water. This has created problems when search and rescue teams, close to the scene of action on land, would be prohibited from communicating with the affected occupants of a vessel in distress.

An amendment has been proposed by the commission to authorize land use by government agencies under life-saving conditions.



Typical hand-drawn flowchart to assist program writing (frequency/wavelength conversion)



Top Secret Registry of US Government Radio Frequencies (5th edition) ed. by Tom Kneitel. (8 1/2" x 11"; 168 pp., paperbound. \$14.95 from CRB Research, P.O. Box 56, Commack, NY 11725). This expanded edition of Kneitel's collection of tens of thousands of frequencies from 25-470-Mhz is now published in a larger print allowing much easier reading than previous editions.

Chapters include military installations, civilian air force, surveillance and scrambling, federal allocations, satellites and even a small selection of HF networks of interest to listeners.

Data are arranged by cross-reference as to location and frequency. A special list of callsigns is included.

The Phone-Book by Larry Kahaner and Alan Green. (6 x 9", 191 pp., paperback. \$7.95 from Penguin Books, 40 W. 23rd Street, NY, NY 10010).

Telecommunications is one of the largest and most rapidly-growing technologies in the world. The archaic image of a small-town operator plugging cords into a switch-board has been replaced by vast impersonal networks of high-technology circuits.

In their new book, Kahaner and Green introduce us to the new telephone system, its flexibilities, accessories, and virtually limitless applications for home and industry.

Chapters include discount services, teletext, cordless and mobile telephones in the air and on the ground, pocket pagers, cellular systems and computer applications.

A special "yellow pages" section lists telephone companies, accessories manufacturers, consumer groups, computer data bases, facsimile services, FCC contacts and offices, phone phreaks, public utility commissions, refurbishers, surveillance and wire-tapping sources and many other related listings.

An excellent primer for the serious connoisseur of telephone technology.

The Radio Amateur's Conversation Guide by Jukka Heikinheimo and Miika Hei-

kinheimo. (5 x 8", 91 pp., spiral bound. \$10 from Transelectro-America, 2301 Canehill Ave., Long Beach, CA 90815).

"Meine Antenne ist ein Dipol." "J'ai eu ma licence en 1960."

Whether you are transmitting or receiving in German, French, Italian, Spanish, Portuguese, Russian or Japanese this conversation guide provides an excellent key for interpretation among foreign languages to English.

The book is divided into sections for quick reference; lists of phonetics and numbers, phrases, typical reports (antenna, weather, operating conditions, etc.), and a handy dictionary for looking up single words related to radio in all nine languages.

Tail Gunner on a Superheterodyne by Larry Brookwell. (5 1/2" x 8 1/2", 237 pp., paperbound. \$8.95 plus \$2.07 first class or \$1.15 third class postage from International DXers Club of San Diego, 1826 Cypress St., San Diego, CA 92154-1154).

While not really a book about radio, Tail-Gunner is an autobiography of the eighty year colorful lifetime of author Larry Brookwell, president and editor of the International DXers Club of San Diego.

It is often the story of how an irascible gringo gets caught up in Mexican revolutions, political hotbeds, and romantic embroglios as author Brookwell hops from country to country, always with enraged officials hot on his tail!

Always fun reading, one is left with a sense of wonder and awe that so much life can be packed into such a short lifetime. 'Is he for real? Irascible Larry Brookwell will never tell, but somehow we are left with the notion that it all actually happened.

Basicode/Hobbyscoop (cassette and instruction manual) assembled by Radio Netherlands. (Dutch/English edition must be paid in Dutch guilders--f 35 North America, f 30 Europe, f 25 Netherlands, f 38 elsewhere; from Basicode, Administratie Algemeen Secretariaat, NOS, P.O. Box 10, 1200 J.B. Hilversum, The Netherlands).

This low-cost (Esperanto) computer interfacing program was developed on a non-profit basis to enable 17 different brands of computers to intercommunicate.

The cassette contains translation programs for various computers; you first teach your computer the NOS-Basicode standard by loading this program. You can then

read and write 16 other brands of computers.

Full instructions are included in the accompanying bilingual manual.

If your particular computer is not listed, enough detailed information is given that it is possible for you to write your own program; help is available from Radio Netherlands as described in the literature accompanying the program.

At press time, the following computers will work with the Basicode system: Apple, BBC, Commodore, CP/M, DAI, Exidy Sourcerer, OSI Challenger, Philips 2000, SWTPC 6800, and TRS-80 models I and III. Others are anticipated.

Alaska Marine Radio Directory (6"x9", 260 pp., paperbound. Alascom Inc. Marketing Dept., Marine Service, H-280, Pouch 6607, Anchorage, AL 99502).

This handy reference book lists virtually every marine radio user, address, and callsign in coastal and inland Alaska.

Arranged like a telephone directory, an alphabetical section is cross-referenced by vessel-name, callsign and name of owner. A yellow pages section lists an array of services of interest to marine communicators and industries.

A handy forward provides information on FCC marine radio rules, operating procedures and an exhaustive listing of channel/frequency assignments used by marine services and the US Coast Guard.

An additional toll-free numbers section is included as a handy reference for a wide variety of services.

Shortwave Frequency Directory - European Edition by Bob Grove (11 1/2" x 8 1/2", 60 pp., spiralbound. Michel Schaay, Radio Publications, Sparrenlaan 42 3941 GM Doorn, Holland).

Extracted from the Grove best-selling Shortwave Frequency Directory, this special European edition contains a distillation of agencies most likely to be encountered by European listeners.

Included are military, diplomatic, energy, federal government, spy number and beacon stations, smuggling networks, INTERPOL, and many other services as well.

Publisher Michiel Schaay is a well-respected collector and source of excellent radio publications throughout the European community; many additional books by Schaay and Klingenfuss are available to European listeners through his publishing address:

Payment must be in Dutch exchange (Hfl.34,- surface mail inside Europe).

Scanner Radio Listings--Cincinnati/Dayton Edition by Norman H. Schrein. (8 1/2" x 11", 153 pp., paperbound. \$9.95 from Fox Marketing Inc, 4518 Taylorsville Rd., Dayton, OH 45424).

This latest edition in the rapidly-growing collection of regional scanner directories by Monitoring Times columnist ("Tune in Canada") Norman Schrein reflects the increasing professionalism of the author's writing.

Thousands of listings in the Cincinnati/Dayton, Ohio area are cross-referenced by user, callsign and frequency.

A convenient table of contents lists page number references for business, public safety, railroads, local and federal government, surveillance codes, frequency spectrum chart, and dozens of other categories as well.

Schrein additionally offers more than a half dozen scanner directories for other US regions. Write Schrein directly at Fox Marketing for more information on his information-packed publications.

A DXer's Technical Guide (2nd edition) by Nick Hall-Patch (5 1/2" x 8 1/2", 118 pp., paperbound. \$6.50 North America, \$8.50 foreign from IRCA, P.O. Box 17088, Seattle, WA 98107).

Hall's newest publication is directed to the stalwart broadcast-band DXer, the serious listener to the medium wavelengths (540-1600 kHz).

The book is a veritable cornucopia of technical and practical information covering every aspect of listening to the AM broadcast band. Receiver reviews and recommendations, audio filters, frequency readout discussions, loop antennas and their construction, outdoor antenna considerations, receiver modifications including schematics and many other considerations are covered.

An exhaustive appendix of suppliers and reference books is provided as a closing chapter.

White's Radio Log published by Don Gabree. (5" x 7 1/2", 136 pp., paperbound. \$4.95 plus \$1 postage from Worldwide Publications, Inc., P.O. Box 5206, N. Branch, NJ 08876).

Yes, it's finally back! The venerable White's Radio Log of past decades has

(continued on page 15)

GETTING STARTED

Lindell Tunes In On The World



T.C. Lindell can zero in on almost any country in the world through his shortwave radio equipment.

(The following article by reader T.C. Lindell originally appeared in the Flathead (Montana) Courier (photo by Fugleberg).

Have you ever sat by the fire on a cold winter's night and wished you could go to the South Sea Islands where the warm winds blow, or take a cruise through the Caribbean with stops at Granada, Bonaire, and maybe on down to Rio?

Perhaps you would rather visit Sweden or far-off places like Australia or Singapore. Well, you can and still enjoy your warm fire. How? It's all right at your finger tips. It is called short-wave radio.

All of us are familiar with AM radio. It is in our homes and we take it with us wherever we go.

What many of us are not familiar with is short-wave radio. While AM radio is widely used in America and other developed nations, a major portion of the world relies almost exclusively on short-wave radio for broadcasting.

Short-wave radio covers the frequencies of 2,000 KHz to 30 MHz. Within this frequency range, by international agreement, are many small "blocks" of frequencies that are assigned for various types of broadcasts. Some "blocks" are assigned for single side band transmissions that include ship-to-shore marine, hams, aircraft and radio-telephone services. Still other

"blocks" group the international broadcast frequencies that countries use to broadcast their news, information and music.

My interest in short-wave radio is to listen to all of these various types

of transmissions in order to know what is happening around me.

What do I hear?

While Federal law prohibits me from relating what I specifically hear, I can say that, almost instinctively, I have tuned in some very interesting things. I have heard Air Force ground teams surveying a plane crash site, or the Coast Guard (by sea and air) hunting for mysterious yachts.

The ham traffic during the Mount St. Helens disaster provided hours of on-the-scene accounts of the extent of the eruption.

Other things of interest might be a doctor calling his patients in the Canadian bush, or someone in London, England talking by radio-telephone to a sailor on a fishing boat off Cape Verde, Africa, or listening to the Pacific Princess (T.V.'s Love Boat). The variety of transmissions is endless.

International Broadcasts

Foremost, I listen to the various news broadcasts to compare, to find a consensus of truth. The best news broadcasts in the world come from the U.S. news services, the BBC (London), the V.O.A. (Voice of America), Radio Australia, Radio Nederland (Holland), and the CBC (Canada). Unless there is a world-wide conspiracy, I cannot detect any governmental control over the news they broadcast (even though all but the U.S. news services are government-owned).

Under some government control, but still good, is Deutsche Welle (West Germany), R. Japan, R. Switzerland, R. Israel, and R. Sweden.

The rest of the free world, third world coun-

tries, and some of the more obscure communist countries either strictly control the news or do not give any at all.

The antithesis of factual, responsible news reporting is Radio Moscow. Embellished by bald-faced lies and rumors, they invariably take every conceivable news topic and twist it to serve a propaganda purpose. Czechoslovakia and Cuba closely follow Moscow's lead, applying themselves to regional news topics.

RADIO FOR RECREATION

The most enjoyable way to listen to international broadcasts is simply to sit back, turn the dial, and tune in a veritable smorgasboard of English language broadcasts. Most every country, during some time in the day or evening, will broadcast a program in English.

Each country is trying to tell the world who it is by playing its ethnic music, giving special travel logs or discussions about points of interest in their country.

Turning the dial, I might spend a few minutes listening to the music of the high Andes from HCJB in Quito, Ecuador; or the oriental-like music of Greece, Albania and Israel. I may spend some time with Radio Australia to hear how things are going up in Alice Springs and listen to some Aussie outback stories.

Listening to communist countries I hear a never-ending stream of production figures on cement, steel, the number of apartments built last year and other material things.

One thing I soon noticed is that there are virtually no commercials on short-wave radio. The only real commercials I have heard were from an announcer in Port Moresby, New Guinea. He was playing American pop tunes, advertising Ford pickup trucks and where to shop at the local jungle trade-good stores!

Another thing I noticed right away is the world's interest in American culture. The other countries give our domestic news and they play our music. Probably more people in Africa and elsewhere know what happened in America today than we do.

RADIO FOR MUSIC

All the world plays our music. The communists duplicate it. I was really surprised to hear Radio Singapore the other morning at 6 a.m. playing the latest country western tunes.

If short-wave radio sounds exciting and interesting, it is. Equipment is readily available, too. The

price for a receiver ranges from about \$49 at your nearest Radio Shack dealer to units that cost hundreds of dollars. Don't let the low-priced receiver fool you. With a short length of wire it will pick up about every country that the expensive "rig" will tune in.

Finally, if you go out and buy a short-wave radio and you cannot seem to get anything on it, do not get discouraged. It takes patience, and any experienced short-wave'er will be happy to show you where to look and when to look. "73's and happy DX'ing."

FCC URGES SSB FOR BROADCASTERS

The Federal Communications Committee is urging members of the United States Information Agency (Voice of America, Radio Free Europe and Radio Liberty) to adopt single sideband as a mode of broadcasting to relieve congestion on the shortwave bands.

VOA operates 30 transmitters in the US and 67 overseas; an additional 46 transmitters in western Europe complement the USIA team which comprises some 10% of all broadcasting transmitters worldwide.

Globally, international broadcasters accumulate some 25,000 hours daily in the high frequency spectrum.

The Commission recognizes that the change will be slow, a phasing rather than an abrupt switch. Millions of conventional double sideband (full carrier AM) radios will have to be replaced by stable single sideband receivers.

The net result should be worth it, continued the Commission, considering the savings in spectrum space, reduction in required transmitter power and improvement in distortion due to selective fading.

MONITORING

NETWORK

Are you a ham or short-wave listener? Tune in to the North American Monitoring Network Wednesday evenings at 0100 UTC, 7227 kHz lower sideband (7268 kHz alternate).

Topics discussed include unusual or unknown signals, frequencies, new equipment, identifications of strange signals, tips and techniques and many other facets of monitoring.

While the network meets on shortwave, the topics cover the spectrum and everyone is welcome to join in.

EXPERIMENTER'S



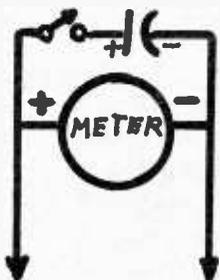
WORKSHOP

METER DAMPING CIRCUIT

Does the rapid deflection of your tuning or S-meter annoy you? There is a simple way to dampen the deflection in order to average the reading.

Mark Simari of Tyngsboro, Massachusetts suggests the following technique: place a small electrolytic capacitor (100 to 470 microfarads, any low voltage) across the meter terminals.

The higher the capacitance, the slower the meter movement; an optional switch may be added to defeat the damping if desired.



OOPS!

We'd like to thank sharp-eyed reader Dave Carberry of Gales Ferry, CT for pointing out two errors in Jon Zalac's parts list for the descrambler (September/October MT) on p. 27.

Resistors R3, R4 and R5 are 150 ohms (not 1500 Ohms) and R15 is 3.3 kilohms, omitted from the parts list.

Fortunately, the values in the schematic (July/August) are correct.

JUST ANOTHER SCAM

At least two commercial ventures are exploiting the gullibility of the two-way radio user by notifying them at license renewal time of a service charge.

There is no charge whatever for any FCC license; licensees are advised to deal directly with the Federal Communications Commission regarding licensing matters.

One of the firms cashing in on the renewal bit is located in the Washington, DC/Gettysburg, PA area, the other is in Indianapolis, IN.

We would like to thank Dave Carberry for bringing this to the attention of fellow MT readers.

ERRATA

UNLOCKING THE BEARCAT 250 IN TEN EASY STEPS

A line of type was omitted from Richard J. Ward's excellent article on p. 30 of the September/October Monitoring Times. The last sentence of paragraph 5 should read, "Now press RECALL and reset squelch knob counterclockwise."

BUSH HOUSE from page 6 members of the staff explained that this is the center point for all World Service programs linked by an announcer; if anything goes wrong they cover it with talking. "Everything else comes through here; it is responsible for the network," continued our host.

GALAXY ELECTRONICS

BOX 1202-67 EBER AVE., AKRON, OHIO 44309

(216) 376-2402

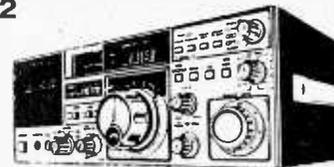


KENWOOD R-2000

R-2000...

10 memories, scanning...state of the art features! Maximum flexibility and ease of operation.

499.95



YAESU FRG-7700 429.95

High-Performance All-Mode Communications Receiver 150 KHz-29.999 MHz SSB/CW/AM/FM Digital readout, LSI clock timer optional 12 channel memory with back-up. Selectable AGC, memory fine tuning, noise blanker, variable RF attenuator, built-in speaker 120/240vac. 13 1/4" w x 4 1/4" h x 9" d, 13 lbs



409.95

KENWOOD R-1000

General Coverage Receiver 200 KHz-30 MHz, 30 bands, each 1 Mhz wide 5-digit frequency display and analog dial 12-hour quartz digital clock & on/off timer Three IF filters 2.7 KHz (SSB/CW), 6.0 KHz (AM narrow) & 12 KHz AM (wide) Noise blanker, built-in speaker, three antenna terminals, RF attenuator, tone control, recording terminal, Remote terminal, for access to timer on/off circuit & muting 120/240vac or 13.8 vdc with optional DC kit. 12" w x 4.6" h x 8.7" d, 12 lbs



BC 100

8 band, 16 channel, programmable pocket scanner, ac adapter/battery charger, case, rubber antenna earplug and [6] AA nicad batteries included, jacks for earphone, ac adapter/battery charger

288.49

SHORTWAVE RADIO

- ICOM
- IC-R70 100 khz-30 mhz digital rcvr. 644.95
- IC-R70 FL-44 Optional SSB filter. 144.95
- KENWOOD
- R-600 150 khz-30 mhz digital rcvr. 344.95
- R-1000 200 khz-30 mhz digital rcvr. 409.95
- R-2000 150 khz-30 mhz digital/memory. 499.95
- YAESU
- FRG-7700 150 khz-30 mhz digital rcvr. 429.95
- *SPECIAL* Purchase a FRG-7700 with the memory unit & get FREE installation-memory unit. 139.95
- YH-55 shortwave receiver headphones. 19.95
- PANASONIC
- RF-2600-6 band digital receiver. 199.95
- RF-2900-5 band digital receiver. 239.95
- RF-3100-31 band digital rcvr *SPECIAL* 266.95
- RF-4900-10 band digital receiver. 389.95
- SONY
- ICF-2002 AM/FM/SSB/CW digital 10 memories. 249.95
- *NEW* BEARCAT DX-1000, 10khz-30mhz digital 519.95
- *NEW* UNIDEN CR-2021, 150khz-30mhz/memory 214.95
- *FREE UPS SHIPPING ON ALL ITEMS TO 48 STATES*

SCANNERS

- BEARCAT
- BC-100 16 ch, programmable handheld. 288.49
- BC-150 10 ch, prog. base unit *SPECIAL* 159.49
- BC-160 16 ch, prog. base unit *SPECIAL* 169.49
- BC-200 16 ch, prog. base w/406-420 mhz. 188.49
- BC-210XL 18 ch, prog. base unit AC/DC. 229.49
- BC-20/20 40 ch, prog. w/aircraft AC/DC. 289.49
- BC-250 50 ch, prog. base unit AC/DC. 279.49
- BC-260 16 ch, prog. mobile, w/406-420 mhz. 299.49
- BC-300 50 ch, prog. w/aircraft AC/DC. 359.49
- REGENCY
- *NEW* HX-1000 handheld programmable. *CALL*
- *NEW* HX-3000 20 ch, handheld 25-550 mhz. *CALL*
- *NEW* MX-3000 30 ch, (REPLACES M-400). 219.95
- D-100 10 ch, programmable base unit. 164.95
- D-300 30 ch, prog. base AC/DC *SPECIAL* 169.95
- D-810 50 ch, prog. base unit w/aircraft. 259.95
- M-100 10 ch, prog. mobile AC/DC *SPECIAL* 199.95
- 720/A FLIGHT SCAN, 108-136, 16 ch, ONLY. 149.95
- R-1040 10 ch, prog. base unit *SPECIAL* 134.95
- INFOTECH M-600A RTTY/MORSE DECODER. 774.95
- *FREE UPS SHIPPING ON ALL ITEMS TO 48 STATES*

Cordless Phones • CB Radios • Radar Detectors • Frequency Directories
• True Discount Prices & Free UPS Shipping To 48 States Picture Catalog \$1.00 Refundable.

Besides news reading and Outlook, this is the only live operation. "So the announcer is always in touch with the audience." If something goes wrong with the transmitter, the apology is made here.

A set of cards "show all the frequencies that join and leave at certain times." There are 25 announcers and all work on a series of shifts. They do 2 hours of continuity at a time.

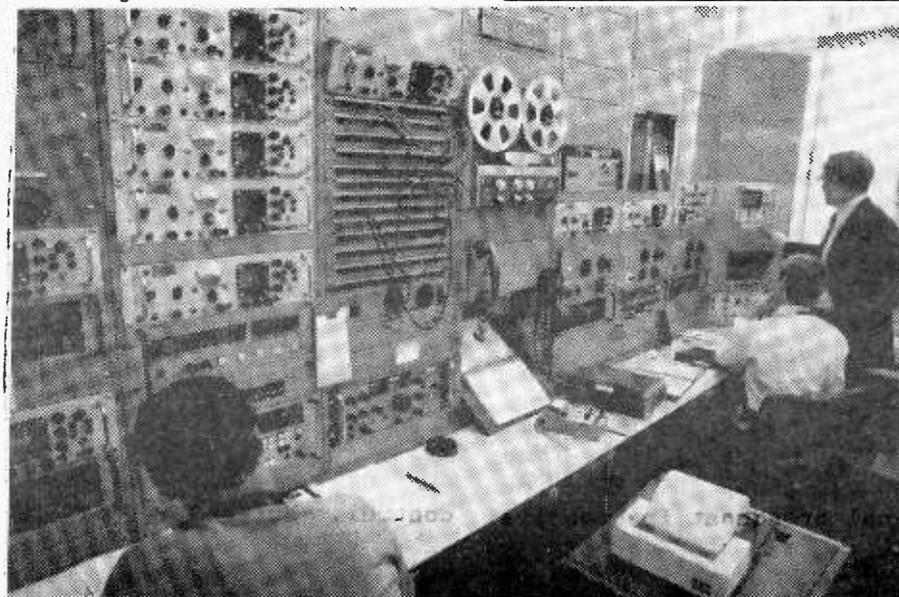
Various kinds of announcing are done on each

shift so it does not become monotonous. For example, each member is a continuity announcer, news reader and presents other programs as well, such as the Press Review.

Our tour took well over an hour, with an obstacle course in the various hallways due to extensive alterations going on inside and outside of Bush House. The staff was very friendly and informative; we could see and feel what our ears hear on our radios at home.



A general view of Bush House Newsroom, with clocks showing different times in various parts of the world. This Newsroom is open 24 hours a day, 365 days a year.



The Radiotelegraphy Room, Caversham Park, where news agency transmissions from many parts of the world are received before being translated, if necessary, and passed to the editorial offices.

TECHNICAL TOPICS

Q "How can non-U.S. Bearcat owners get service information?"

J. R. Koesman
Bogor, Indonesia

A After several long distance calls around the U.S., I think I finally have some answers..and some good news!

Parts for your BC-220 are directly available from the Electra international office, and they are sending you a schematic directly.

In case you need to contact them, their address is: Electra Company International Business Office, c/o Phil Love or Vicky, 1828 Swift, Suite 102, North Kansas City, MO 64116 (ph. 816-842-0440).

* * * *

Q "Can I hook a magnetic-mount mobile antenna, sitting up in my attic, to a scanner for improved reception?"

Darren Rogers
Seaford, NY

A I discourage it. No mobile antenna works well without a car body as a "counterpoise" or ground plane. It is only half an antenna without the car.

Use an antenna designed as a stand-alone, such as a discone, ground plane or beam, all recommended for outdoor or attic use.

* * * *

Q "How can I listen to the Space Shuttle direct and watch their video also?"

Vincent Caracci
Massapequa, NY

It is likely that the UHF (296.8 and 259.7 MHz) will be terminated in favor of s-band (2287.5 MHz and nearby frequencies).

For s-band you will need a high-gain antenna such as a dish or one of the converter MDS "satellite" directional antenna/converter combinations. Their TV monitoring is in the same frequency range.

We hope to have articles on this in the future as we expand our satellite column.

* * * *

Q "What is the difference between UTC, GMT and Z (Zulu) time?"

John Topoleski
Philadelphia, PA

A For all practical (and most scientific) purposes, Universal Coordinated Time, Greenwich Mean Time and Zulu time are identical. Since WWV operates its own National Bureau of Standards time clock (cesium beam), it must occasionally insert a "leap second" to synchronize with the International Time Bureau.

An excellent publication which explains all this

and more is the NBS special publication 432 "NBS Time and Frequency Dissemination Services" available from Time and Frequency Division, National Measurement Laboratory, National Bureau of Standards, Boulder, CO 80303.

* * * *

Q "A friend of mine told me I was wasting my money (buying a satellite receiving rig) due to direct broadcast satellite transmissions that will be arriving in 1986. Will DBS transmissions do away with present satellite transmissions? My friend says I'll wind up with a 10-foot bird bath!"

"My second question is about the Yaesu FRG-7700 SW receiver. I would like to know about narrow band FM that this receiver covers. What can be heard on NBFM and what antenna must be used?"

John Slader
Robbinsville, NC

A It is highly unlikely that the new 12 GHz DBS systems will have much impact initially on the present 4 GHz satellites. The higher frequency units will offer far less programming (fewer channels) and there is much too high an investment already in the present system.

My recommendation would be to go with the present system unless you want to wait about ten years or so for a very gradual trend.

Narrowband FM in the range that the FRG-7700 covers is limited to around 1.7 MHz (cordless telephone base units), 25-25.5 MHz (petroleum industry mobiles/portables), 29.4-29.7 MHz (amateur) and a little South American use from 29.7-30.0 MHz.

It is seldom encountered and is found on new shortwave receivers principally to be used along with their VHF converters, available optionally. That is also the primary intent of the squelch controls.

Naturally, the FM to be found in the shortwave bands would come in best using normal shortwave antennas, while VHF/UHF signals heard using converters ahead of the receiver would be best heard using VHF/UHF antennas manufactured for that purpose such as seen in Monitoring Times ads.

* * * *

Q "How can these Morse/Rtty readers be converted to print from public safety radio?"

John Dorsey
Quinton, VA

A Supposedly, the ASCII digital teletype from the cars can be copied using the ASCII mode on the little readers. While I'm assured by the manufacturers it can be done, no one has ever told me he has done it!

In any case, the Morse ID sent at certain times must be of the proper audio frequency to pass through the filters of the reader. In most cases, it would merely mean turning up the audio until it is loud enough. At worst, you would need to use a speech-inversion descrambler to change the pitch to the appropriate frequency to be passed by the filters.

But that isn't the only problem; many readers need to sample several characters before they can figure out the speed; by that time, the ID has been sent!

I've never tried either type of reception of these public safety messages, John, so what I'm telling you is theory only. You will have to try it yourself for a final determination of just what can be done.

Good luck, and please let me know the results so we can share them with other readers!

* * * *

Q "How can I improve reception on my FRG7700 receiver?"

Ben Hofmann
Marietta, GA

A If you have a good outside antenna, about the only assistance you could offer it would be a good preselector like our TUN-3 MiniTuner.

The TUN-3 is not an amplifying device; rather, it will suppress off-frequency signals, eliminating images and intermod, often so bothersome in the late afternoon and early evening when you and I probably do the most listening!

It is amazing how the phantom signals at the higher frequencies disappear when a good preselector is switched in and peaked. All of a sudden, background clutter which we knew shouldn't be there...isn't!

Due to antenna lengths at lower frequencies, the TUN-3 will often make the S-meter read higher, especially below 5 MHz. It sometimes helps to loosen the coax ground (broadcast band and below) to avoid capacitance effects of the shielded cable, often improving signal strengths enormously!

But all this presupposes that you have a reasonably-good outside antenna, up at least 15 feet in the air, away from power lines, and at least 25 feet in length (50-100 is great).

LISTENERS LOG from pg 28		
153.77	Camden NJ fire	
460.075	Camden NJ police	
154.43	Camden Co. fire	
156.70	Area Coast Guard	
165.312	"	
157.10	"	
33.80	Jackson NJ Great Adventure fire	
150.90	Keystone AAA	
452.60	"	
154.13	Montgomery Co. fire	
33.70	"	
45.46	Montgomery Co. PD	
451.875	J.D.M. Co. snow removal	
44.62	NJ state police	
155.19	" Turnpike	
453.70	Atlantic City expressway	
453.90	"	
162.475	Phila NOAA	
162.40	Atlantic City NOAA	
460.375	Benjamin Franklin & Betsy Ross bridges	
460.425	Commodore Barry & Walt Whitman bridges	
156.70	bridge openings	
118.5	Philadelphia International Airport tower	
121.9	" ground	
118.85	" clearance delivery	
128.4	" approach	
114.35	" departure	
119.75	" departure	
453.45	" administration & police	
453.85	" "	
451.075	Philadelphia electric	
154.145	Philadelphia fire North	
154.235	" South	
153.95	" emergency	
170.15	" rescue	
463.00	" Medical	
153.83	" portables	
153.935	" "	
173.295	Philadelphia gas (CSD)	
153.56	" construction	
453.775	Philadelphia snow removal	
160.80	Conrail & Antrak	
161.07	" "	
452.15	Yellow Cab	
452.10	"	
452.25	"	
452.30	"	
Philadelphia Police		
AREA FREQ DISTRICT PARK DIS		
NE 453.95	2,7,8,15	
NW 453.80	14,35	92
E 453.30	24,25,26	
NC 453.20	22,23	90,92
C 453.15	6,9	
W 453.35	16,19	90
S 453.65	1,3,4,17	
SW 453.50	12,18	93
N 453.05	5,39	92
453.75	J Administrative	
453.25	T Traffic	
453.55	M Emergency	
453.40	H Detective	
462.95	Paratransit for disabled	

Coaxial cable feedline is recommended to lessen electrical interference, or to reduce absorptive losses if the line must run close to large metallic masses like ducting or sheet metal.

HELPFUL HINTS

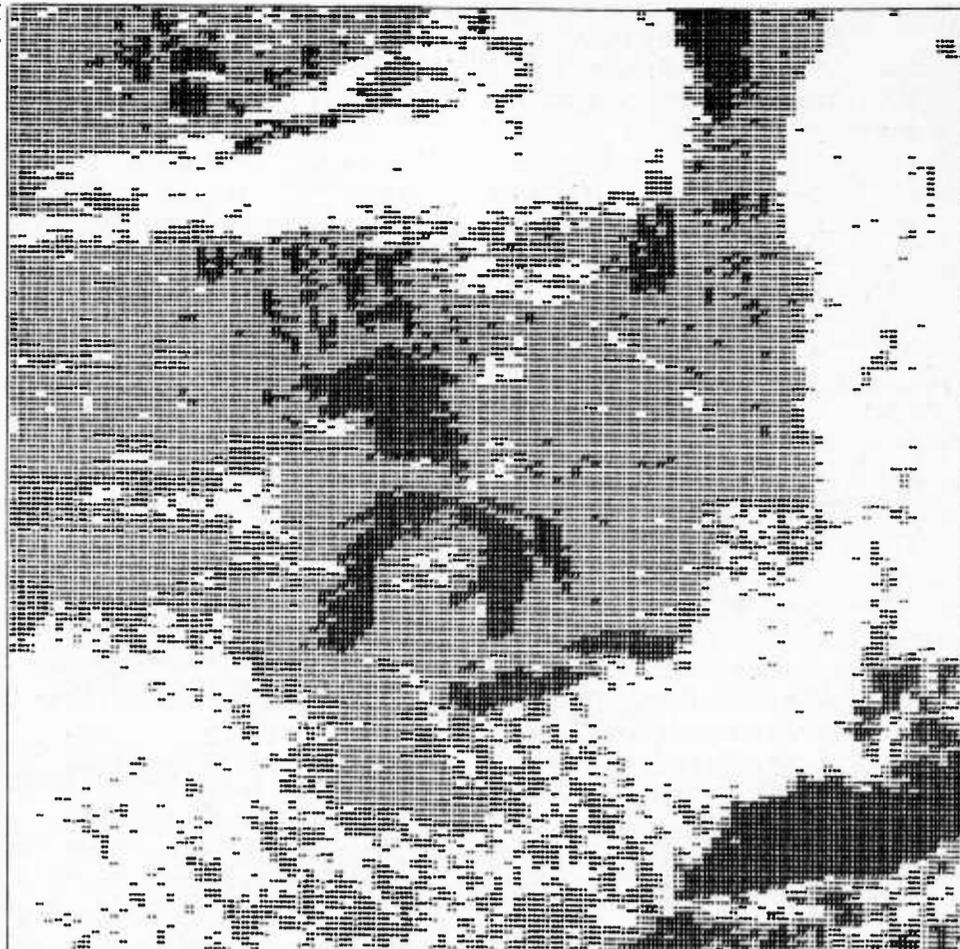
WORLD TIME

Local times of the countries listed are derived by adding to or subtracting from UTC as shown. UTC - Coordinated Universal Time equals GMT - Greenwich Mean Time.

	LOCAL TIME
Afghanistan	+ 4 1/2
Alaska	- 8
Albania	+ 1
Algeria	UTC
Argentina	- 3
Australia	
Victoria	+ 10
New S. Wales	+ 10
Queensland	+ 10
Tasmania	+ 10
North Territory	+ 9 1/2
South Australia	+ 9 1/2
West Australia	+ 8
Austria	+ 1
Bahamas	- 5
Barbados	- 4
Belgium	+ 1
Bermuda	- 4
Bolivia	- 4
Brazil	
Eastern & Coastal	- 3
Manaos	- 4
Acre	- 5
Bulgaria	+ 2
Burma	+ 6 1/2
Cameroon	+ 1
Canada	
Newfoundland	- 3 1/2
Labrador	- 4
Nova Scotia	- 4
Ontario	- 5
Quebec	- 5
Manitoba	- 6
Alberta	- 7
British Columbia	- 8
Yukon	- 8
Chad	+ 1
Chile	- 4
China	+ 8
Lhasa	+ 6
Taipei	+ 8
Colombia	- 5
Congo	+ 1
Costa Rica	- 6
Cuba	- 5
Cyprus	+ 2
Czechoslovakia	+ 1
Denmark	+ 1
Dominican Republic	- 4
Ecuador	- 5
Egypt	+ 2
Ethiopia	+ 3
Finland	+ 2
France	+ 1
French Guiana	- 3
Gabon	+ 1
Germany	+ 1
Ghana	UTC
Gibraltar	+ 1
Greece	+ 2
Greenland	- 3
Guadeloupe	- 4
Guatemala	- 6
Guyana	- 3
Guinea	UTC
Guinea Equatorial	- 1
Haiti	- 5
Hawaii	- 10
Honduras	- 6
Hong Kong	+ 8
Hungary	+ 1
Iceland	UTC
India	+ 5 1/2

Indonesia	+ 7
Iran	+ 3 1/2
Iraq	+ 3
Ireland	UTC
Israel	+ 2
Italy	+ 1
Ivory Coast	UTC
Jamaica	- 5
Japan	+ 9
Jordan	+ 2
Kampuchea	+ 7
Kenya	+ 3
Korea	+ 9
Kuwait	+ 3
Laos	+ 7
Lebanon	+ 2
Liberia	UTC
Libya	+ 1
Madeira	UTC
Malawi	+ 2
Malaysia	+ 8
Malta	+ 1
Martinique	- 4
Mauritius	+ 4
Mexico	- 6
Monaco	+ 1
Mongolia	+ 8
Morocco	UTC
Netherlands	+ 1
Netherland Antilles	- 4
New Caledonia	+ 11
New Zealand	+ 12
Nicaragua	- 6
Niger	+ 1
Norway	+ 1
Pakistan	+ 5
Panama	- 5
Papua (New Guinea)	+ 10
Paraguay	- 4
Peru	- 5
Philippines	+ 8
Poland	+ 1
Portugal	UTC
Puerto-Rico	- 4
Rumania	+ 2
Rwanda	+ 2
Saudi Arabia	+ 3
Senegal	UTC
Singapore	+ 8
Somalia	+ 3
South Africa	+ 2
Spain	+ 1
Sri Lanka	+ 5 1/2
Sudan	+ 2
Sweden	+ 1
Switzerland	+ 1
Syria	+ 2
Tahiti	- 10
Taiwan	+ 8
Thailand	+ 7
Trinidad	- 4
Tunisia	+ 1
Turkey	+ 3
Uganda	+ 3
United Kingdom	UTC
Upper Volta	UTC
Uruguay	- 3
U.S.S.R.	
Moscow	+ 3
Leningrad	+ 3
Sverdlovsk	+ 5
Novosibirsk	+ 7
Yakutsk	+ 9
Magadan	+ 11
Anadyr	+ 13
U. S. A.	
Eastern Zone	- 5
Central Zone	- 6
Mountain Zone	- 7
Pacific Zone	- 8
Vatican	- 1
Venezuela	- 4
Vietnam	+ 7
Yugoslavia	+ 1
Zaire	+ 1
Zambia	+ 2
Zimbabwe	+ 2

WEATHER BIRDS from page 21



Satellite image using the author's Color Computer and a Gemini 10 printer. The picture shows the Great Lakes, James Bay along with Hudson Bay in the upper right and the Atlantic Ocean in the lower right.

press photos, receive radio teletype, display satellite pictures, and call up radar pictures over the phone line from the Weather Service.

GOES

The United States also maintains three geostationary weather satellites that transmit both pictures and weather maps. The are known as GOES (Geostationary Operational Environmental Satellite) and positioned to cover the western and eastern half of the country.

GOES Central serves mainly as a platform from which reprocessed pictures, and maps from the other satellites are transmitted to users at 1691 Mhz.

To hear the GOES satellites you will need a small 3-4 foot dish, 1691 downconverter and low noise amplifier. I am not aware of any low cost off-the-shelf equipment for this frequency although many radio amateurs have constructed systems to receive these satellites.

For anyone dedicated to setting up his own station I strongly recommend they obtain copies of the following books: THE WEATHER SATELLITE HANDBOOK, by Ralph E. Tag-

gart, (available from 73 MAGAZINE, Peterborough, NH 03458) and THE TEACHERS GUIDE FOR BUILDING AND OPERATING WEATHER SATELLITE GROUND STATIONS (Office of Public Affairs, NASA Goddard Space Flight Center, Greenbelt, MD 20771).

SOURCES FOR EQUIPMENT

Used Faxes
Atlantic Surplus Sales
3730 Nautilus Avenue
Brooklyn, NY 11224

Antennas, Preamplifiers
Grove Enterprises
140 Dog Branch Road
Brasstown, NC 28902

Preamplifiers, Converters, VHF Satellite Receiver Kits
Ham Tronics Inc.
65 Moule Road
Hilton, NY 14468

Color Computer Interfaces
Stinson Southwest
P. O. Box 27224
San Antonio, TX 78227

Vhf Satellite Radios, Preamplifiers
Vanguard Labs
196-23 Jamaica Avenue
Hollis, NY 11423

NEW CB RULES

The Citizens Radio Service has been deregulated substantially. As of July 8, 1983 the following guidelines apply:

- 1) Any U.S. citizen of any age may own and use a CB radio;
- 2) No CB licenses are in effect; any call sign may

be used whether former, contrived, initials, "handles" or even amateur (yours or borrowed!);

3) Technical specifications and limitations still apply; channel 9 is still emergency; output power still 4 W AM, 12 W SSB;

4) Fines up to \$2000 and criminal prosecution still levied for violations.

ICOM AND KENWOOD USERS INFORMATION

International Radio, Incorporated, run by editor/publisher Robert Pohorence N8RT (364 Kilpatrick Avenue, Port St. Lucie, FL 33452) now offers a separate newsletter for ICOM owners.

As a commercial venture, Rob's group offers repair and modification information and service to his respondents.

A similar service by Rob is offered for Kenwood users as well. Kenwood users meet on the air each Sunday on 14317 kHz at 1600 UTC to exchange information about their respective equipment and its applications.

Finally, Rob has a swap sheet called "The Ham Boneyard"; published bi-monthly, a year's subscription costs \$12.

A Kenwood newsletter, covered in an earlier article, is also available from International Radio. Send an SASE for information about any of these services.

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AMSAT

From time to time we refer to AMSAT, the Radio Amateur Satellite Corporation. Open for members from both amateurs and non-amateurs, AMSAT is a non-profit scientific corporation which encourages development of communications technology at an international level including satellites.

Annual membership is \$24 and includes ORBIT Magazine. For more information send an SASE to AMSAT, P.O. Box 27, Washington, DC 20044.

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SPEEDX

While listed in the ANARC membership roster above, The Society to Preserve the Engrossing Enjoyment of DXing (SPEEDX) is one of the leading shortwave utilities/broadcast listening clubs with a monthly news magazine on the order of 60 pages.

Other member services include reception report forms, awards program, news bulletins, and a variety of listener's publications.

For more information send an SASE to AMSAT, P.O. Box 27, Washington, DC 20044.

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ASSOCIATION OF DX REPORTERS

Consisting largely of an initial nucleus of top editors from the now-defunct Newark News Radio Club, ADXR is a quality organization of serious listeners.

Articles in their monthly news magazine are exceptionally well-written and authoritative. As an example, the September 1983 issue features the professional biography of E.H.

ANARC: THERE'S A CLUB FOR EVERYBODY!

The Association of North American Radio Clubs (ANARC) is a "central processor" of information about clubs. Subscriptions to the monthly ANARC newsletter are \$8 per year in North America; information includes lists of available publications as well as club news and organization activities.

For an information packet send \$1 to ANARC Publisher, 1500 Bunbury Drive, N. Whittier, CA 90601.

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LIST OF ANARC FULL MEMBER CLUBS

(ABBREVIATIONS USED): IRC (postal International Reply Coupon); LW (longwave listening); MW (mediumwave broadcast band listening); NA (North America); SW/SWL (shortwave listening); SASE (self-addressed stamped envelope).

ANARC RECEIVER BULLETIN OUT OF PRINT

Monitoring Times has been advised by Jose Barr, Executive editor and publisher of the Association of North American Radio Clubs (ANARC) newsletter, that the popular publication, "Choosing a Receiver" is out of print.

Fortunately, a second edition is in the works; Monitoring Times readers will be advised when it is ready for distribution.

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Scott of radio manufacturing fame.

Another article covers a practical on-air evaluation of the Kenwood R-2000 receiver.

Send \$1 for a sample to Association of DX Reporters, 7008 Plymouth Rd., Baltimore, MD 21208.

RADIO MARTI

QUESTIONED AGAIN

Controversy still surrounds proposed Radio Marti, originally planned as an AM anti-Castro station in southern Florida.

A house commerce subcommittee has recommended using instead a shortwave VOA frequency and that an assessment of previous and possible future economic harm from retaliatory transmissions from Cuba be made with the possibility of compensation to US broadcasters suffering from lost revenue due to the Cuban jamming.

Senate action is pending.

ANARC FULL MEMBER CLUBS:

AMERICAN SHORTWAVE LISTENERS CLUB (ASWLC) Founded in 1964 - Address: 16182 Ballad Lane, Huntington Beach, CA 92649, USA Coverage: SW, MW, utilities Publication: "SWL", monthly Dues: NA \$16.00; overseas: write HQ for details. Sample: NA \$1.00, overseas \$2.00 or 8 IRCs
CANADIAN INTERNATIONAL DX CLUB (CIDX) Founded in 1962 Address: 6815 12th Avenue, Edmonton, Alberta, T6K 3J6, Canada Coverage: All wave Publication: "CIDX Messenger", monthly Dues: NA \$16.00; overseas \$20.00 (in Canadian funds) Sample: NA \$1.50; overseas 6 IRCs
CLUB ONDES COURTES DU QUEBEC (COCQ) Founded in 1974 Address: 745 Du Chateau #24, Sainte Foy, Quebec G1X 3P4, Canada Coverage: SW, MW, ham, utilities Publication: "L'Onde", monthly (in French) Dues: Canada/USA \$33.00; overseas \$38.00 Sample: NA \$1.50; overseas 5 IRCs
HANDICAPPED AID PROGRAM, USA Inc. (HAP-USA) Founded in 1972 Address: Route 4, Box 32, Rolla, MO 65401, USA Coverage: Promotes shortwave radio for the physically disabled and housebound, through education and services. Publication: "HAP-penings", monthly (center insert of ANARC Newsletter); extensive cassette tape library available to members. Dues: None to qualified members of HAP-USA. Sample: Not available. All physically handicapped persons in USA are eligible for membership by writing HAP-USA for details and information.
INTERNATIONAL DXERS CLUB OF SAN DIEGO (IDXSD) Founded in 1978 Address: 1826 Cypress Street, San Diego, CA 92154, USA Coverage: Non-technical receiver and equipment information, relating to SW, MW, LW, TV, FM, and utilities. Publication: "International DXers Club of San Diego", monthly. Dues: NA \$11.00; Central America, Colombia, Venezuela, and the Caribbean \$16.00; elsewhere \$17.00 Sample: NA \$1.00, overseas 5 IRCs
INTERNATIONAL RADIO CLUB OF AMERICA (IRCA) Founded in 1964 Address: P.O. Box 26254, San Francisco, CA 94126, USA Coverage: MW Publication: "DX Monitor", 34 issues annually. Dues: NA \$16.50; \$18.00 surface mail to rest of the world; \$27.00 airmail to Central America, Colombia, Venezuela and the Caribbean; \$30.00 to the rest of Latin America, W. Europe, N. Africa and the Middle East; \$34.00 to the rest of the world. Sample: NA \$0.50, overseas 3 IRCs
LONGWAVE CLUB OF AMERICA (LWCA) Founded in 1974 Address: 45 Wildflower Road, Levittown, PA 19057, USA Coverage: LW Publication: "The Lowdown", monthly Dues: NA \$10.00; overseas \$18.00 Sample: NA \$0.85; overseas 5 IRCs
MIAMI VALLEY DX CLUB (MVDXC) Founded in 1973 Address: 4666 Larkhall Lane, Columbus, OH 43229, USA Coverage: All wave, with emphasis on SW Publication: "DX World", monthly Dues: NA \$7.00, overseas, write to HQ for details. Sample: NA \$0.75; overseas 6 IRCs
NATIONAL RADIO CLUB (NRC) Founded in 1933 Address: P.O. Box 118, Poquonok, CT 06064, USA Coverage: MW Publication: "DX News", 30 issues annually. Dues: USA \$18.00; Canada \$21.00, other countries, write HQ for rates. Sample: NA \$0.60; overseas 3 IRCs
NORTH AMERICAN SHORTWAVE ASSOCIATION (NASWA) Founded in 1961 Address: P.O. Box 13, Liberty, IN 47353, USA Coverage: SW Publication: "FRENDX" monthly Dues: NA \$16.00; Central Am/Carib/South Am/Europe \$25.00; Africa/Asia/Pacific \$28.00; worldwide by surface mail \$16.00. Sample: NA \$1.00; overseas \$2.00 or 10 IRCs
ONTARIO DX ASSOCIATION (ODXA) Founded in 1974 Address: 3 Camrose Crescent, Scarborough, Ontario M1L 2B5 Coverage: SW, MW Publication: "DX Ontario", monthly Dues: Canada \$19.00; USA \$20.00; overseas \$25.00 Sample: \$1.50 worldwide
RADIO COMMUNICATIONS MONITORING ASSOCIATION (RCMA) Founded in 1975 Address: P.O. Box 4563, Anaheim, CA 92803, USA Coverage: VHF/UHF public service bands, SW utilities. Publication: "RCMA Newsletter", monthly Dues: USA \$16.50; Mexico/Canada \$18.50; Europe \$20.00; Asia/Pacific \$21.50 Sample: NA \$1.00; overseas 6 IRCs
SOCIETY TO PRESERVE THE ENGROSSING ENJOYMENT OF DXING (SPEEDX) Founded in 1971 Address: P.O. Box E, Elsinore, CA 92530, USA Coverage: SW, utilities Publication: "SPEEDX", monthly Dues: NA \$16.00; Carib/Central Am \$24.00; Europe/South Am \$28.00; Asia/Pacific/Africa/USSR \$31.00; surface mail worldwide \$17.00 Sample: NA \$1.00; overseas \$2.00 or 8 IRCs
WORLDWIDE TV-FM DX ASSOCIATION (WTFDA) Founded in 1967 Address: P.O. Box 97, Calumet City, IL 60409, USA Coverage: TV, FM, VHF/UHF public service bands. Publication: "VHF/UHF Digest", monthly Dues: NA \$15.00; overseas \$24.00 Sample: NA \$1.00; overseas 6 IRCs

STOCK EXCHANGE

Note: Monitoring Times assumes no responsibility for misrepresented merchandise.

SUBSCRIBER RATES: \$.10 per word, paid in advance. All merchandise must be listening related. Ads for Stock Exchange must be received 30 days prior to publication date.

SILTRONIX 1011-D, Audio Preamp, Shure 444 mic, excellent condition. Need \$225, postpaid by me. Also, complete with accessories BEARCAT 4-6 Thinscan - \$65, works fine! PACE 4 ch. pocket scanner, w/120 v adapter \$40. REGENCY 10 ch. executive scanner, \$100. All scanners are crystalized for S.E. Indiana.

Would trade on Grove Scanverter--make offer for above. Dan Muiford, Box 5 Hunt St., Osgood, IN 47037. Ph. 812-689-7314.

For Sale: KENWOOD R-1000, needs work; intermittent speaker & display. 1981 model. Contact Miles Collier, Apt. 214, 1500 Crescent Circle, Lake Park, FL 33403.

Listen to Ohio at work--RR's, aero, business, federal government PLUS MORE! Sample newsletter \$1 or SASE for details. All Ohio Scanner Club, 10 Avalon Rd., Mt. Vernon, OH 43050.

BEARCAT 100 - excellent condition, owners manual, charger, original carton - only \$210. Call (813) 983-8177 8 to 5 Eastern or (813) 983-7896 after 6 pm.

FOR SALE: Rodney Alexander, 1506 Pershing Blvd., Clinton IA 52732 (319-243-5792). DRAKE SPR-4 with 24 crystals (aero and marine). SSR-1 with or without GAR-7 (Gilfer read out). MICROLOG/AVR-2 cw-rtty converter, great for hams.

Active Antennas: MFJ1020, RAK7, RADIO WEST Ferrite Loop with three coils, PALOMER Amplifier and two loops (VLF, HF).

MIZUHO SX-59 Preselector, RAK 59 Coupler (two radios and two antennas). Two small L-C antenna tuners. MFJ-752 dual filter still in its carton.

Have instructions or manuals on all equipment. Prices are open to what is reasonable. Please write to above address as working a 12 hour shift and not always able to use the telephone; the YL knows nothing on this subject.

Canadian D.O.C. microfilm that identify frequencies and services including Govt. services. Also BEARCAT 200 scanner working base and mobile. For more info send a SASE to Gilles Thibodeau, 3653 Montcalm St., Lac-Megantic, Quebec G6B 2H8 Canada (819) 583-1817 after 5 hrs. p.m.

SELL: The best short wave radio, COLLINS 51J4 all wave receiver, perfect, 3 filters tune the world in style. U-ship. \$325.00 cash. Bill (714-525-8875)

For Sale: INFO-TECH M-200-F. Must sell. Mint condition. \$350 including UPS. MICO-CRAFT RTTY Reader \$90. Brian

Stauffer, El Cielo Libre Weather Services, 1631 Kains, Berkeley, CA 94702. (415) 527-3951.

MOTOROLA MH70 Handi-Com; excellent working condition; with Ni-Cad and antenna. Set up on 155.34; switchable PL; \$150.00. Don Isabella, 806 South Seventh St., Philadelphia, PA 19147.

INFORMATION PLEASE

MONITORING TIMES WILL PRINT AT NO CHARGE (AS SPACE PERMITS) ANNOUNCEMENTS AND QUESTIONS OF A NON-COMMERCIAL SERVICE NATURE.

NEEDED: Information on how to make an Icom '551D six meter rig transmit AND receive above 54 Mhz and below 50 Mhz (legitimate use). Reply to Don Isabella, 806 South 7th St., Philadelphia, PA 19147.

WANTED: Young pen pals interested in SWL'ing, CB or ham radio. Would like photos of stations. Arnold Feldman, P. O. Box 700, Jessup, MD 20794.

ARIZONA resident would like to hear from other monitor enthusiasts in southern AZ: Scott Schreiner, P.O. Box 1421, Sierra Vista, AZ 85635.

HELP: An article appeared somewhere recently about interfacing the TI 99/4A for RTTY, ASCII and Morse. Please notify where, or send photocopy (will reimburse costs) to: Henry Ponder, Rt. 1, Box 394A, Lawndale, NC 28090.

WANTED: Information on programming a Regency D-100 scanner for out of band use; also any info on federal and state tactical frequencies in the Dothan, Alabama area. I would also like information on construction of a notch filter for a Realistic DX-100 general coverage receiver. Ed Hutton, 1300 Pettus St., Dothan, AL 36301.

Do you own a computer? And are you an active SWL? If yes! Contact Rob Harrington, P.O. Box 3434, Littleton, CO 80161.

ANOTHER BURGLARY: We were sorry to learn of another break-in and burglary of equipment from a Monitoring Times reader. Mike Hardester (MWHS-2 Medical, SC-16, MCAS Cherry Point, NC 28533).

Readers are requested to keep an eye out for the following equipment and serial numbers:

Yaesu FRG-7: 6 M 082526
Kenwood R-1000: 0070145
Drake SPR-4: 1734
Bearcat 300 scanner: 31058
JVC model 3060 TV/radio/cassette: 12362403
Sony TC-106A reel-to-reel mono recorder: 28883
Additionally, Mike's social security number is engraved on some items (559-80-7072).

WANTED: Back issues of Monitoring Times. Vol. 1, #1, 3, 4, 5 & Vol. 2, #1. Will buy, rent, or borrow. Jim Barnes, 4514 Sturbridge Place, Alexandria, VA 22310.

SCANNER FREQUENCIES WANTED for England, Scotland and Wales. I'll be visitng the

United Kingdom in about a year and would like frequency allocation plans or specific frequencies in use, especially police, fire, EMS/ambulance, railroad (BR). Any additional information shall also be appreciated. Larry Chickerell, Rte. 1 Box 262 D-M, Fairmont, WV 26554.

1) I need info on the General Mobile Radio Service (GMRS), How to set-up a repeater system, licensing procedures, and manufacturers of GMRS radio equipment and possible costs.

2) I have available for all readers a free copy of the LA Information Frequency Information Systems Frequency List for the price of a Self-Addressed-Stamped-Envelope. Phone (504) 732-9903 after 3:30 PM (Please do not call collect.) David Fuller, Rt. 2 Box 156-A, Bogalusa, LA 70427.

I have all kinds of frequencies all over the U.S. to swap for any in the 48 states. Dick Ferreira, 2200 N. Parmellee, Compton, CA 90222.

LEBANON from page 1

Fijibatt: Fabrizio Magrone reports that Fijibatt's location in Lakeba Camp is in Qana, Lebanon (nearly ten miles from the Israeli border) and along with its already reported frequency of 20712 khz, Fijibatt has been reported on 19700 khz with very weak signals. Fijibatt (part of UNIFIL) is a very rare DX catch in Italy as well as North America, so try catching them on the observed times 0600 1200 GMT.

Are French & U.S. troops also using the 19 mhz band for military comms?

Apparently, while monitoring Italian transmissions between Beirut and Italy, French communications have been observed over Italcon's new frequency of 19577 khz in USB.

It seems that French troops in Beirut are using Italcon's transmitters to talk to relatives back home in France. So don't be surprised if there's French and Italian comms on the same frequency.

As for the American soldiers in Beirut, they have not been observed using the 19 Mhz band for comms between Beirut and the U.S. Military comms are probably covered by the Navy's M.A.R.S. communication network on another part of the shortwave spectrum.

There is a possibility that the British forces, who are joining the U.S., Italian and French Forces, may also be using the 19 Mhz band in the near future for their military comms, so look out for them!

If you want to send reception reports to any of the UNIFIL or multi-national troops in Lebanon, here are some addresses to write to:

For all UNIFIL troops: UNIFIL, UNBPO, Ben Gurion Airport, Tel Aviv, Israel; then add which battalion you are referring to (e.g. Irishbatt, Norbatt, etc.) as well as something like "Commanding Radio Officer."

Italcon: Italcon Beirut, Contingente Italiano in Libano, Roma 13, Italy.

3DV3I (Fiji Army, Suva): Ministry of Home Affairs, Government Buildings, Suva, Fiji Island, Pacific Ocean.

VIEWPOINT from page 2 tion, which prior to either the 1870 or the 1880 collection was considered too strenuous for women, almost immediately began the wholesale employment of women with the advent of the Holzerith machine.

When you can strike a blow for equality as well as historical accuracy, you might as well do so.

Mary H. Deal
Dayton, OH

NEXT ISSUE!

SECTION 605--

a history



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