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# POPULAR COMMUNICATIONS

JANUARY 1988 \$2.50

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## We Visit A New Shortwave Voice The Inside Story With Photos

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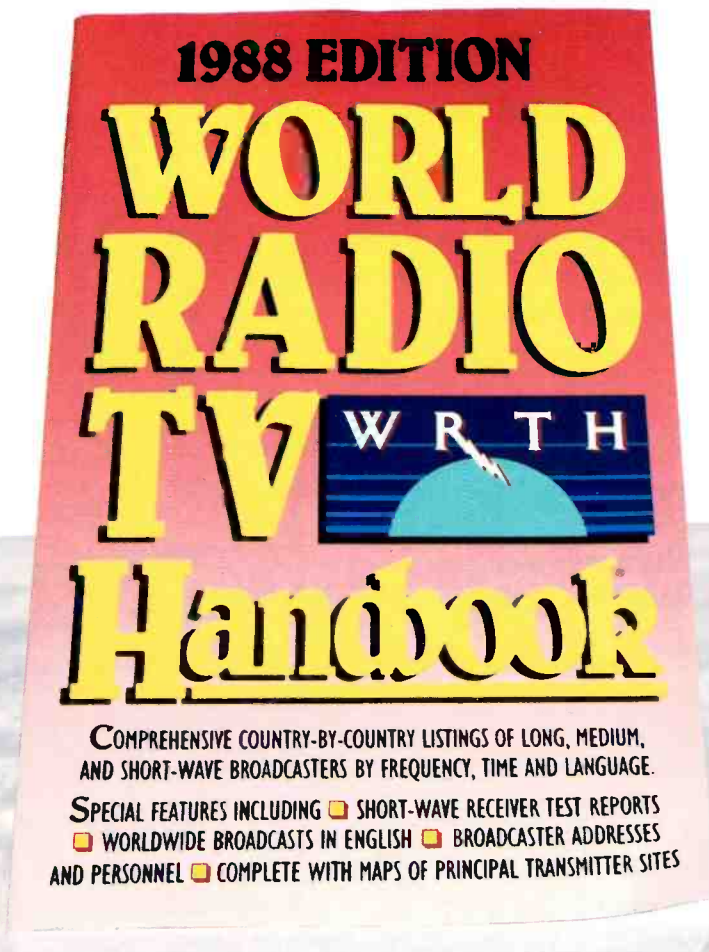
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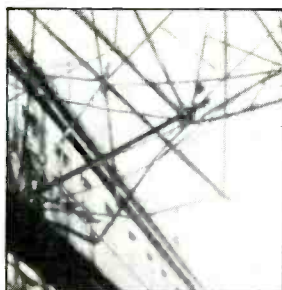
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JANUARY 1988

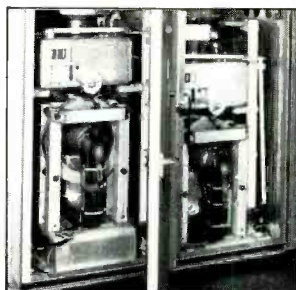
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*This month's cover: Night view of the WCSN transmitter sight in Scotts Corners, Maine. Photo by Wendell Davis.*

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# BEAMING IN

AN EDITORIAL

## The New Year's Eve Broadcast – Remembered

There are insider subcultures in almost every speciality of radio, including scanners, CB, “utes,” even shortwave broadcast monitoring. Traditionally, these are close-knit groups of hardcore enthusiasts that prefer to keep their distance from the rest of the world, often to the point of being enveloped in a cloud of total secrecy. The world of unlicensed broadcasters is probably the most colorful of these subcultures; unfortunately, it is also one that is the furthest underground. The national news media's coverage of *Radio Newyork International* has been the public's first look at this strange world, although *POP'COMM* readers have always had a ringside view of it, thanks to our monthly *Pirates Den* column and the many features we have run.

Such coverage in our pages was one of the “must have” ingredients for *POP'COMM* when the magazine was first planned. My interest and appreciation of this somewhat paranoid aspect of radio goes back many years and became firmly established during what came to be known in my memory as the “Big New Year's Eve Broadcast of 1949.”

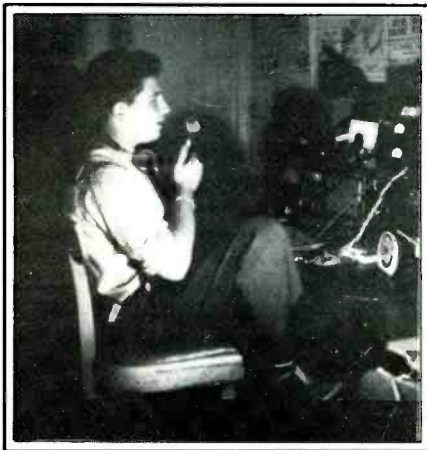
In 1947, at the age of 14, I had become totally dazzled by radio and communications. With my Hallicrafters receiver, I could tune in hams, utes, and broadcasters throughout the world. I had a fantasy that I could be an integral part of these exciting goings-on. I had made it a point to meet many of my neighborhood hams—W2MFM, W2MID, W2OEU, W2FDR, W2WHB, and others. All had encouraged me to study for a ham ticket, but (in those days before the Novice Class ticket had been invented) it seemed that the path to such glories was so long that the goal was far over the horizon.

I decided to take a shortcut to the wonders of radio, opting to enter the dual worlds of ham radio and broadcasting minus the red tape and formalities of bothersome and restrictive licenses. Two friends (Sy and Don) and I chipped in to buy a homebrew transmitter that could be used as the focal point of our ham/broadcasting adventures. The school mate who sold us the rig assured us that even though it put out only about 3 watts, it would “easily work Europe” on the 75 meter band. Best of all, he had discovered that the rig could be tuned up on frequencies within the AM broadcast band. The tubes all lit, so we bought it on sight.

Hooking it to my longwire antenna, we began calling “CQ DX 75 meters from New York City, USA.” Nobody replied, so we kept calling—even taking turns at the mike. Our callsign, “W2JHB,” was arbitrarily se-



*Yours truly, in 1947, at the microphone of “W2JHB” on the one single day it existed, before a neighborhood ham confiscated the transmitter.*



*The control room and main studio of WISP as it looked in 1948 during the second of its three broadcasts. That's me doing the honors at the microphone.*

lected because it was one that wasn't shown in the *Callbook*.

After about 45 minutes of futile requests for DX stations to reply to us, the doorbell rang. It was Adolph, W2MID, who lived around the corner from me. Undoubtedly, he was the only ham on earth within range of our signals. He was more than slightly annoyed when he recognized my voice. He also recognized the callsign “W2JHB” as one that, until recently, was assigned to a well-known award-winning ham. He knew that I didn't have a ham ticket, so he took the

transmitter to help me resist any further temptations along those lines until I got a license.

I hadn't even told him that the major plans for that rig were for it to be used as our own outlaw 1165 kHz broadcasting station, WISP. That, too, was going to be heard throughout the world. We even had pooled our funds to print up QSL cards for WISP. The loss of the transmitter was devastating. More devastating was the loss of the services of one of the partners in the proposed broadcast station, Sy. The whole confrontation with W2MID had rattled him so much that he decided to leave us to our life of bootlegging while he went out and got a license. He was issued the callsign W2YCP.

Frankly, the incident had scared me, too. It was then that I realized that there was some possibility that W2MID would be listening for my signals around the clock. Would he turn me in to the FCC? Would our erstwhile partner spill the beans about our plans to the FCC?

Don and I decided that there was no turning back, that WISP would eventually ride the airwaves. An AN/ART-13 transmitter was obtained for \$80, being a military surplus rig that ran 100 watts on shortwave, but could also operate from 200 to 1500 kHz.

During my many excursions to the roof of our apartment house, I had noticed that there was a maze of wires strung from egg insulators mounted on poles. It was obviously time to ask the building superintendent their purpose. He said it was the “master radio antenna” once installed to serve the entire building, but had been unused for years. It was exactly what WISP needed! Besides, I could also use it for SWL'ing.

Both Don and I had become increasingly fearful of getting caught as we took months preparing for the inaugural WISP broadcast. I told a few friends about the broadcast. We decided to run the transmitter at only a couple of watts. The program went on the air at midnight and spooked us so much that we signed off in less than ten minutes. One kid across the street heard our premier broadcast—he got a QSL card!

For our next test, we sent a few postcards out to discreet listeners out of town in the hopes that someone, anyone, in the DX community would hear WISP and report it to the *Newark News Radio Club's* broadcast band section. The QSL cards that we had originally printed read “3 watts” when we were certain that it took no more wattage than that to achieve recognition and worldwide fame. Nevertheless, for the next

broadcast we decided to slightly increase the power—although we realized that we were flirting with detection by the FCC. We would run 25 watts.

For the second WISP broadcast, several neighborhood friends reported hearing WISP. Also, reports came in from two DX'ers in New Jersey who said that the half-hour late-night mixed AM/CW transmission was weak, but readable.

When several months had passed without FCC agents arriving to lead us away in chains, we planned the next WISP program. This would be a 60-minute extravaganza to take place at midnight as the year 1948 exited and 1949 was welcomed by the world. No detail was ignored, and several dozen postcard notifications were mailed out to selected DX'ers throughout the midwest and northeast advising that we would be playing records and also sending out 3-letter CW groups between the musical selections.

We had planned on running about 50 watts, but decided to go all-out and try the rig at its full 100-watt potentials. We also decided to tack some blankets on the door to the bedroom, not only to keep the sounds of WISP out of the rest of the apartment, but also to keep out the sounds of the New Year's Eve party my parents were having.

Four hours before air-time, Don called me to say that his parents had grounded him and I was on my own. I figured he had cold feet, but that didn't bother me at all—WISP would definitely broadcast that night! I went into intense preparation—my air name would be "Roger Jolly," the station's slogan was, "WISP, the station with more platter and less chatter."

As for those platters, I had them stacked neatly at hand. There was *Baby, It's Cold Outside*, *Woody Woodpecker*, *Powder Your Face With Sunshine*, *Once In Love With Amy*, and other popular songs of the time. I had about twenty-five 78-rpm records in all, just in case the broadcast went into overtime.

At 11:55 p.m., I turned on the transmitter. As the clock slowly advanced towards air time, my palms got sweaty, my pulse was pounding in my temples. At the right instant, WISP went into action. After the opening theme, a few words of explanation were offered, followed by some CW, then a record. Another CW group was sent, then a record. WISP had been on for about fifteen minutes when there was a sharp knocking at the door. I was right in the midst of a repeat of the announcement explaining the CW signals when the knock came. My words suddenly stuck in my throat. Was it the FCC? W2MID? I realized immediately that something was wrong. Actually, it was worse than the FCC, it was my father. Struggling through the blankets tacked to



*WISP's QSL cards were printed up with the full expectation that 3 watts was all that would be needed to be heard from coast to coast. It was a slightly over-enthusiastic miscalculation!*

the door frame, he stuck his head into the room and said, "There's a 'phone call for you—hey, what's going on in here, and why is someone calling you in the middle of the night?"

I was so startled that I knocked over the stack of records, which fell to the floor with a loud crash. Making my way to the telephone meant struggling through the throng of party revelers, all of whom seemed to expect me to stop to exchange pleasantries. The call was from DX'er Dave Thomas of Proctorville, OH. Inasmuch as he was the founder of the world's first pirate broadcast station, WUMS, I had sent him one of the WISP announcement cards.

He wasted no time in telling me that he was able to copy two musical selections and also correctly identify the CW letter groups I had sent. I was stunned by this accomplishment and was able to stammer out only a few words of thanks for his call. With my father close on my heels still demanding to know what was going on, I went back to the main WISP studios and abruptly turned off the transmitter without any formalities. There was really nothing further to say, no more reason for WISP to exist—and, besides, I was too excited to say anything else. Furthermore, my old man was standing there in the studio loudly enumerating all of the terrible consequences that would surely befall me in the event I ever again received a middle-of-the-night telephone call.

WISP was finished for good. I had achieved Nirvana, got a signal as far as Ohio. In the days after the broadcast, several other reception reports arrived by mail from Massachusetts, Pennsylvania and elsewhere. All were sent QSL cards and letters expressing heartfelt thanks. Still, it took a long time to unwind from the exhilaration and paranoia of my brief excursion into the world of pirate radio.

The incident left me with a lasting fascina-

tion for the concept that individuals should have some mechanism for being able to legally establish low-powered experimental, personal broadcasting stations. I've advocated this in *POP'COMM* a number of times (in the October '83 and February '84 issues, for instance). I'm still pushing the idea, and I was pleased to note that others have also taken up the cudgel. Not long ago, former pirate Bruce *Jolly Roger* Radio Quinn submitted a formal petition to the FCC asking for their consideration in allowing 10-watt broadcasting stations to operate in the 1640 to 1700 kHz frequency range.

The FCC has never appeared to be anxious to see such stations on the air, so those who feel compelled to broadcast (for whatever reason, and at whatever power) will probably continue to be orphans, so to speak. A pity, too, for many of those who have established pirate stations in the past few years are talented and have things to say and do over the air that are unique to their breed. While it's now easier than ever to get licensed to operate legally on the ham bands, the whole tangled situation with so-called pirate *Radio Newyork International* has shown that the FCC appears to be little interested in clearing the path for personal broadcasting stations, regardless of how talented and ingenious they may be.

As innovative and clever as the FCC has been in some areas, the agency appears to be oddly attached to its rigid, outmoded, and coldly insensitive view of those who would establish low-power personal broadcasting stations, and the many persons who would enjoy listening to such stations.

This new year is called '88. Maybe it's a good time to remember that, in radio jargon, 88 means *love and kisses*. A thought the FCC might keep in mind in dealing with those broadcasters who have everything—everything, that is, except a license and the ability to obtain one.

PC

# MAILBAG LETTERS TO THE EDITOR

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

## Keeping In Tune

Congratulations on the addition of CB and Ham columns. These were two areas that needed coverage in the pages of POP'COMM. I had always assumed that the format of the magazine was etched in granite and wouldn't/couldn't accommodate "new" areas.

Cal Hannah  
Golden, CO

*One of the worst mistakes any publication can make is to become rigidly and solidly locked into a format that is unable to accommodate changes called for by its readers and/or suggested by changing times. We like to think that POP'COMM will always be ready and willing to respond to such stimuli. Stagnation is a naughty word at POP'COMM! — Editor*

## A New Direction

Although I've been DX'ing for five years, and a POP'COMM reader for an equal number of years, I never paid much attention to pirate broadcaster monitoring until I saw your November issue in-depth coverage of RNI (Radio Newyork International). That convinced me that I've been missing a lot. Since then, I've logged "The Voice of Fubar" (7465 kHz) and "Voice of Tomorrow" (7410 kHz). Thanks for sparking my

interest in this direction. Are there any clubs that cater to those interested in DX'ing pirate broadcasters?

John Roderick  
Cadillac, MI

*After not having heard from or about the Association of Clandestine Enthusiasts (ACE) for several years, we had assumed the worst—that this unusual group had ceased operation. ACE, which specializes in pirate station DX'ing, recently wrote to say that their newsletter has a new publisher, Bill Martin, P.O. Box 1744, Wilmington, DE 19899. A sample issue is \$1.50, a subscription in North America is \$12, and \$18 via air mail to other areas of the world.*

— Editor

## Signs Of The Times

Am I the only one who has noticed that ship callsigns are getting strange? For decades they were straightforward like WEDI, ELBH, FNTT, GBSS, HOPF, and similar four-letter combos. Now, tune-in the maritime bands and you hear oddball calls such as 3FHL2, D5RK, ELCV4, 3ELJ5, H9PJ, and worse! What's happened?

Joe Patemoster, KPA3RD  
Berwick, PA

*Now that you mention it, you're right. Probably the same questions DX'ers were asking in the early 1920's when ship callsigns went from a three-letter format to the four-letter format you recall so fondly. I suspect the problem here is that nations have become wary of reissuing the same maritime callsigns when they are no longer*

*needed by their original assignees. The only reason I can see for this is to avoid any possible confusion in identifying a vessel that might be sending a distress call by radio—since all who hear a given distress call may not have current callsign rosters on hand. As a result, new maritime callsign formats have had to be created to open up additional call letters for ships. Of course, this doesn't apply to American Navy and Coast Guard vessels since they always receive callsigns reissued over and over from within the callsign series NAAA through NZZZ. If anybody has a better answer, please step forward. — Editor*

## Rollin' Radio

Truckers in this area have been installing something they call "skip free marine transceivers" in their vehicles. What frequencies do these radios use? Are they legal in trucks?

Bobbycarl Hill  
Collinsville, MS

*For many years, interstate truckers have been more annoyed than amused by DX skip conditions on 27 MHz CB frequencies. In the late 1970's, a contingent of these folks decided to vacate 27 MHz and (illegally) establish 147.57 MHz as a so-called "National Truckers' Channel" in the 2 meter Ham band. Primarily using the low cost transceivers offered in a national general merchandise catalog, many truckers flocked to VHF.*

*Perhaps it was as the result of complaints from Hams, or other factors, but a while back it seems that the Ham band was dropped and operations were shifted (again, illegally) to the VHF marine band on intership channels 8, 10, 67, 70, 72, and 77 (that translates to 156.40, 156.50, 156.375, 156.525, 156.625, and 156.875 MHz).*

*During the boating season these commercial and non-commercial frequencies usually sound like a free-for-all, but in the off-season, or throughout the year in areas more than 25 miles from coastlines, large lakes, or navigable waterways, the frequencies are reasonably devoid of activity. Moreover, neither the FCC nor the USCG seems to monitor the channels, equipment is plentiful and inexpensive, there's no skip interference, and it's almost impossible to cause enough interference to get anybody angry or suspicious. None of it is legal, but these frequencies have unwittingly become host to all manner of unlicensed, uninvited and unauthorized users that have nothing whatsoever to do with maritime operation. That includes the truckers, plus campers, business and industrial users, even paramilitary and survival organizations. The only legit stations are those located aboard vessels and licensed by the FCC in the marine radio service. — Editor*

## Radio Interview

In the early hours of Saturday, January 9th, the ABC Talk Radio Network will carry Ray Briem's SWL/DX-oriented call-in program. Ray has run these programs in the past and they've been both informative and entertaining. DX fans can call in and talk to the numerous hobby personalities that Ray has on the line. The overall program runs from 3 a.m. to 8 a.m. EST (0800 to 1300 UTC), although some stations in the 75+ station network don't carry the final two hours (and KGU, 760 kHz, in Honolulu carries the whole program on tape delay).

As we go to press, Ray is still in the process of lining up his guests—I'll be one of them, as will Bob Grove. Stew MacKenzie will be there too. Ray tells me that I'm tentatively scheduled to be there during either the first or second hour of the program.

Some of the key ABC Talk Radio Network are: KENI, Anchorage, AK (550 kHz); WSB, Atlanta, GA (750 kHz); WABC, New York, NY (770 kHz); WTKN, Pittsburgh, PA (970 kHz); KTSP, St. Paul, MN (1500 kHz); KOA, Denver, CO (850 kHz); KABC, Los Angeles, CA (790 kHz); WJBO, Boston, MA (1150 kHz); WIOD, Miami, FL (610 kHz); KXL, Portland, OR (750 kHz); KTAR, Phoenix, AZ (620 kHz); KOH, Reno, NV (630 kHz); and WNIR, Akron, OH (100.1 MHz FM). Check your local newspapers for other stations in the ABC Talk Radio Network.

The call-in number (a toll call) is 213-879-8255. For calls originating in the Los Angeles area, listen to KABC for the numbers to dial. In all cases, if it's busy, keep trying. If it rings, just let it ring (no matter how long) until they answer. During last year's program I had the chance to chat with many POP'COMM readers and it was lots of fun. Hope to again hear some of my friends.

Tom

PC



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## OFFICIAL NEWS COLUMN OF THE SCANNER ASSOCIATION OF NORTH AMERICA

**"Trunking" Comes To Dayton, Ohio**

After our recent columns on trunking systems we received a letter from Bruce Deerhake that we would like to share with you . . .

Dear SCAN:

Recently, the Dayton, OH Police Department disappeared from its location at around 460 MHz. I figured that they were upgrading their equipment, so I started searching the new 800 MHz band . . . thinking that would be a logical move. Lo and behold, I found them operating on six frequencies from 855.212 to 860.212 in one MegaHertz increments (two-way with repeater, with one of the frequencies apparently used for data transmission). But wait a minute! I also started hearing Dayton Fire Department on these same frequencies, and the channels seemed to swap with one another quite often. I wondered what the heck was going on. Then I found the answer in the October '87 issue of *POP'COMM*: Trunking! . . . When it gets busy it's hard to follow the runs you are interested in. You really can't scan passively, you almost have to get out pencil and paper and write down everything that's going on, just to follow a couple of runs. Like you say in the article, we're going to have to sharpen our scanning skills! Maybe someone can come up with some computer software to decode the channel assignment codes, or perhaps use computerized voice recognition of the dispatcher to follow the assignments. I would appreciate hearing from others who are "trunking scanners." I have scanned in Columbus, OH and it sounds like they are switching over to this type of system. I would also like to hear from anyone who has a list of Dayton, OH police codes, as I have not figured them all out. Keep up the GREAT work, I look forward to every issue!

Very interesting comments from Bruce Deerhake. . . it is input like this that keeps us all up-to-speed on what's happening in the world of scanning! If you can help him out with any of the information he needs, please send a letter to him c/o SCAN, P.O. Box 414, Western Springs, IL 60558. We would also like to hear from anyone else with experience in scanning those trunking systems.

**Emergency Communications  
And Cellular Phones**

First of all, let's put the record straight about our position about cellular phones. Because of our critical comments about the Electronic Communications Privacy Act and some people in the cellular radiotelephone industry, a few readers have thought that we are somehow against cellular phones. Not at all! They are a very useful communications tool—one that we at SCAN often use. It is just that we think that it is only fair that everyone be aware of its limitations. The privacy issue is one that we have spoken of many times in this column and I am sure you are all familiar with. To claim that cellular radiotelephones are private is complete nonsense.

The service also has other limitations that have not received much, if any, notice. There is a common misconception that cellular radiotelephone is the ultimate communications tool in emergencies. In fact, there are those who feel that Amateur Radio and CB radio emergency groups will no longer have any value in the future as the cellular systems come on stream nationwide. The opinion of these people is that when the "phone lines are down" in an emergency, cellular radiotelephone is the alternate route that can always get through. This claim has just as much validity as the claim that the calls are private. In fact, in even minor emergencies the cellular system quickly becomes almost useless. In a recent flooding incident, it was almost impossible to get a dial tone. Sure, some people

were getting through, but there was no priority of which calls were emergencies and which were idle chit chat. In one case I know of it took 40 minutes to get an open line! Obviously, someone could die in that time frame.

Now compare that to a well disciplined emergency radio net. First of all, casual users, upon hearing the emergency, stop using the frequency. Secondly, the net control can prioritize the traffic, so the most urgent messages get through quickly. And, of course, many radio systems have interconnect to the phone line if it is useable. But the key point is that in most widespread emergencies the phone is useless. If it isn't out of order, it is hopelessly clogged with calls preventing the most important emergency calls from getting through. And that applies to a conventional phone or cellular. So the emergency radio net is still the only reliable way of maintaining communications when widespread emergencies happen. Cellular is great for calling in reports of isolated car accidents, but in a big emergency it is like having a "dixie cup and a string!"

**Proprietary Software May Restrict  
Trunking Decoders**

One of the suggestions made in the above letter was the development of decoding software to follow trunking system channel assignments. Maybe that will be possible, but there are some troubling storm clouds that may preclude it from happening. Each of the radio manufacturers has its own software for trunking. Recently, when one radio manufacturer attempted to market a system with software that was compatible with another manufacturer's system, they were sued and lost in court. We've also been told (but have not yet confirmed) that a company building a trunking signal decoder has also been sued. So, unfortunately, software decoding may be difficult to obtain or be very expensive because it would need to be licensed.

On the other hand, Bruce Deerhake's suggestion of computer voice recognition is most interesting. It would appear that voice recognition would get around the proprietary software laws to allow following a conversation. Computer voice recognition technology is in its infancy at this time, however, so it may be a while before we see a practical system that could be used in this application.

**Trunking On Low, High, And UHF Bands?**

Yes, it could happen. In fact, the FCC has actually proposed it! Spectrum efficiency is the buzz-word in Washington these days and there is no technological reason why trunking systems used on 800-900 MHz can't be used on other frequencies. But there are plenty of practical reasons why it shouldn't be implemented on existing bands.

For one thing, the "new" 800 MHz frequencies were set up from the beginning for trunking, with groups of paired frequencies. On low band, VHF and even UHF, the forced implementation of trunking would cause a wholesale disruption of existing systems. Many users of these bands, because of the number of units they operate, have fully loaded their channels and have, for years, been the only users of those channels. Imagine their reaction if they were forced to vacate or share those frequencies, totally re-equip their radio systems with new trunking radios, and develop new operating procedures. Considering the fact that the frequencies they are using are already fully loaded, it makes no sense from the standpoint of frequency conservation or economics.

Also, all of those sharing the trunking frequency group would need to agree on the same brand of radios because of the software compatibility problem. Does this sound like a practical solution to crowded frequencies? We don't think so and our bet is that the FCC will quickly come to the same conclusion. It will probably be a long, long time before we see computerized trunking below 800 MHz.

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# The Christian Science Monitor World Service

## A Venerable Newspaper Goes Electronic

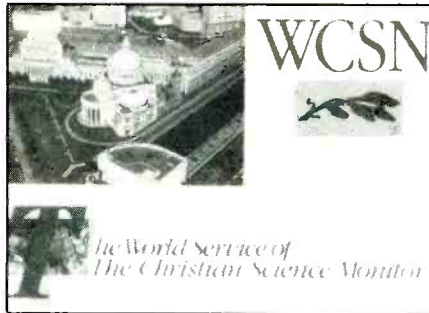
BY MARTIN LOMONACO

**T**here is a new shortwave voice emanating from the United States, but it is being provided by an organization that is well acquainted with international communication. This new station is the World Service of the Christian Science Monitor.

For those of you unfamiliar with it, the *Christian Science Monitor* is an international newspaper published by the First Church of Christ, Scientist in Boston, Massachusetts. The newspaper has a circulation of only 182,600 (compared with, for example, *USA Today* which boasts a daily circulation of some 1,600,000 copies). The people at the *Monitor* are quick to point out that their paper is not religious; it has the reputation of being fair and objective in its coverage of world news events.

As Don Feldheim, spokesperson for the World Service told me, "every church has its forms of public service. Mrs. Eddy (Mary Baker Eddy, founder of the Christian Science Church) determined in 1908 that the church would start a newspaper that would not take sides on an issue, but allow the reader to make up his own mind."

The *Christian Science Monitor* was an innovation in the early part of the twentieth century when "yellow journalism" was going strong with Pulitzer and Hearst competing for readers using bold headlines and



QSL card from WCSN showing Christian Science Church headquarters.

stories bordering on fiction. In that era, a newspaper with an emphasis on unbiased journalism was unique.

It is this same sense of objectivity that characterizes the *World Service of the Christian Science Monitor*. John Huges, Editor and Executive Producer of Radio Broadcasting, told me, "We take great care in making sure that our broadcasts are as objective as possible. Our reporters and staff come from many different countries and, as a private non-government broadcaster, we don't have an ideological axe to grind."

That objectivity is not lost on the World

Service's audience as this letter from a listener in Nigeria attests: "I was deeply carried away by your programming . . . I deem it right that your radio station is more objective, more comprehensive, and more reliable in reporting events."

The World Service broadcasts Monday to Thursday from 1400 to 1200 UTC and on Friday and Saturday from 1400 to 0000 UTC. The programming consists of a two-hour block with news updates on the hour and half hour. In-depth reports and interviews fill in the time between newscasts. Anyone familiar with *Monitorradio* on American Public Radio is no doubt acquainted with this successful approach which uses news gathered from the *Christian Science Monitor's* twenty-one bureaus in the United States and abroad. Each two-hour block is then repeated on the frequency and antenna beam to reach the targeted regions of the world.

But that's not to say that the World Service broadcasts only news, with no religious orientation. Since its formal sign-on March 31, 1987, the station has broadcast a schedule that includes a healthy dose of religious programs.

The Herald of Christian Science is a program service which includes the Mother Church's Sunday Worship Service and a



The Mother Church of Christian Science with the Boston Skyline in the background.

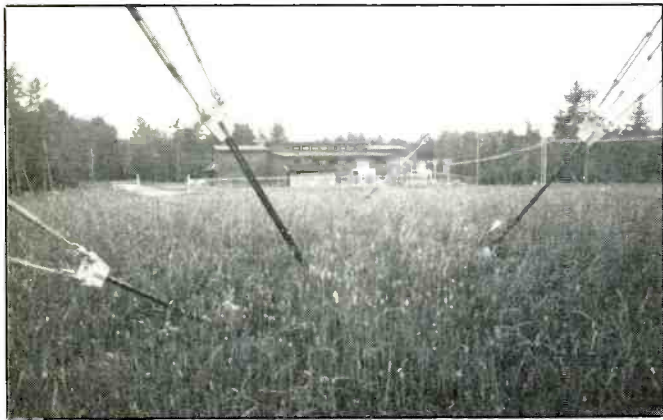


Installation of the satellite up-link on the roof of the Christian Science broadcast center. This dish transmits signals to Westar III.

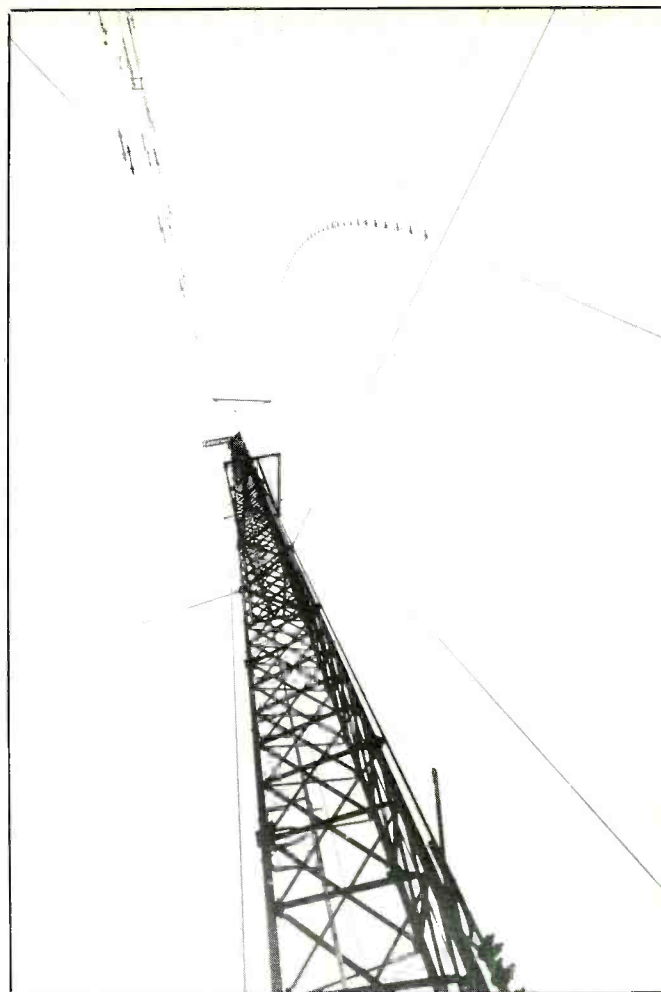
## World Service of the Christian Science Monitor and the Herald of Christian Science Transmission Schedule on WCSN, Scotts Corners, Maine

November 1, 1987 to March 6, 1988

Time (UTC)	Frequency (kHz)	Reception Target Area
1400-1600	17640	Northern and Eastern Africa
1600-1800	15280	Northern Europe
1800-2000	21515	Southern and Central Africa
2000-2200	9465	Southern Europe
2200-0000	9465	West Africa
0000-0200	9850	Northern Europe
0200-0400	9850	East Africa
0400-0600	9465	Southern and Central Africa
0600-0800	7365	Northern Europe
0800-1000	7365	West Africa
1000-1200	17640	West Africa



WCSN's transmitter site in Scott's Corners, Maine.



Part of WCSN's mast and dipole curtain.

two-hour program entitled the *Herald of Christian Science*. It consists of interviews, testimonials, profiles of Christian Scientists and discussions by the editors of Christian Science periodicals. At fifteen minutes past the second hour, a twenty-minute French edition is broadcast, followed by a German edition. The content of these foreign language editions is slightly different from the English edition. This two-hour block is repeated from 0000 to 1200 UTC on Saturday and again on Sunday from 0000 to 1200 UTC. From 1600 Sunday to 1200 Monday the English Language Christian Science Worship Service is followed by the French and German language editions of the *Herald of Christian Science*.

The church is producing one *Herald* program every two weeks, but hopes to have a weekly schedule in the near future. Just as in the World Service broadcasts each of the two-hour blocks is broadcast on a different frequency and with a different antenna bearing to reach a different part of the world.

Programs originate at the World Service studios in Boston. They are then transmitted via satellite to the World Service transmitter in Scott's Corner, Maine. (If you'd like to try picking up their satellite feed, they use Westar III, transponder 2, at 54.8 MHz.)

The transmitter, about twenty-five miles north of Bangor, Maine, whose call letters are actually WCSN, is a 500-kilowatt Brown-Boveri unit manufactured in Basil, Switzerland. The dipole curtain antenna was manufactured by TCI in Mountain View, CA. The low band antenna tunes the 6, 7, 9, and 11 MHz bands while the high band antenna tunes the 11, 15, 17, and 21 MHz bands. The station will use the 13 MHz band once it gets FCC authorization.

From its site up in Maine, the World Service transmitter is ideally suited for the target areas of Europe and Africa. The FCC has mandated that WCSN beam its signals away from the United States. That makes the station a particularly difficult DX catch in most of the United States and Canada, although back scatter does occur which may make the signal available to some listeners in North America, particularly on transmissions beamed to northern Europe and central Africa.

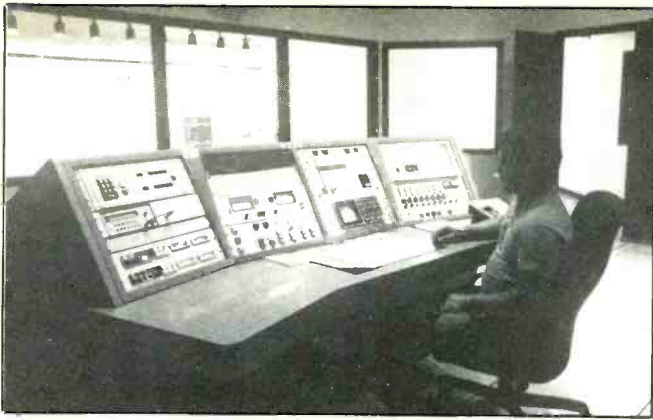
The 500-kilowatt power that WCSN transmits with makes it one of the most powerful non-government broadcasters in the world. This first-class facility lays an exceptionally strong signal into its target areas as this letter from a listener in Germany attests: "... the signal of your station was very good for a station directly transmitted from the United

States of America. Other American stations (VOA, AFRTS, WRNO, WHRI, and others) have not-so-strong signals."

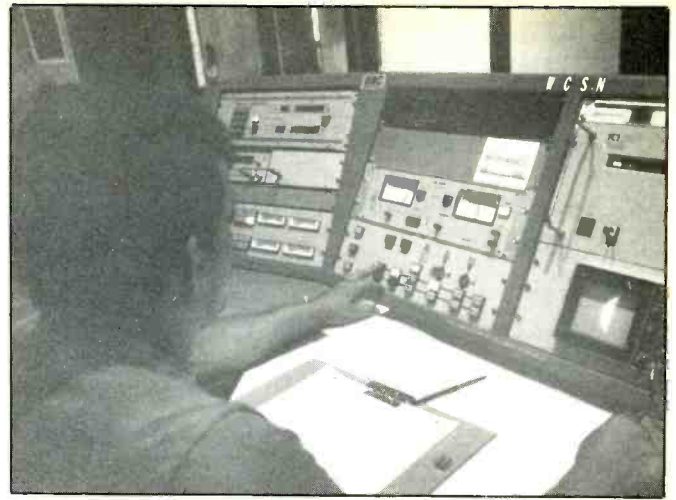
At the present time there is no service to Latin America, Australia, or New Zealand. But the management of the World Service is examining transmitter sites in the southeastern United States to beam to these areas as well as north to Canada. A second transmitter at this site—which will probably be in South Carolina—will make the World Service more accessible to listeners in the United States. The target date for this transmitter to be on the air is early 1989. Although it isn't firmed up yet, this transmitter will probably transmit some of its broadcast day in Spanish and Portuguese for Latin America and French for Canada.

Plans are also underway for providing World Service broadcasts to Asia. In December, 1986, the Christian Science Syndicate purchased KYOI from Marcom, Inc. KYOI is located on Saipan, a U.S. possession that is part of the Northern Mariana Island group in the South Pacific. At the present time KYOI is broadcasting Top-40 hit music to China, Korea, and Japan. But a satellite earth station, soon to be installed, will allow the station to pick up the World Service and Herald of Christian Science feeds.

"Since the Top-40 format is so popular,"



WCSN's transmitter control console. The BBC on the console's left-hand side does not refer to the British Broadcasting Corporation, but rather to Brown-Boveri Company of Basil, Switzerland, manufacturer of the transmitter.



Another view of the transmitter control console.

Don Feldheim told me, "we are trying to figure out a way of integrating it with the news and public affairs of the World Service."

But it seems that the World Service is popular in its own right. About fifty letters a day have come into the station's headquarters in Boston since the station's start-up. If estimates based on this volume of mail are correct then in its short life the station has attracted some 400,000 listeners.

The \$8,000,000 cost for the Scotts Cor-

ner transmitter and sixty-five acre antenna site, plus the \$2,500,000 per year operating expenses are all being paid for by the Christian Science Church. And the church has deep pockets; last year alone the Christian Science Monitor newspaper lost \$20,000,000. But, in the future, the management of the World Service hopes to get outside funding.

According to Don Feldheim, "We wish to get funding along the lines of public radio

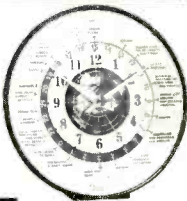
with underwriting, not the advertising used by commercial stations." This form of funding is familiar to the broadcast operations of the Christian Science Church since their domestically distributed *Monitorradio* is financed this way.

Underwriting will allow the World Service to maintain its independence and objectivity, characteristics which the Christian Science Monitor newspaper has been known for for almost 80 years.

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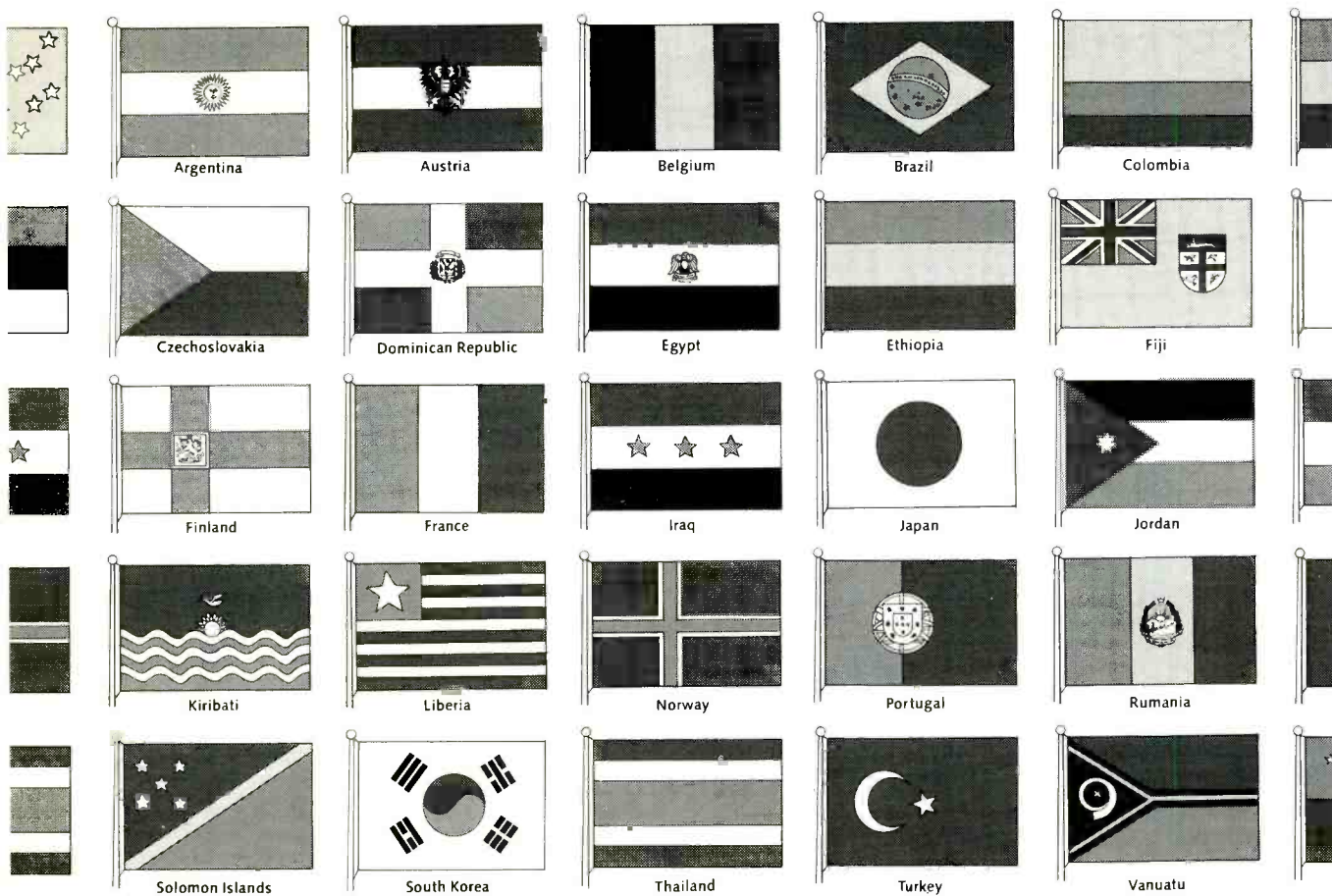
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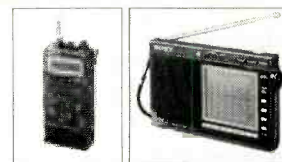
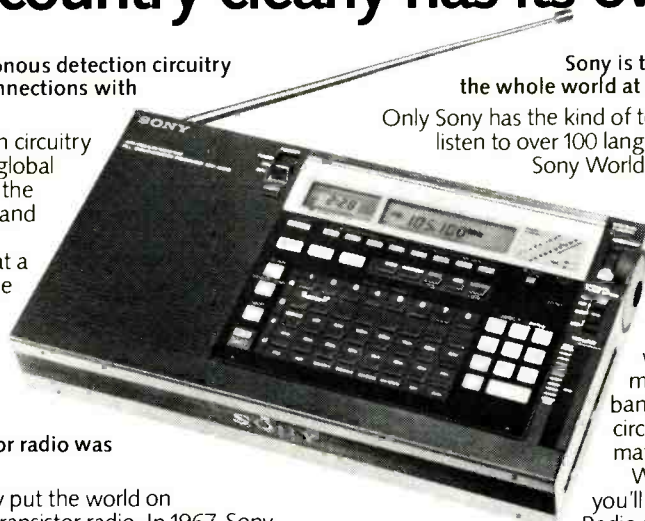
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# Selected English Language Broadcasts

Winter 1988

BY GERRY L. DEXTER

**Note:** This list of English language broadcasts was accurate at the time of compilation, but stations often make changes in the hours and frequencies of their broadcasts with little advance notice. Hundreds of broadcasts are aired in English every day on shortwave, many of them directed to an audience in North America. This is a representative sampling and not intended as a complete reference. Some broadcasters air only a part of their program in English during a given hour or may run the English segment into the following hour. Times are in UTC. The numbers in parenthesis indicate a starting time for English that many minutes past the hour.

Time	Station/Country	Frequencies
000	Radio Exterior de Espana, Spain	9630
	Radio Luxembourg	6090
	Radio Discovery, Dom. Rep.	15045
	All India Radio	9910, 11715, 11745, 15110
	Radio Portugal (30)	9680
	Radio Havana Cuba	6080, 6140, 9740
	BBC	5975, 6175, 6195, 7325, 9515, 9590
	WRNO	7365
	Radio Moscow	5915, 5940, 6000, 7115, 7215, 7310, 12050
	Voice of Israel	9435, 9885, 11610
	Radio Baghdad	11705
	HCJB, Ecuador (30)	9870, 11755, 15115
	Voice of America	5995, 6130, 9455, 9775
	Vatican Radio (50)	6150, 9605, 11780
	Radio Berlin Int'l.	6080, 9730
AFRTS, USA	6030, 9700, 11790, 15355	

Time	Station/Country	Frequencies
0100	Radio New Zealand	11780, 15150
	Radio Canada Int'l.	5960, 9535, 9755, 11940
	RAI, Italy	9575, 11800
	RAE, Argentina	9690, 11710
	Radio Prague, Czechoslovakia	5930, 6015, 6155, 7345, 9740, 11990
	Voice of Germany	6040, 6085, 6145, 9505, 9545, 9565
	KVOH, California	9495
	Radio Moscow	5915, 5940, 6000, 7115, 7215, 7310, 7440, 12050
	Voice of Israel	9435, 9855, 11610
	Voice of Greece (30)	7430, 9395, 9420
	Radio Austria Int'l. (30)	9550
	All India Radio	7215, 9535, 9910, 11715
	Radio Budapest, Hungary	6025, 6110, 9520, 9585, 9835
	Radio Baghdad, Iraq	9705
	Radio Exterior Espana, Spain	9630
WCSN Boston	7365	
Radio New Zealand (45)	15150	
0200	Radiobras, Brazil	11745
	Swiss Radio Int'l.	6135, 9725, 9885, 12035
	Radio Exterior Espana, Spain	9630
	Radio Bucharest, Romania	5990, 6155, 9510, 9570, 11810, 11940
	Radio RSA, South Africa	6010, 9615, 11730



Time	Station/Country	Frequencies	Time	Station/Country	Frequencies
	Radio Havana Cuba	6080, 6140, 9525, 9740		Voice of America	5995, 6130, 9455, 9775
	Voice of Germany	5955, 6035, 7285, 9615, 9690		Radio Berlin Int'l.	9560, 9620
	Radio Warsaw, Poland	6095, 7145, 7270, 9575, 11815	0500	Radio Korea, S. Korea	6060, 9570, 7255
	Radio Moscow	5915, 5940, 6000, 7115, 9635, 12050		Voice of Nigeria	5960, 6120, 6130, 9645, 9700
	Radio Sweden Int'l. (30)	9695		Voice of Germany	6185
	Voice of Free China	7445, 9680, 9765, 11740, 11745, 11860, 15345		WRNO New Orleans	6020, 7125, 7260, 9580
	HCJB, Ecuador	6205, 9870, 11775		Radio Moscow	6930 (or 6950)
	Radio Cairo, Egypt	9475, 9675		Radio Netherlands (30)	6165, 9715
	Radio Tiarana, Albania	9765		Vatican Radio	6185, 9645
	Radio France Int'l. (15)	5950, 9715		Radio Havana Cuba	6090, 6100, 6140, 9740, 11725
	Radio Budapest, Hungary	9520, 9585, 9835	0600		
	Radio Kiev, Ukraine	7260, 9800, 11790, 11875, 13645		Voice of Nicaragua	6015, 6100
	Radio Netherlands (30)	6020, 6165, 9590, 11730		Radio Havana Cuba	9525
	Radio New Zealand	11780, 15150		WYFR, Florida	7355, 9852
0300	Radio Portugal	9705		ELWA, Liberia	4760
	Radio Prague, Czechoslovakia	5930, 6015, 6055, 7345, 9540, 9630, 9740, 11990		Radio Cook Islands	11760
	Voice of Germany	5965, 6010, 6045, 9545, 9565		ABC Perth, Australia	9610
	Radio Moscow	5915, 5940, 6000, 7115, 9635, 12050		SIBS, Solomon Islands	5020, 9545
	Voice of Greece (40)	7430, 9395, 9420	0700		
	HRVC, Honduras	4820		HCJB, Ecuador	6205, 9870
	Voice of Free China	5955, 7445, 9680, 9765, 11745, 15345		Radio Netherlands (30)	9630
	Radio France Int'l. (30)	6055, 9800		Radio New Zealand	9600, 11780
	Voice of Turkey	9560		Radio Havana Cuba	9525
	Radio Belize	3285		Radio Japan	11705
	Radio Budapest, Hungary	6025, 6110, 9520, 9585, 9835, 11990		Voice of Free China	5985
	Radio Havana Cuba	6100, 6140, 9740, 11725	0800		
	Radio Beijing, China	9645, 11660, 11970, 11980, 15445		TWR Monaco	7165
	TIFC, Costa Rica	5055		KNLS Alaska	6095
	Radio Warsaw, Poland	6095, 6135, 7145, 7270, 9525, 11815		Radio Australia	9580
	TWR Netherlands Antilles	9535		BRT Belgium	9880
	Radio Austria Int'l. (30)	6150		WCSN Boston	9465
0400	Radio Cameroons (30)	4850		Radio Austria Int'l. (30)	6000
	Radio Bucharest, Romania	5990, 6155, 9510, 11810, 11940		FEBC Philippines (30)	11850
	RAE, Argentina	9690, 11710	0900		
	Radio Havana Cuba	5965, 6035, 6080, 6140, 9575, 9740		Radio Canada Int'l. (30)	5960, 9755
	UAE Radio, UAE	9640, 11940, 15345		Radio Afghanistan	4450, 15255, 17655
	TWR Netherlands Antilles	9535		HCJB, Ecuador	6130
	Radio Beijing, China	9645, 11980		Radio Australia	6060, 9580, 11720
	BBC	5975, 6175, 9510		KTWR, Guam	11715
	TGNA, Guatemala	5955		AFRTS, USA	6030, 9530, 9590, 15265
	Voice of Israel	9435, 9815, 11585, 11960		Radio Singapore	5052, 11940
	Radio Finland Int'l. (30)	11715, 11755	1000		
	Radio Austria Int'l. (30)	9550		KNLS, Alaska	6085
	Radio France Int'l. (15)	6055, 9800		Voice of Vietnam	9840, 12035
	Swiss Radio Int'l.	6135, 9725, 9885, 12035		NBC Papua New Guinea	4890
				Radio Australia	6060, 9580, 11720
				Radio Netherlands (30)	6020, 9650
				TWR Monaco	9495
				Radio Oman	9735, 11890
				SLBS Solomon Islands	5020, 9545
			1100		
				VOIRI, Iran (15)	11790
				Radio Pyongyang, N. Korea	6576, 11735
				TWR Netherlands Antilles (10)	11815
				Radio France Int'l. (10)	6175, 9805, 11670, 11845, 15195, 15300, 15315, 15365, 17620
				Radio Bangladesh (30)	12030, 15525
				Voice of Vietnam	9755, 12035
				Radio New Zealand	6100, 9600

Time	Station/Country	Frequencies	Time	Station/Country	Frequencies
	Radio Singapore	5052, 11940		Voice of America	15410, 15445,
	Radio Japan	5990, 12035			15580, 17785,
	Radio Pakistan	15605			17800, 17870
	Radio Tirana, Albania (30)	9480, 11855, 15185		BSKSA, Saudi Arabia	9705, 9720
	Radio Australia	5995, 9580		Voice of Vietnam	10040, 12020,
	Radio Thailand	9655, 11905			15010
	Radio Beijing	9535, 15280		Voice of Nigeria	15120
	BBC	9510, 11775		BRT Belgium (30)	17595
1200	Radio Canada Int'l.	9625, 11855, 17820	1700	WRNO New Orleans	15420
	Radio Pyongyang, N. Korea	9600, 9715, 9977		Radio Norway Int'l. (Sun)	11850, 15310
	Radio Ulan Bator, Mongolia	9615, 12015		Radio Yugoslavia	5980, 6100, 7240,
	Radio Bangladesh (30)	15525			11735
	Radio Beijing	9535, 11650, 13650		Voice of Israel	9460, 11585, 13750
	HCJB, Ecuador	11740, 15115,		WHRI Indiana	15105
		17890		BBC	9410, 12095, 15070,
	VOPK Kampuchea	9695, 11938			15420
	Radio Finland	11945, 15400	1800	Radiobras, Brazil	15265
	Radio Tashkent, Uzbekistan	7325, 9600, 9715,		Radio Canada Int'l.	15260, 17820
		11785, 15460		All India Radio	11620, 11935
	Radio Australia	6060, 9580, 9770		Radio Netherlands (30)	17605
	Radio Austria Int'l.	15320		WINB, Pennsylvania	15400
1300	All India Radio (30)	9545, 11810, 15335		Radio Kuwait	11675
	Radio Korea, S. Korea	9750, 15575		Voice of Nigeria	11770
	WRNO New Orleans	9715	1900	VOIRI, Iran (30)	9022, 11930
	Radio Canada Int'l.	11955, 15440		TWR Monaco	11635
	HCJB, Ecuador	11740, 15115,		Radio Norway (Sun)	9590, 11850, 15310
		17890		HCJB, Ecuador	11740, 15270,
	Radio Norway Int'l. (Sun)	9590, 15310, 17775			17790
	BRT Belgium	15590		Radio Afghanistan	9530, 9635
	Radio Finland Int'l.	11945, 15400		Radio Canada Int'l.	15260, 17820
	TWR Netherlands Antilles	11815		Radio Japan	11705
	Radio Pyongyang, N. Korea	9325, 9345		Radio Algiers	9640, 15160, 17745
1400	FEBC Philippines	11850		Radio Kuwait	11675
	Radio Norway (Sun)	15310		Voice of Nigeria	11770
	Radio Sweden	11785, 15345		Voice of Greece (20)	9395, 9425
	Radio Netherlands (30)	15560	2000	Radio Discovery, Dom. Rep.	15045
	TWR Netherlands Antilles	11815		KVOH California	17775
	Radio Finland	15400		Radio Baghdad	9875
	Radio Japan	5950		Radio Sofia, Bulgaria (30)	6070, 9700, 11750
	AFRTS USA	6125, 9700, 11890,		Radio Budapest, Hungary	9835
		15330, 15430		Radio Netherlands (30)	9715, 11740
	Radio Canada Int'l.	11955, 15440		Swiss Radio Int'l.	12035
1500	Radio Pyongyang, N. Korea	7290, 9325, 9940,		Radio Damascus, Syria (05)	9950, 12085, 15020
		9977		Radio Havana Cuba (10)	17845, (50) 15300,
	Radio Veritas, Philippines	9770, 15215			17750
	KVOH California	17775	2100	Radio Canada Int'l.	11835, 151550,
	WRNO New Orleans	11965			17820
	Voice of Greece (40)	11645, 15630,		RAE, Argentina	11710
		17565		WRNO New Orleans	11705
	Voice of Indonesia	11790, 15150		Voice of Israel (30)	9435, 11610, 13725
	HCJB, Ecuador	11740, 15115,		Radio Sofia, Bulgaria	9700, 11720
		17890		BRT Belgium	5910, 9675
	Radio Australia	9580		Radio Australia	15395
	FEBA, Seychelles	15325		All India Radio	5965, 6125
1600	UAE Radio	9640, 11955, 15320,		Radio Yugoslavia (15)	6100, 7240, 9620
		17865	2200	Radio Canada Int'l.	5960, 9755
	Radio France Int'l.	11705, 17620,		Radio Korea, S. Korea (30)	15575
		17795		Radio Vilnius, Latvian SSR	7260, 9640, 11790,
	Radio Budapest, Hungary	9835			11875, 13645
	Radio Pakistan	15605			
	WYFR Florida	9535, 11875			

Time	Station/Country	Frequencies
	Voice of Free China	5985, 9955, 15370, 15440, 17845
	Voice of Turkey	9560
	Vatican Radio	9615, 11830
	Radio Berlin Int'l.	6125, 6165, 11750
	Radio Jamahiriya, Libya	7245
	WHRI Indiana	9770
	Radio Sofia, Bulgaria (30)	6070, 11720
	BBC	6120, 6175, 9590, 9915
	Radio Moscow	7190, 9530, 9720, 9760, 9860, 9880, 11750, 11770, 11850, 12030, 12050, 12060, 13600, 15420
2300	Radio Canada Int'l. (30)	5960, 9755
	Radio Moscow	7115, 7310, 12050, 13665, 15425
	Voice of Israel	9435, 9855, 11610
	Radio Sweden	9695, 11705
	Radio Sofia, Bulgaria	9700, 11720
	Voice of Greece (35)	9395, 11645
	BRT Belgium (30)	9790
	Radio Japan	11800
	Radio Mediterranean, Malta	6110
	Radio Berlin Int'l.	6080, 9730
	Radio Korea, S. Korea	15575
	Radio Kiev, Ukrainian SSR (30)	7260, 9640, 9800, 11790, 11875, 13645, 13775

PC

**SCAN**

**Where Oh Where Do I Send . . .**

There still is understandable confusion about what to send to SCAN and what to send to *Popular Communications*. Even we were confused at first, so don't feel alone! Here's a brief rundown you may want to save for reference.

**Change of Address:** If you're a SCAN member, your old mailing label and new address should be sent directly to: SCAN Address Change, P.O. Box 414, Western Springs, IL 60558. Sending it to *Popular Communications* will cause delays if you're a SCAN member. On the other hand, if you're not a SCAN member, address changes should go to *Popular Communications*.

**Communications Shop Ads:** These should go directly to: PC Communications Shop, 76 N. Broadway, Hicksville, NY 11801. Please, please type your ad or print very clearly.

**Membership Renewal:** Please send your SCAN membership renewal (which includes subscription to *Popular Communications*) only to SCAN, P.O. Box 414, Western Springs, IL 60558. *Popular Communications* subscribers who are not SCAN members should continue to send renewals to *Popular Communications*.

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**Public Service Award Nominations:** Send to SCAN Public Service Award, P.O. Box 414, Western Springs, IL 60558.

**Co-Op Service Orders:** Send to SCAN Co-Op Service, P.O. Box 414, Western Springs, IL 60558.

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**Comments and Suggestions:** Always welcome at either *Popular Communications* or SCAN, or both!

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# Recalling Radio

## Tenderly Turning The Brittle Pages Of Communications And Broadcast History

BY ALICE BRANNIGAN

In our last look back into the past, we saw two of the early broadcasting ships as we paid our own tribute to those amazing young men in their broadcasting machine, *Radio Newyork International*. We thought that this would be a fine time to take a rare peek at the very first commercial vessel ever to be fitted with wireless apparatus.

The ship was the S.S. *Saint Paul*, of the American Line. This was a 554-foot steamer built in 1895. It carried a crew of 400 and almost 1400 passengers (800 of whom were steerage). This ship was chosen, in 1898, by Marconi to demonstrate the concept that wireless was a commercial product that would be useful to merchandise to ocean-going vessels. He was, of course, seeking financial backing from the parsimonious Victorian banking world to mass market his product.

The S.S. *Saint Paul* test was a success, although the equipment that had been placed aboard was removed right after the demonstration. In 1900, the German liner *Kaiser Wilhelm der Grosse* (callsign: DKW) was the first liner to establish a permanent Marconi installation. Shipowners were slow to accept the concept that wireless was as via-



The steamer *Saint Paul* was the first commercial vessel to have a wireless station on board. Marconi put it there in 1898 for a demonstration.

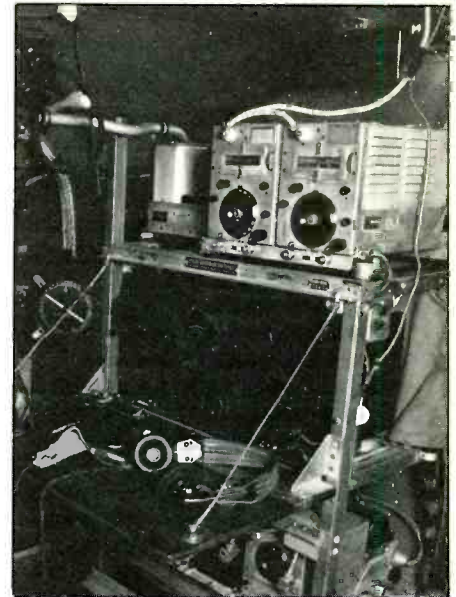
ble asset. They generally regarded it as a newfangled contraption primarily useful for obtaining stock exchange prices when the vessels were sailing sufficiently close to shore to pick up the few limited-range shore stations that existed. Military forces, however, realized its potentials and the Japanese fleet found that it was an invaluable aid in beating the Russians in 1905.

Subsequent tragic events involving the ocean liners *RMS Republic* (January 1909) and *RMS Titanic* (April 1912) served to convince everybody of the advantages of wireless at sea. The S.S. *Saint Paul*, in any event, still became one of the early vessels to have a permanent wireless installation months after Marconi's demonstration. The ship used the callsign SP, which, in the early days when callsigns were a rather informal thing, was also used by the German liner S.S. *Prinz Joachim* of the Atlas Line.

The S.S. *Saint Paul* (which was briefly known as the *USS Knoxville* during its career) eventually was assigned the callsign KSO when ships received formal callsigns from their own governments. The ship was in regular North Atlantic passenger service until being dismantled in 1923.

### Look, Up In The Sky!

I don't wish to be accused of favoring sea-



The radio gear aboard a WWII B-26 medium bomber made good use of every inch of space. To the left of the rack, in the background, you can see the direction indicator of the aircraft's radiocompass.

borne communications over the airborne genre, therefore let's take a look at the small area set aside for the radio operator/waist gunner aboard a WWII Martin Marauder B-26B twin-engine medium bomber. The Marauder could carry only half the bomb load of a B-17 Flying Fortress, and had the reputation of being very tricky (and distinctly dangerous to inexperienced pilots), but was beautiful to look at and racked up an excellent combat record.

The radio operator in a B-26B was confronted with a rather spartan and utilitarian station that served its purpose well. In the photo (copyright 1979 by the Smithsonian Institution), we see two ARC-5 "command set" transmitters mounted side-by-side on the top shelf. The one on the left is a BC-458 (5300 to 7000 kHz), while the one on the right is a BC-457 (4000 to 5300 kHz). These were capable of outputs up to 100 watts depending on the plate voltage used. The separate MD-7 modulator used a pair of 1625 tubes.

Down on the lowest shelf (beneath the drop-down desk) are a pair of remote controlled ARC-5 receivers, a BC-454 (3000 to 6000 kHz) and a BC-455 (6000 to 9100



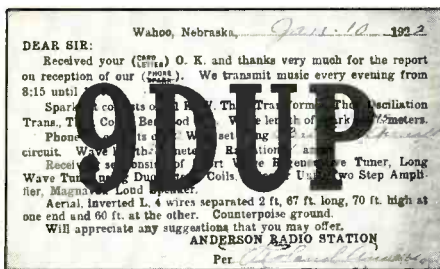
A ship's wireless "shack" in the early days of telegraphy looked like this. The "sparks" weren't part of the crew, but were employees of the Marconi Company. The spark gap transmitter is on the shelf to the right. The receiver is at the center of the operating desk.

kHz). The ARC-5 (also known as the SCR-274N) equipment was extremely versatile and rugged, many postwar hams found that it easily converted for civilian use for Amateur Radio service.

The large, dark (and hard to make out) set at desk-level is a BC-312 (1.5 to 18 MHz) receiver, a version of very similar receivers carrying nomenclatures such as BC-314, BC-342, BC-344, and BC-348. These were all superhet receivers that also found many ham applications after the war.

The callsign of this particular station was "131773;" it is shown on the small black plate on the shelf edge under the ARC-5 transmitter at the right. This callsign related to the aircraft's Air Corps tail number, which was 41-31773. That particular aircraft, dubbed the *Flak Bait* by its crew, flew over Europe with the 322nd Bomb Group of the Eighth Air Force. *Flak Bait*, in its less than two years of combat, took more than 1,000 hits in its 202 bombing and 5 decoy missions. It's on display at the National Air and Space Museum in Washington, DC.

DX monitors of the day reported hearing a rich mix of American military aircraft on 4220 and 4765 kHz as well as other frequencies.



Station 9DUP was a 1923 ham station that regularly broadcast music on 1333 kHz. Inasmuch as commercial broadcasting in this band started in 1921, a QSL from a competent ham station is a genuine rarity!

## Music, Maestro, Please!

There's been so much debate about which station was the first broadcaster on the air—KDKA, WBZ, KQW, WHA, and the others—that we tend to forget that there were many ham stations in those carefree (and regulation-free) early broadcasting days. The first government license for a broadcasting station was given to WBZ (Boston, MA) on September 15th, 1921. Other stations said that, as Amateur and Experimental activities, they had been broadcasting music and other information to the public for many years.

The popular supposition is that, once actual broadcasting licenses started to be issued, the amateur broadcasters either obtained broadcasting licenses or else limited their activities to two-way communications. This isn't true, however. Although you won't find them listed in broadcast station rosters, ham-broadcasters were still to be found in operation after the era of broadcasting stations began.

One case in point was ham station 9DUP, operated by Roland Anderson of Wahoo, NE. This station, with its 10-watt signal, operated as a regular broadcaster on 1333 kHz. A QSL card from this station is dated January 10th, 1922 and plainly states, "We transmit music every evening from 8:15 until 10:00." Remember that many commercial broadcasters were operating with only 10 watts in those days. It was probably enough to cover the entire community and then some, offering the small town its only local broadcast entertainment. By the way, Wahoo, NE is the birthplace of famed movie producer/screenwriter/executive Darryl F. Zanuck (1902-1979)—Zanuck was the man who brought the world *All About Eve*, *The Longest Day*, *The Grapes of Wrath*, and many other film classics.

Station 9DUP's antenna was an inverted "L," with 4-wires separated 2 feet apart. It was 67 feet long; 70 feet high at one end, 60 feet high at the other end. The 'phone transmitter was described as a "British Aircraft" circuit. For two-way operations on about 1540 kHz, a 1-kW spark transmitter was used in conjunction with an amplified regenerative tuner.

Thusfar, 9DUP's rare QSL is the only one we have actually seen that confirms the fact that ham stations located in rural areas continued broadcasting operations, at least for a while, after commercial broadcasting commenced. Certainly an interesting aspect of early broadcasting that cries out for further exploration and discussion.

As for the longevity of 9DUP, by 1923 records indicate that the callsign had been reassigned to an operator in Macomb, IL. Moreover, it did not appear that Roland Anderson had converted his station in Wahoo to a commercial operation. Our QSL card was sent to a listener 85 miles away!

## Be My Guess

Larry Sheehan of California passed along a 1942 postcard showing a view of Pensacola, FL that depicts St. Michaels Church and the San Carlos Hotel. Perched high atop the roof of the hotel is an unidentified radio tower. Larry asks if we can identify the broadcaster whose tower is shown on the card.

Based solely on circumstantial evidence, I'd guess that it's the tower used by WCOA. My guess is based upon the presumption that it is a broadcasting station tower, plus the fact that WCOA was Pensacola's only broadcast station at the time the postcard was mailed.

WCOA began operation in 1926 as "The Breezy Boy from the Gulf" with 500 watts on 1350 kHz. It was owned by the City of Pensacola and was its municipal broadcasting station. By the 1930's, WCOA had been sold to private owners and had changed frequency to 1340 kHz. In the early 1940's the station hopped over to 1370 kHz, and eventually upped its power to 1 kW days, 500 watts at night. By the mid-1940's the WCOA transmitter was located on the Pen-



We think that the station in Pensacola's Hotel San Carlos was most likely WCOA that first began operating in 1926—and is still in operation!



The Abilene Municipal Building, in Texas, was once the site of a station that used those two towers on the roof. Its callsign was KADR on 2458 kHz. It was the ancestor of the modern-day VHF police base station that uses three base channels and six mobile channels.

sacola Bay Bridge, so it must have checked out of the San Carlos Hotel. By 1948, stations WBSR and WEAR came on the air in Pensacola, followed later by WBOP, WHYM, WNVY, and WPFA. But in 1942, it was WCOA alone that was broadcasting to Pensacola. Today, WCOA is on 1370 kHz with 5 kW.

## Formerly Fort Phantom Hill

In 1852 the U.S. Army established Fort Phantom Hill at a lonely spot in eastern Texas. Today, sixteen miles southwest of that spot, the center of the City of Abilene has grown into the busy hub of Taylor County. The year 1926 saw a stately municipal headquarters building constructed in Abilene, a two-story brick structure with marble columns and plenty of front steps. Approximately ten years later, something new was added—two steel towers on the roof of that building.

The towers were for station KADR, that was the municipal police station running 400 watts on 2458 kHz. This station was still in operation after the war, except by 1946 the mobile units could answer back on 30.98 MHz. As technology changed, so did Abilene and, by 1953, the police had moved the base station and 25 mobile units to 46.02 MHz under the callsign KKF229.

Currently, Abilene's police station is known as KQY587, operating bases on 154.74, 154.785 and 154.875 MHz, with mobile units on 154.785, 154.845,

154.95, 158.91, 158.97, and 159.03 MHz. Quite a substantial change from the old KADR days!

Our view is via a picture postcard that depicts the Municipal Building with the two KADR 2458 kHz towers on the roof.

### April Showers

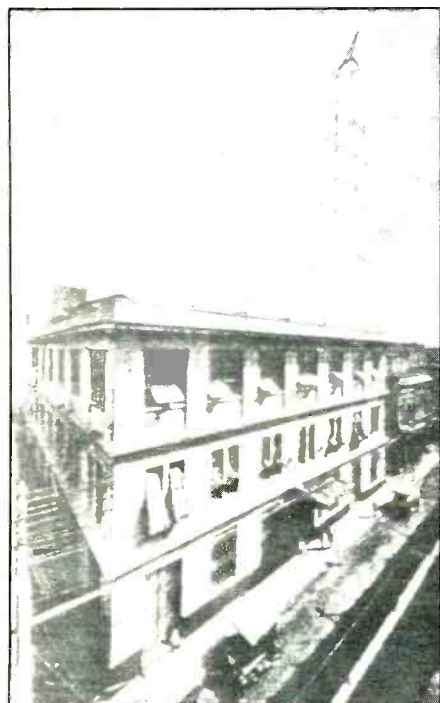
Last April we ran some information on old-time broadcast station PWX, operated (in the late 1920's) by the Cuban Telephone Company, Havana, Cuba. This station operated on 750 kHz and was heard in Europe, Central America, the U.S. and Canada.

When we mentioned PWX we got some feedback, including a note from James Roggentine of Bolingbrook, IL. He reported that his father received a QSL card from PWX in 1925. He thought the photo card would make a nifty companion to the QSL letter we had originally run, although the card has become discolored a bit with the passage of more than 65 years since it was originally mailed. The card shows the towers of station PWX mounted on the roof of the Cuban Telephone Building in Havana.

Next, an alarming photo showing one of the PWX towers in a state of major disaster. A late-1920's hurricane, enroute Florida, took down the PWX towers in a jiffy time. Thanks to Joe Dominguez of Florida for giving us a peek.

### Short Timer

Howard Kemp, Laconia, NH provides us with a 1934 QSL of a shortwave broadcast station that seems to have been little-known and active only briefly. That would be XETE



This QSL photo from station PWX in Havana is really showing its age. You might be able to barely make out the two towers on the roof.



A much clearer photo of one of the PWX towers shows it just after a hurricane came through town on the way to Florida.

of Mexico City, Mexico. The station, owned by Empresa de Telefonos Ericsson, operated on 6130 and 9600 kHz. The station seems to have existed for such a short period of time that it doesn't even appear in most station rosters and records of the era!

### News From Newport News

In 1928, listeners in Newport News, VA first heard station WNEW. This station, on 1310 with 100 watts, was soon to get a new callsign, WGH. Station WGH was owned by the Hampton Roads Broadcasting Corp., 307 Bank of Commerce Bldg., Norfolk, VA. By 1931, the station had been moved to the Hotel Warwick in Newport News. When the government made most broadcasters change frequencies (just prior to WWII), WGH was assigned to use 1340 kHz, and allowed to increase its power to 250 watts.

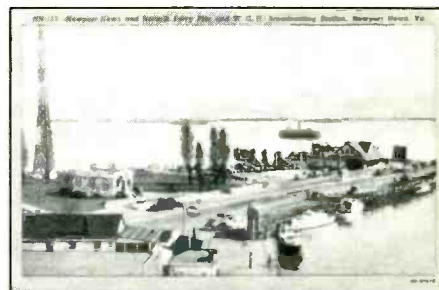
The late 1940's found WGH located in the Portlock Building in Norfolk, with studios there and also in the Warwick Hotel and the Newport News Daily Press Building. The transmitter was located at the end of Jefferson Avenue.

Apparently not happy on 1340 kHz, WGH eventually moved back to its old 1310 kHz frequency and increased power to 5 kW. A few years ago, listeners in Newport News noticed one day that WGH, their old friend on 1310 kHz, had become known as WNSV!

Our view of WGH shows the transmitter site at the end of Jefferson Street near the old Norfolk Ferry Pier. The ferries went out of service when the Hampton Roads Bridge-Tunnel was built. WGH's facilities here included a two-story white stucco building



There's not much to be said for Mexican shortwave broadcaster XETE except that it didn't seem to have the staying power of a well made enchilada.



Station WGH, of Newport News, VA was located at the foot of Jefferson Street near the old ferry pier. Many's the sailor who got his "sea legs" riding the ferry back and forth between Newport News and the Norfolk Naval Station. Thanks to Will Jensby, W0EOM, for sharing it with us.

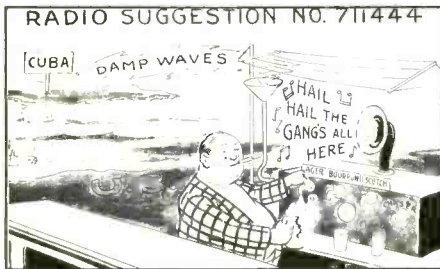
with a single radiator to the north of the building.

### Skyborne Lady

Thanks to the anonymous reader from



This blonde lady holding the microphone while flying through the clear night sky is in 1920's artwork entitled, "The Spirit of Radio." It was used to promote a radio program called, "The Eveready Hour" on WEA/NBC.



During the Prohibition era, more than radio signals arrived on these shores from Cuba. In those years, Cuba was best known for rum, cigars, and Moishe Pucic's famous Cuban delicassy, gribbenes kasheh.

Anaheim, CA who sent us a colorful picture card advertising "The Eveready Hour" radio program (WEAF/NBC 1923-1930). One side of the card shows a rather ethereal lady floating through the air holding a microphone in one hand. The picture is entitled, "The Spirit of Radio." Our thoughtful (but bashful) reader included an unsigned note suggesting that I use the illustration at the heading of these pages in every issue because "I think the artist had you in mind."

Well, I don't know about every issue, but I'm sufficiently flattered to run it in at least one issue! Now, if I could only fit this reader's rather optimistic and idealized image of me, I'd be happy!

### In Good Spirit?

"The Spirit of Radio" reminded me of another kind of spirits, the kind they used to smuggle in from Cuba during the era when station PWX was in operation—that is, during Prohibition. An anonymous cartoonist

from 60 years ago incorporated it all in his classic "Radio Suggestion No. 711444," showing a DX listener tuning in on those damped—er, *damp*—waves from Cuba.

This by way of reminding everybody that of all of the nights of the year not to drive while drinking, New Year's Eve is the best time to avoid the practice. It's a great evening to tune the bands for special holiday broadcasts. Stay sober, stay home, *stay alive!* And have the happiest and healthiest year ever! I have proclaimed it so!

PC

### Historic Ham QSL's

As Bernie Wimmers, Jr., of Vienna, VA commented when he sent us the QSL from station KZ5USN, "I don't think that the age of a QSL means how historic a card could be." That's because the card from KZ5USN is dated 1979, many years more recent than those that have thusfar appeared here.

Bernie is, of course, completely correct. KZ5USN was the ham station of the USN Communication Station at Balboa, Canal Zone. Dave received this QSL for reception in the 28 MHz band—the operator was Dave, W7KJW/KZ5DR.

KZ5 stations were Americans located in the former Canal Zone of the Republic of Panama. That zone, as well as KZ5 stations, are no more since that area has now been returned to Panama. Our naval presence at Balboa still exists, except now it's called Panama instead of the Canal Zone.

RTTY monitors who copy station NBA should quickly recognize the call-sign as hailing from this location. NBA, it



might be recalled is the military station with a sense of humor. While the station usually runs standard "The quick brown fox . . ." RTTY test slips, it sometimes substitutes little gems such as, "Of all the fishes in the sea, the mermaid is the one for me."

As you might surmise from this, there isn't a lot to do if you're stationed there. That's why KZ5 stations used to be heard so frequently. Now, they're not heard at all. The Zone no longer counts as a separate country.

Of all the nations that were on the air, the rarest ones are those no longer there.

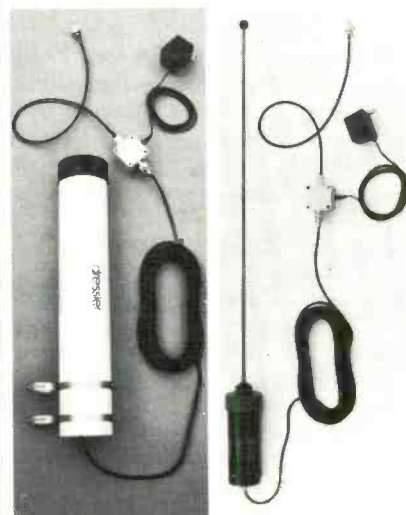
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CIRCLE 43 ON READER SERVICE CARD

## Houston Fire Dispatcher Helps Save Child

A new life saving program and the calm, reassuring voice of a fire dispatcher played major roles in keeping a four-year-old girl alive.

Terry Collins was outside his Houston apartment when he heard his daughter Ashley coughing. She had swallowed a toy baby bottle, and quickly turned blue from a lack of oxygen.

### SCAN PUBLIC SERVICE AWARD

"I got her to where she would quit choking," Collins told the *Houston Post*. "She started up again and quit breathing and turned blue and all that stuff." Collins ran inside the apartment and tried to dial the 911 emergency telephone number on one phone, but was unsuccessful. He tried another telephone and the call went through.

A tape released by the fire department recorded a calm-sounding Collins as he told Capt. Craig Boegler of the Houston Fire Department that his child was choking. Only a few seconds later, Collins's voice was filled with panic as he pleaded with Boegler to send an ambulance.

"I have child choking," he said. "Look, she's choking! Can you send an ambulance please?"

"Okay, sir, I'm going to help you on this," Boegler said. "Is the child by you there?"

Boegler told Collins to bring his daughter inside the apartment near the telephone, and then talked the father through a step-by-step process that would ultimately save the child's life. A neighbor got on the phone and relayed Boegler's instructions as Collins tried to save the child while his wife, Tamara, watched for the ambulance.

Once Ashley was inside, near the phone,



Captain Craig Boegler of the Houston Fire Department.

Boegler explained to Collins that he would have to lay the child on her back, then tilt her head back slightly. Next, Boegler explained that Collins should cover the child's nose and mouth, and give her two puffs and see if her lungs rose.

All the while, Collins was asking if an ambulance had been sent, and Boegler explained that one was on the way, but that Collins would have to continue to try and save his daughter.

Finally, Boegler could hear Ashley over the telephone, coughing and crying in the background. That was a good sign. He then instructed Collins to leave Ashley lying where she was.

According to an account of the incident in the *Post*, the ambulance crew arrived and found Ashley was breathing on her own.

"Her color was good," explained paramedic Randy Cockrell. "She was talking fine, but she was just a little sleepy."

The paramedics could hear wheezing in one lung after they arrived. Ashley was taken to Ben Taub Hospital, where a tiny

half-inch-long toy was discovered in a side windpipe of the child's main trachea tube.

Doctors at the hospital said that the toy bottle was blown from the main windpipe to the side windpipe when Collins administered mouth-to-mouth resuscitation. The girl was anesthetized and the toy was removed with a gripper that was run down her throat.

Later that day, Ashley was reported to be playing at the hospital. She had a sore stomach and throat but seemed to be well.

"She wouldn't be here if it wasn't for 911 and the Houston Fire Department," Collins told the *Post*. "I wasn't calm. They have a lot of patience. I was screaming and cussing and wanting to know where the ambulance was."

Collins was able to help save his daughter's life partly because of a new training program for dispatchers. Dr. Robert Bass, associate director for the fire department's emergency medical services, said that the program was designed for dispatchers to give instructions during life-threatening situations while an ambulance is en route.

"This was a dramatic example of how pre-arrival instructions work," Bass said. "I think it saved this young lady's life."

Boegler said that he has given life-saving instructions over the phone at other times in his six years as a dispatcher, but he used flip cards with instructions to help Ashley rather than relying on memory.

When he heard Ashley's crying over the phone, Boegler said that he felt joy and happiness because "we did something to save somebody."

For his efforts in the lifesaving, Capt. Craig Boegler of the Houston Fire Department will receive the SCAN Public Service Award, which consists of a special commendation plaque and a cash prize. For making the nomination, Hazel O. Edwards of Houston will also receive a commendation plaque. Congratulations to both of you.

### Best Appearing

From the looks of things in this photo, John B. Chambers takes a very businesslike



### SCAN PHOTO CONTEST WINNERS

approach to radio communications. That's no coincidence. Chambers is a professional firefighter and EMT in Bloomington, Illinois.

John mentions that most of the time his scanners are not gathered together for a group picture. They are usually scattered around the house and garage so he is always within earshot of one. He must have a

big house, because he has a lot of scanners: a Bearcat 210XL, Bearcat 210, Bearcat 100, Bearcat 100XL, Bearcat 4-6 Thin-Scan and Bearcat 5-6. John also uses a Johnson Duo-Scan, Motorola Alerter/Monitor and Bearcat weather alert radio.

John's computer is a Radio Shack TRS-III. Also shown in this shot are a Radio Shack CCR-82 cassette recorder and Royal Alpha typewriter.

An Antenna Specialists Mon-31 and various other antennas cut to cover specific frequencies are used, but John writes that most stations in his area are on fairly powerful repeaters. Most of his scanners work well with a small telescoping antenna.



## Best Equipped

Amateur radio operator Chris Gay of Lexington, Kentucky, is interested in railroad monitoring, police and fire activities, and, of course, amateur signals. Chris, known as KU4A on the ham bands, is primarily involved in two meter packet, two meter voice and single sideband on 20, 15 and 10 meters.



Chris uses a Bearcat 100 scanner, Regency tone alert weather monitor, Drake T-4XC transmitter and R-4C receiver, ICOM IC-260A and a Kenwood TH-21A handie-talkie. (An ICOM IC-22S and IC-215 are used for two meter FM and an IC-502 for six meter SSB. These are not shown in this photo.)

Antennas include a mini-quad at 45 feet, a ground-mounted Butternut vertical and a random wire, and a ground plane at 50 feet for two meters. The computer is an IBM PC/XT with an Epson MX80 printer and Alpha Concord 1200 baud modem. Other equipment includes a Kantronics UTU-XT for CW, RTTY and AMTOR, Astron 35 amp power supply, and antenna tuner.

Chris mentions that the sign in the upper right portion of the photo reads: "Warning - FCC regulations forbid operation of this equipment by unlicensed persons, in other words, keep your cotton pickin' hands off the goodies!"



Winners in the Photo Contest this month receive the BMI "Nitelogger" tape recorder activator. Plugged into a cassette recorder and a scanner, it gives a complete record of all communications with no "dead time" on the tape. If you would like to enter the contest, just send a sharp black/white print to SCAN Photo Contest, P.O. Box 414, Western Springs, IL 60558.

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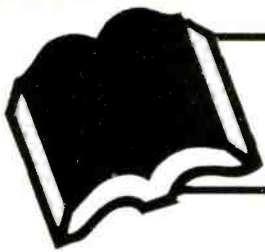
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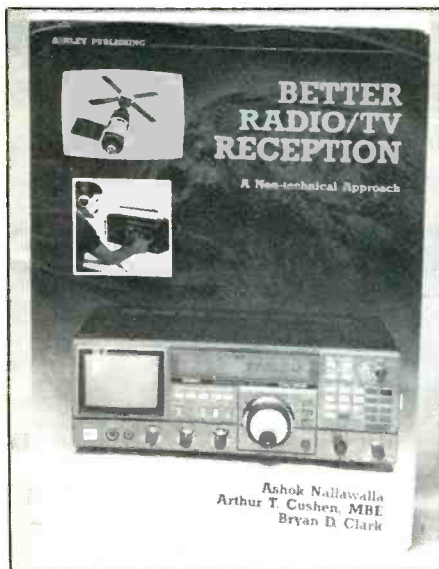


# BOOKS YOU'LL LIKE!

BY R. L. SLATTERY

## Getting Better All The Time!

What with DX activity (thanks to the cooperation of sunspots) continuing to steadily improve, now's the time to make certain that your receiving equipment and how-to-receiving knowledge is aligned and tuned to peak. Rather than doing it the hard way—what we used to call “tune for maximum smoke” when I was in the military—the book *Better Radio/TV Reception* offers a non-technical approach to all aspects of DX'ing.



This book is the work of three authors, Ash Nallawalla (ZL4LM/VK3CIT); veteran DX'er Art Cushen; and Bryan D. Clark, a DX'er with 200 countries verified on shortwave and 100 on the broadcast band. Their 129-page large-format (8½" by 11") book aptly describes itself as a work that plugs the gap between the textbooks and the say-little instruction leaflets that are all too often packed in with radio/TV receivers. In other words, it's for those who know what gets plugged into the wall, but can't understand why electronics gear is made with chips when those items belong in a poker game or a pasture.

In seven interesting chapters, *Better Radio/TV Reception* takes you gently by the hand and discusses radio/TV reception techniques and problems, the various bands (from long wave to UHF) and the DX possibilities of each, receivers (their purchase and use for best results), antennas, accessories, QSL'ing, keeping logs, some insight into various broadcasters, and many

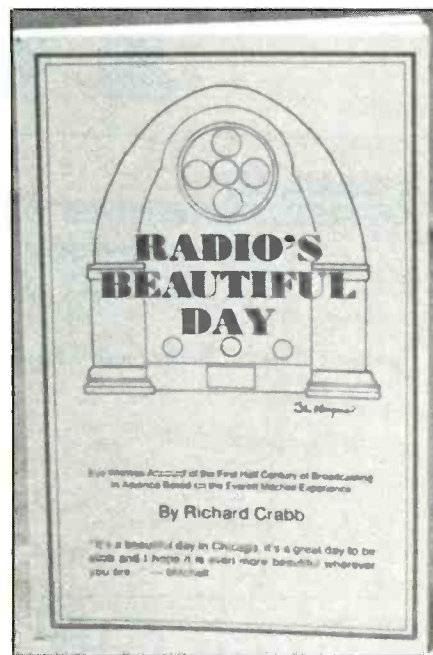
tips and techniques for DX reception that have proven useful to the book's authors.

The book is filled with illustrations and charts that help it in filling its mission of providing a large serving of easily-understandable and very useful information at a time in communications technology when many folks are starting to numb-out on complex technical specs and treatises that are best presented to MIT graduates and others of their ilk.

You can get this worthwhile book from our friends at Gilfer Shortwave, 52 Park Avenue, Park Ridge, NJ 07656. The book is \$14.95 per copy, plus \$2 postage/handling.

## It's A Beautiful Morning

*Radio's Beautiful Day*, by A. Richard Crabb, is the memoirs of Everett Mitchell, pioneer Chicago radio personality, the “Voice of Firestone,” and (for 30 years) host of radio's “National Farm and Home Hour.”



Mitchell had a major role in putting Chicago station WENR on the air in the crystal-set era. That was the start of a career in broadcasting that eventually made him one of the major on-the-air personalities of NBC at a time when it was easier to get lost in the shuffle of a major network than to become well known. Mitchell's peak popularity was achieved during the years of the Great Depression when his radio programs helped lift

the fog of gloom shrouding the nation. This was achieved by his “Beautiful Day” philosophy and the opening line of his broadcasts: “It's a beautiful day in Chicago and I hope it's even more beautiful wherever you are.”

Crabb's book, of course, is more than a biographical sketch of Mitchell's career in radio broadcasting during the industry's early and halcyon years. In a larger sense, it is an account of the first fifty years of broadcasting, complete with many anecdotes concerning the industry's planning, problems, personalities, as well as the start of the networks and the new factors that development brought into play. Even if you never heard (or heard of) Everett Mitchell, if you have even the slightest interest in how radio broadcasting started and evolved, this 334-page book will give you an insightful and extremely personal view of those exciting years.

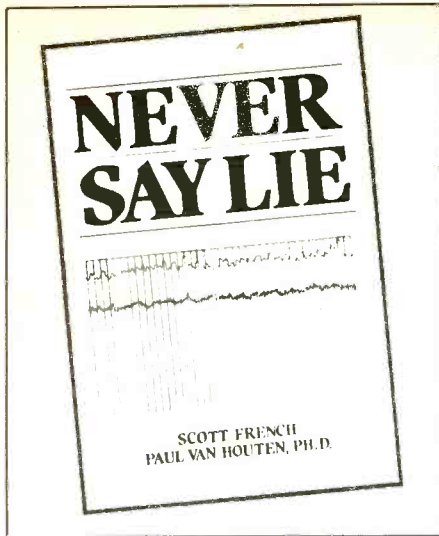
*Radio's Beautiful Day* is filled with great photos from those early days of broadcasting—Billy Sunday boxing with the Devil; a photo of the famous big city announcer who was fired from Mitchell's farm program when he couldn't tell the difference between a haystack and a strawstack; and all sorts of other people from that wonderful era.

*Radio's Beautiful Day* is \$10.95, plus \$1.50 for postage. It can be ordered from Crossroads Communications, P.O. Box 7, Carpentersville, IL 60110-0007.

## My Bonnie Lies Over The Ocean (And Everywhere Else)

*Never Say Lie* is a new book that is probably the world's first in-depth look at the techniques and legal aspects of lie detection, plus detailed explanations of methods that effectively fake out those detection techniques.

These days, lie detection techniques are used by the FBI, IRS, CIA, job screening firms, employers, lawyers, the military, law enforcement agencies, and many others. Countless methods may be involved from highly sophisticated electronics gizmos such as voice stress analyzers and polygraphs, to the supersecret science of kinesic interviewing, drug testing, graphology (handwriting analysis), and “body language.” You'll be shocked by the many signposts that can alert the trained observer that someone is fudging the truth. One quick (and seemingly) innocent scratch of the forehead and the ball game could be over! There are no less than thirteen different ways for a person to firmly deny that they're lying that clearly indicate that they're really lying through their teeth!



Of course, many states now have laws that bear upon the use of electronic lie detection technology (these are all explained in this book), but with many alternate methods now in use, such laws may well have only a limited value in protecting the average unaware person from the subtle probing and sneaky head games that could be taking place without their knowledge and yet end up easily ruining their reputation, job, career, or entire life!

Fact is, that many nervous people who aren't lying often do and say inadvertent and casual things in the normal course of their conversations with authority figures (such as interviewers, company executives, etc.) that somehow give off signals that they are attempting to deceive.

*Never Say Lie* explains all the lie detection techniques, tells how they work and what they're looking for. Then it goes on to provide an abundance of information on how a person (lying or telling the truth) can walk away from the test or interview with confidence and no fears. With the right information at hand, it's actually possible to confound and beat the most sophisticated voice stress and polygraph technologies, drug tests, "honesty" screenings, body language observations, and everything else.

As a side (and extremely useful) benefit, once a person has the information on these various things, they should be instantly able to spot when someone's trying to lie to them! It's all a part of the art and science of manipulating the truth-detector, or (as described in the book), "information alignment through knowledge, discipline, and artificial agents."

Learning to "lie with a straight face" is a distinctly possible practice. This well written, fully illustrated 157-page large format volume looks to be a must-have survival manual against the new games people play.

*Never Say Lie* was written by Scott French (author of *The Big Brother Game* and co-author of *Ninja 1990*), and Paul Van Houten, Ph.D. They have researched their

topic well, and explain it with ease. *Never Say Lie* is \$19.95 plus \$2 postage/handling (to addresses in USA/Canada/APO/FPO) from CRB Research, P.O. Box 56, Commack, NY 11725.

### On A Slow Boat To China

An interesting and attractive new book called *Sailing With Ham Radio*, by Ian Keith (WA6DNU), and Derek Van Loan (WB6VXS) has arrived on the scene. It's a (sort of) spiral-bound 136-page book that offers lots and lots of valuable information and ideas on getting the most from the potentials of ham radio on shipboard.



Besides basic info on getting a ham ticket and understanding electricity and magnetism, there's detailed data on special maritime considerations for operating, band selection, antenna installation, lightning protection, equipment selection, etc. Actually, there's much in this book that can be of use and interest to any person with a radio installation aboard a non-commercial vessel (especially sailing vessels, since the authors are experienced with boats of the wind-in-the-canvas genre) using HF comms.

The authors are blue-water sailors who have cruised the oceans of the world. Their experience shows through. Although the book more than adequately lives up to the letter of its title, it would have been a beneficial extra had it included a chapter on obtaining land-based licenses from various nations so that mini-DX'peditions could be set up from little-heard DX nations and isolated islands encountered while the vessel was enroute.

This slickly done (with 95 illustrations) book is available at \$9.95 (plus \$1 postage/handling) from Paradise Cay Publications, 1001 Bridgeway #405, Sausalito, CA 94965.

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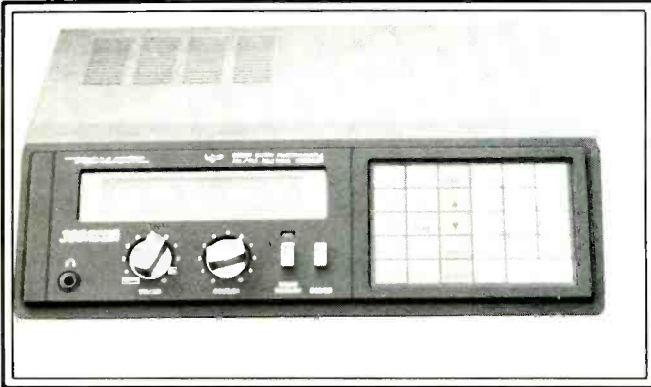
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# New Scanning Horizons!

## An Introduction To The Exciting New World Of Scanning Above 800 MHz

BY RICK MASLAU, KNY2GL



With a very minor modification, the Realistic PRO-2004 receives all frequencies between 800 and 1300 MHz.



The ICOM R-7000 is an all-band scanner that tunes to 1300 MHz.

It's snuck up on most scanner owners. It's been happening for the past year or two. Maybe you haven't yet noticed what's going on, but the world of scanning no longer fizzles out at 512 MHz, the "top end" of the old UHF-T band. Remember when the 470 to 512 MHz band started to be included in scanners! Doesn't seem like it was *that* long ago, and now it's no longer the *new* frontier!

The current state of scanning now zooms above 800 MHz. Equipment for monitoring above 800 MHz is now readily available but, until now, virtually no information on what's going on there has issued forth to the public. What's going on there, and why hasn't it been explained to you? In fact, the ground rules for monitoring 800 to 1300 MHz are quite different than what you've been used to dealing with in the 25 to 512 MHz bands—and they make a *big* difference!

Looks as though now's a good time to take stock of the art and science of scanning between 800 and 1300 MHz since it's here to stay.

### The Hardware

Perhaps you've noticed that many of the latest high-tech scanners cover frequencies above 800 MHz in *addition* to their capabilities on lower frequencies. Included in currently and recently produced scanners covering frequencies above 800 MHz are:

Regency TS-2 (806 to 950 MHz); MX-4000 (800 to 950 MHz); Regency handheld HX-2200 (800 to 950 MHz); Uniden Bearcat BC-800XLT (806 to 912 MHz); ACE AR-2002 (800 to 1300 MHz); Realistic

PRO-2004 (800 to 1300 MHz—if modified for continuous coverage per instructions in *POP'COMM's* July '87 issue); ICOM IC-R7000 (800 to 1300 MHz); Yaesu FRG-9600 (800 to 905 MHz).

A converter for tuning in 800 to 900 MHz on your existing scanner having 416 to 516 MHz receiving capabilities is the model UV-800. It's made by RF Limited, P.O. Box 1124, Issaquah, WA 98027. A converter for changing 902 to 928 MHz to 422 to 448 MHz for standard scanner reception is made (in kit form) by Hamtronics, Inc., 65 Moul Road, Hilton, NY 14468.

Hamtronics also makes an excellent 800 to 960 MHz low-noise signal-boosting pre-amplifier (Model LNG-800). This is a GaAs-FET unit that provides about 15 dB gain.

### What's To Monitor?

The equipment is capable of monitoring many different types of stations now beginning to rush to these frequencies. The popularity of communications equipment for these bands, frequency shortages in some localities in the VHF/UHF bands, newly developing communications services, and last, but not least, communications privacy.

Looking over the band assignments in the United States, we see:

800 to 806 MHz: This is UHF-TV Channel 69, with the video on 801.25 MHz, audio on 805.75 MHz. TV channel assignments here include San Diego, CA; Hollywood, FL; Atlanta, GA; Paintsville, KY; and Allentown, PA. These are the highest frequency TV stations in the United States.



Uniden's popular Bearcat 800XLT is a pioneer in 800 MHz scanning technology.

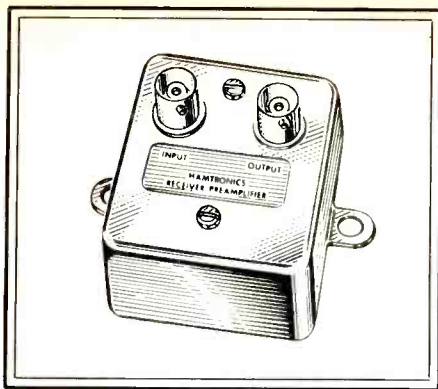
In Toronto, Ont., there is a station authorized on Channel 79 (860 to 866 MHz, video on 861.25 MHz, audio on 865.75 MHz).

806 to 821 MHz: These frequencies are host to mobile units of Land Mobile services of various types, with conventional systems noted between 806 and 816 MHz. From 807 to 821 MHz, there are also so-called "trunked" systems that utilize several channels each. Paired with 851 to 866 MHz frequencies.

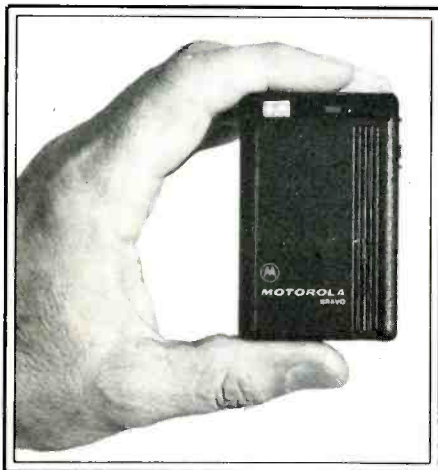
821 to 825 MHz: A band that is reserved but will probably be assigned for Land Mobile satellite uplinks as these technologies become available. To be paired with 866 to 870 MHz.

825 to 845 MHz: Mobile units for Cellular Telephone systems, with the 835 to 845 MHz sub-band allocated to subscribers affiliated with "wireline" cellular services.

845 to 851 MHz: Reserved for future cell-



This Hamtronics LNG-800 signal booster does a fine job of extending the receiving range of any 800 to 960 MHz scanner installation.



Radio paging services are active in the 929 to 932 MHz range.

ular Mobile Telephone (CMT) mobile units as the service expands. Paired with 890 to 896 MHz.

851 to 866 MHz: Base station repeaters working mobile units operating from 806 to 821 MHz. Conventional from 851 to 861 MHz, trunked from 855 to 866 MHz.

866 to 870 MHz: Reserved for probable use in the Land Mobile services as host to satellite downlinks as such become available in the future.

870 to 890 MHz: These are the CMT base frequencies that are used in conjunction with mobile units on 825 to 845 MHz. Assignments between 880 and 890 MHz are for facilities operated by "wireline" (telephone company) stations.

890 to 896 MHz: Reserved for future CMT expansion. Bases/repeaters.

896 to 902 MHz: Reserved for future Land Mobile uses (mobile units paired with bases/repeaters on 935 to 941 MHz).

902 to 928 MHz: A recently allocated Ham band, but also used for various and sundry other services including ISM (industrial, scientific, medical) on 915.0 MHz, and for automatic vehicle monitoring.

928 to 929 MHz: Operational fixed, domestic fixed public systems.



← A recently passed law making CMT monitoring illegal seems to have, if anything, aroused the interest of many people who would have probably otherwise ignored the service.

CMT's come in many guises including mobile, maritime, and even handheld. This Motorola Triton 880 can be carried in a briefcase.

929 to 930 MHz: Radio paging (private systems).

930 to 931 MHz: Reserved for future use by radio paging systems.

931 to 932 MHz: Radio paging (telephone company operated systems).

932 to 935 MHz: Miscellaneous point-to-point (federal and private).

935 to 941 MHz: Reserved for future Land Mobile system base/repeater use (paired with 896 to 902 MHz mobile units).

941 to 944 MHz: Reserved for future federal and private point-to-point use.

944 to 947 MHz: Experimentally being used at present for an air/ground telephone service aboard airliners. Ground stations in many major metropolitan areas. Also reserved for possible future use by broadcasters for intercity relay facilities and for links between the studio and the transmitter.

947 to 952 MHz: International fixed public, also broadcast station use for voice (only) links between the studio and transmitter.

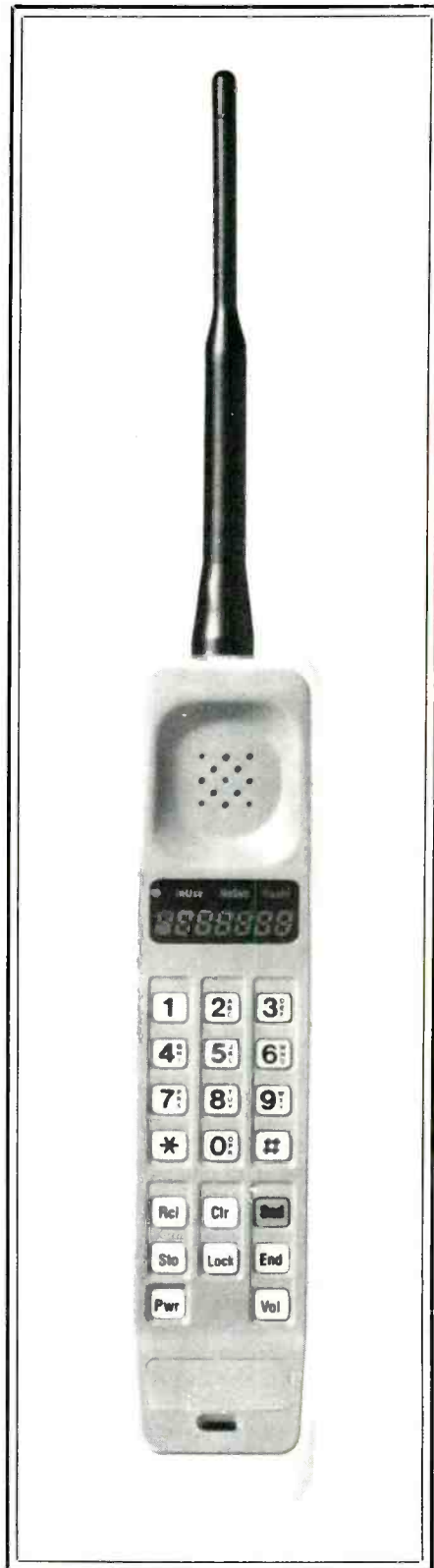
952 to 980 MHz: Operational fixed, domestic fixed public.

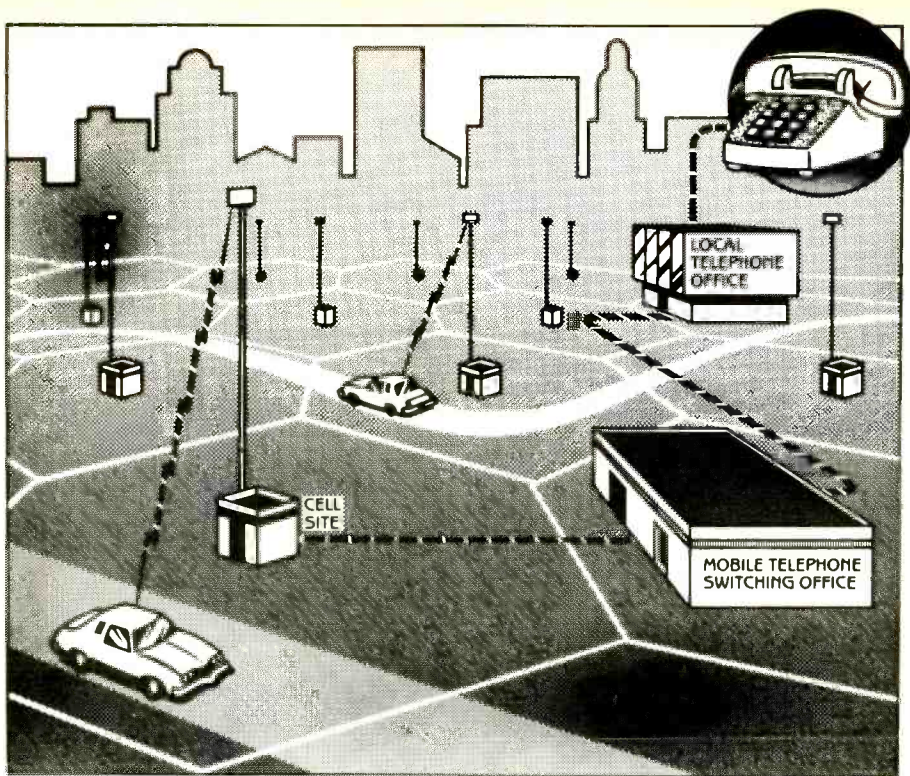
960 to 1215 MHz: Radio navigation.

1270 to 1295 MHz: A ham band that has recently been opened to all licensed operators including Novices and Technicians. The *National FM Simplex Calling Frequency* here is 1294.5 MHz, although other simplex frequencies are at 25 kHz intervals between 1294.025 through 1294.975 MHz. Repeaters operate at 25 kHz intervals from 1282.025 MHz through 1287.975 MHz. The repeater inputs are exactly 12 MHz lower in frequency (1270.025, 1270.05, etc.).

### Cellular Topics

The CMT industry was successful in lobbying for the passage of legislation that forbids the monitoring of certain types of communications. Since it's virtually impossible to detect violations of this law, and since it doesn't appear likely that any federal agency intends investigating or prosecuting any suspected violations, it has created a large body of people who want to monitor the "forbidden" CMT communications! Those





Scanner owners seeking to listen in on CMT calls observe that calls sometimes seem to abruptly end in mid-sentence. This happens when the CMT subscriber moves from one "cell" to another and the call shifts to a different operating frequency.

who monitor the 870 to 890 MHz band report no shortage of CMT chatter including drug deals, business deals, political deals, and all sorts of other deals intermixed with what sounds like an army of aging and married would-be Lotharios calling their intended sweetie-pies on the sly.

Monitors also mention that sometimes, just when some calls are getting interesting, they suddenly seem to vanish. This is not at all uncommon when it comes to monitoring CMT and reflects the way the CMT network operates.

CMT technology is based upon a grid of hexagons (called *cells*) that represent limited geographic areas. Each cell contains a CMT receiver, low-power transmitter, antenna, and control equipment located in a building called a *cell site*. Various remote cell sites in a given area are all connected to a Mobile Telephone Switching Office (MTSO), which is hooked to the regular landline telephone system. With its electronic switching capability, the MTSO monitors the mobile units and automatically shifts in-progress conversations between the equipment in various cells as the caller moves from one to another.

Each cell has its own set of operating frequencies, thus permitting reuse of every channel for many different simultaneous conversations in the given service area. Persons engaged in CMT calls are unaware of all of the switching of cells and frequencies, but outsiders monitoring the calls on scanners are abruptly disconnected when the calls are switched to a different cell and frequency as the CMT subscriber moves about.

It may be possible, using the scanner's *search/scan* feature to locate the same conversation as it continues on another frequency, but only if the scanner's receiving range includes the cell in use.

### Signal Snagging Techniques

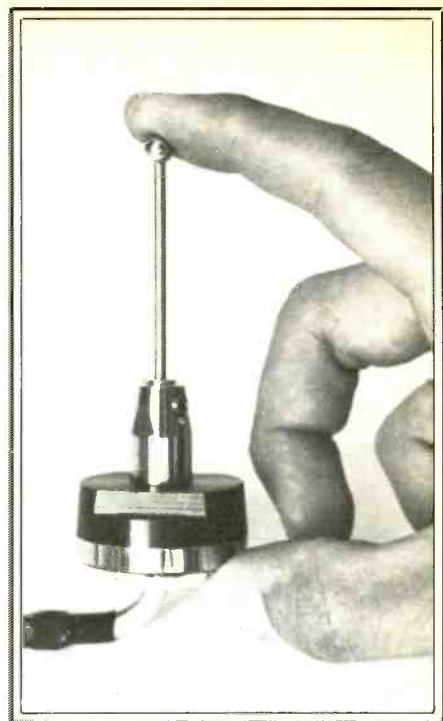
Using a standard 30 to 512 MHz scanner antenna system, you'll hear some 800 to 1300 MHz communications. Problem is that you'll catch only a fraction of what you'd otherwise hear with a proper antenna system designed for reception of frequencies in that portion of the spectrum.

Among the "all band" scanner base antennas that are intended for reception on frequencies as high as 1000 MHz are Antenna Specialists types MONR-31, MONR-38, and MONR-64; the Encomm D-130; the Grove ANT-1B, and the Scan-Tenna.

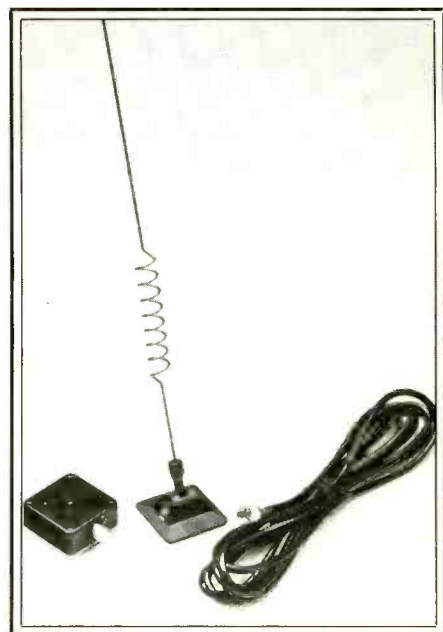
Mobile scanner antennas that will cover all frequencies between 25 and 1000 MHz include Antenna Specialists types MONR-32, MONR-33, and MONR-51.

The Rhoades Super Antenna is an active antenna intended for indoor use. It's rated for use in the 800 MHz band.

For those interested in a "serious" professional base station antenna system, there are several available. Antenna Specialists types ASP-973, ASP-950, ASP-951, ASP-952, ASP-953, ASP-954, ASP-955, ASP-963, ASP-964, ASP-965, ASP-970, ASP-989, ASP-960, and ASP-962 are formidable for directional and omnidirectional use. They are, of course, more expensive than types intended for scanner (hobby) use.

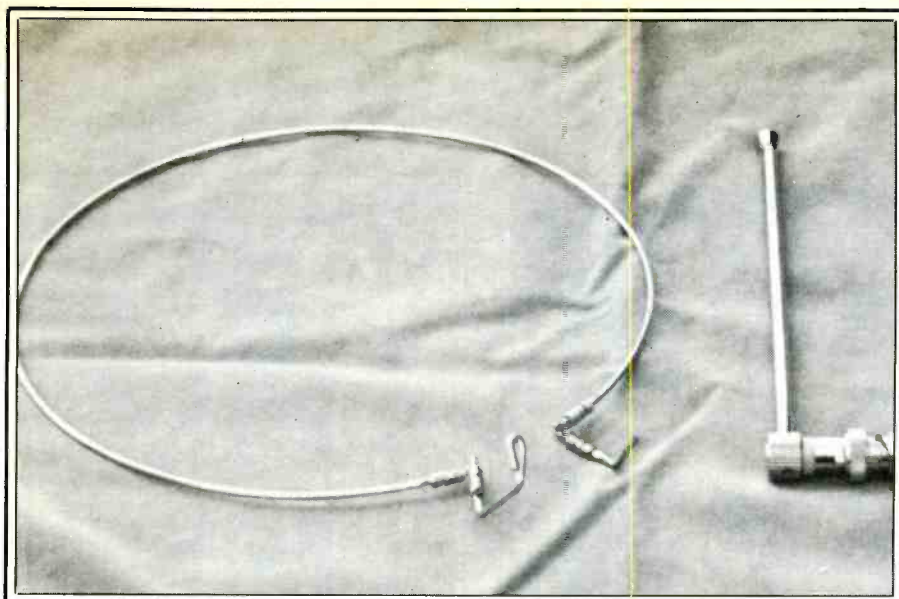


As seen in this 900 MHz mobile whip, at these frequencies we're dealing with signals having a wavelength of only a few inches.



A CMT mobile whip intended to be used on a vehicle windshield can also be used on a window in your home. The one in this photo is from Antenna Specialists Co.

At the other end of the cost and complexity scale, there are several inexpensive shortcuts to monitoring antennas for the 800 MHz region of the spectrum. First, don't overlook the possibilities of ham antennas intended for use in the 902 or 1270 MHz bands. Also, you can easily purchase a windshield stick-on CMT mobile antenna and use it at your base station. Simply glue



Two cheap-'n'-dirty antennas for 800 MHz band reception. On the left is an indoor UHF-TV loop antenna (can be jury-rigged to a scanner antenna connector in a few minutes). On the right is the telescoping whip that comes with most new scanners and normally ignored.

it to your window and it will do a pretty good job.

Passable local reception at very low cost can be obtained by using the basic telescoping whip antenna that is supplied with most scanners. Since the wavelength of an 800 MHz signal is extremely short (only a few inches), just collapse down the whip and connect it directly to the rear of the scanner itself and you've got a resonant antenna!

Another way to go is by the use of one of those 7-inch UHF-TV indoor loop antennas. With a little jury-rigging, one of these can be hooked to an antenna connector and attached to the back of a scanner. These antennas are designed to work between 500 and 900 MHz and you can buy them for about a dollar. Some UHF-TV stations even give them away free!

### Cable Fable

To many scanner owners, there's a belief that RG-58/U coax is the cable of choice for any and all runs of 50 feet or less between the equipment and the antenna; for longer runs, use RG-8/U. This rule-of-thumb probably entered scanning via the world of CB. For CB purposes and most scanner applications below 174 MHz, this advice is tolerable. For higher frequencies, it's only so-so or simply awful.

There are many types of coaxial cable, and all of it causes signal attenuation (loss) to one extent or another. The longer the run of cable, the more the attenuation; the attenuation being more pronounced as the frequency increases. When you're dealing with frequencies around 800 MHz and above, cables such as RG-58/U and even RG-8/U have so much signal loss that many of the incoming signals are reduced to nothingness by the time they arrive at the scanner.

Fact is, that (regardless of the frequency band) special low loss cable is preferred. For use at 800 MHz and above, it is strongly recommended for best results. Cable recommended for 800 MHz work includes RG-213/U, Belden 8267, Belden 9086, Belden 9913, Nema 1130, and Andrew Corp. Helix in 1/2-inch or 7/8-inch size. All of these, while more expensive than what you're using now, will produce substantially improved results on frequencies above 400 MHz; above 800 MHz they're practically a necessity. Some of these are semi-rigid cables.

One other word of advice, some of these cables are intended to be used with Type N (Amphenol UG-21D) connectors instead of the PL-259 or BNC connectors with which you normally work. These connectors are far better to use insofar as efficiency is concerned, although it will undoubtedly require an adapter or a new chassis mount antenna coupling for your scanner.

Your best bet is to speak to someone behind the counter at a communications shop. Explain that you want to get the best 800 MHz band monitoring results possible on your scanner; then absorb all words of wisdom sent your way. The information on feedlines given here is intended mainly to let you know that 800 MHz is a different ball game with different rules.

### On The Horizon

The frequencies between 800 MHz and 1300 MHz are destined to be the new frontier in communications. Many major users are already in full operation there with voice and data operations. You won't want to miss out on sharing in the expansion to this latest frequency plateau.

The equipment is here, the stations are here—but where are you?

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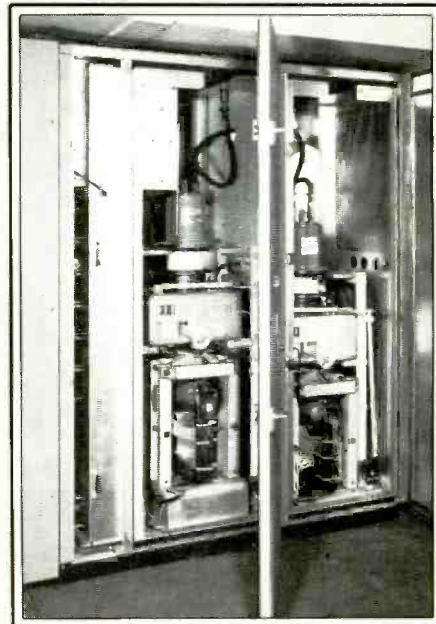
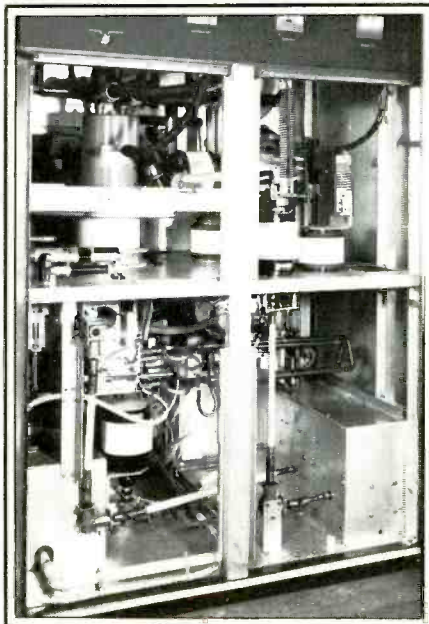
# POP'COMM Foto File

## A Look At NDXE's Planned Equipment

Stereo shortwave broadcaster NDXE (Opelika, Alabama) hopes to be in operation by next year. The station tells us that they are working with Marconi Communications' engineers to install a station that will put a concert quality 60-megawatt (ERP) signal in every corner of the globe.

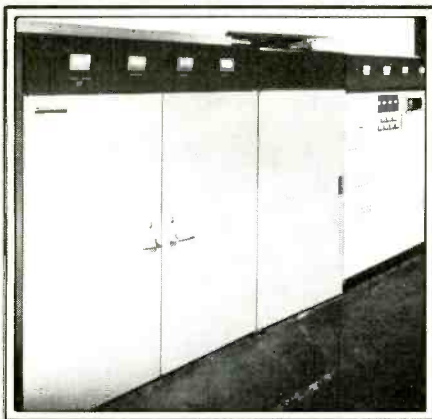
The transmitting station, known as *Big Mac*, is claimed to be the "costliest and most powerful privately owned and first stereo HF station in the world." NDXE's H. Dickson Norman advises us that his station's engineers invite comments from POP'COMM readers on this new station. Address your comments to: Engineering Department, NDXE Global Radio Corporation, P.O. Box 569, Opelika, AL 36801.

**PC**

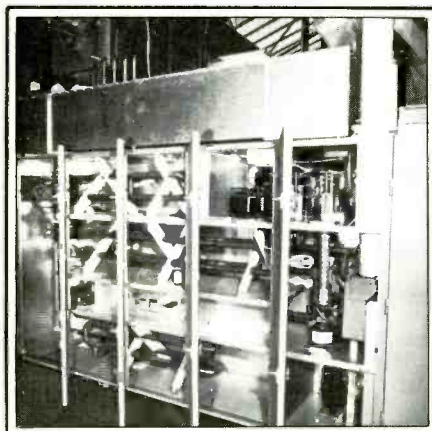


The transmitter's final RF stage offers automatic adjustment of output coupling and tuning to provide full power when matched to a 50-ohm antenna offering a mismatch not exceeding 2:1 VSWR.

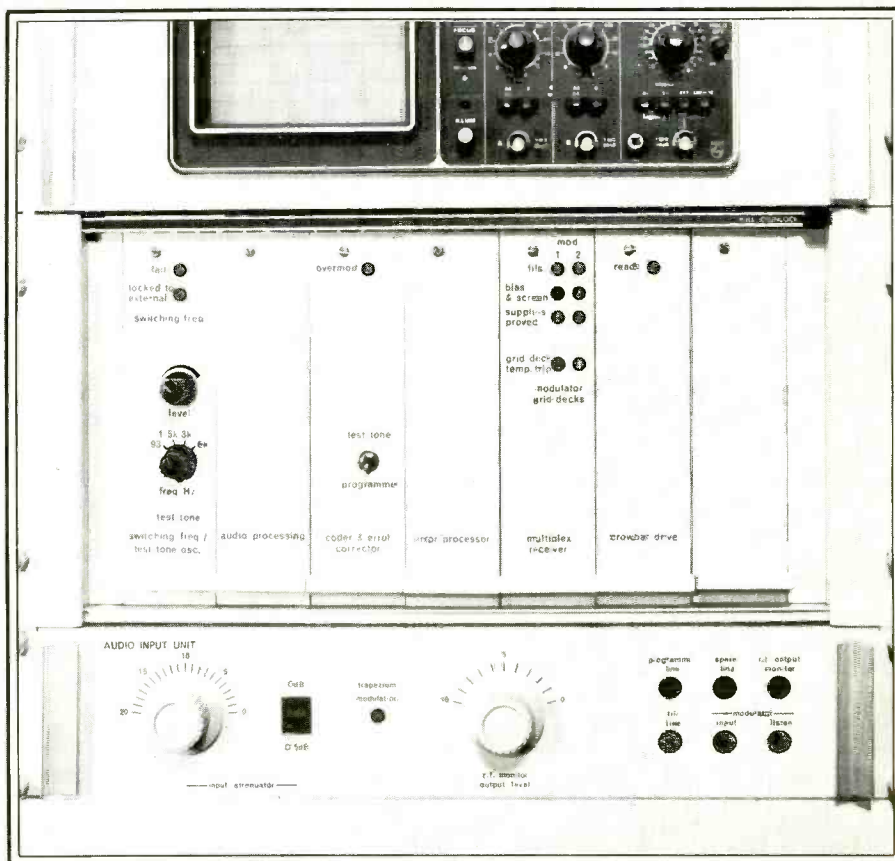
Opening the doors on the half-million watt transmitter reveals macho-sized transformers. The main H.T. rectifier requires an 11-kV 3-phase power supply.



The Marconi 500-kW Type B-6128 shortwave transmitter operates on frequencies between 3950 and 26100 kHz. Up to 100 preselected frequencies may be programmed and stored in the unit's memory and the transmitter will automatically tune itself up on each frequency selected.



The "Big Mac's" RF output circuits. The mean power of any spurious RF emission below 40 MHz (into a matched test load) is less than -70 db relative to the unmodulated power.

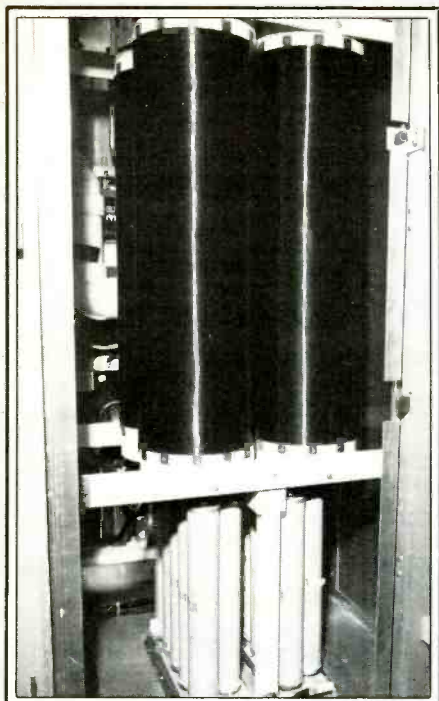


A close-up view of the PWM coder. The coder permits monitoring of various transmitter functions.

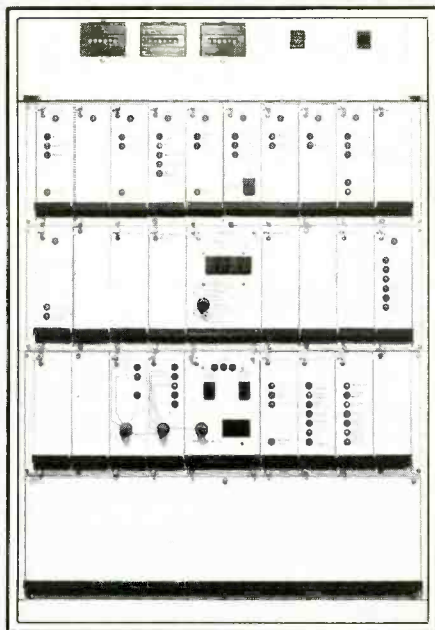


# HAM RADIO IS FUN!

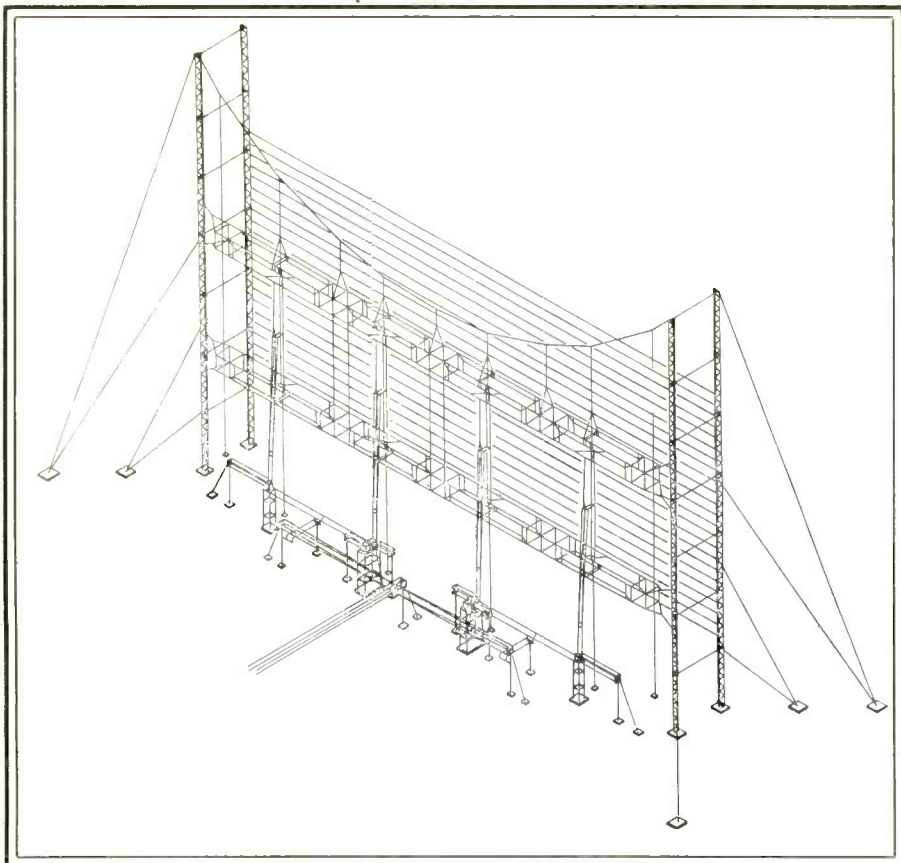
It's even more fun for beginners now that they can operate voice and link computers just as soon as they obtain their Novice class license. You can talk to hams all over the world when conditions permit, then switch to a repeater for local coverage, perhaps using a transceiver in your car or handheld unit.



This galaxy of copper coils comprises "Big Mac's" PWM filter.



The transmitter's control and indicator modules make up the big transmitter unit's nerve center. Frequency changes take only 10 seconds within the same band, or 35 seconds for a change from one band to another.



This is the Marconi R9000/R9010 antenna system that NDXE says they'll use. It offers horizontal polarization, and operates from 6 to 26 MHz.



Your passport to ham radio adventure is TUNE-IN THE WORLD WITH HAM RADIO. The book tells what you need to know in order to pass your Novice exam. Two cassettes teach the code quickly and easily.

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CIRCLE 15 ON READER SERVICE CARD

# A Television Remote

## *You Never Realized What's Involved!*

BY LANCE MCGRAW

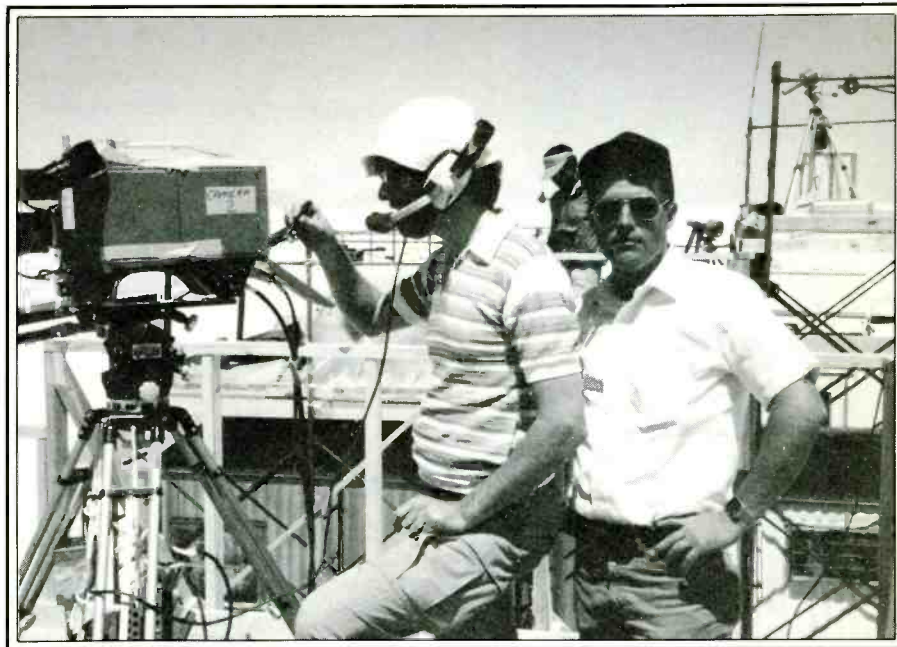
**M**ost people have little or no idea of how a live television story gets on the air, so I'd like to share a little insight into what it *really* takes.

NASA had released the landing location of the space shuttle—at the Northrup Strip at White Sands, New Mexico. We looked at the map and made a few calls to AT&T to see if any video circuits were available. There were none. Additionally, there were no shelters for the press or even bathrooms. The last one is the toughest when you are a two-hour drive from even the nearest bush or tree.

We had to roll in a completely portable TV control room and get the signal back to New York. We thought about it for a while and came up with the answer. First, we rented an empty 40-foot construction trailer. A few shelves and a work bench were constructed and air conditioning for the equipment (mechanical as well as human) was installed. The folks at Northrup strip brought in electrical power.

We packed about 100 cases of portable television equipment in New York and along with six technicians flew to the nearest airport that would get us to driving range of White Sands which was El Paso. We made arrangements for truck and trailer rentals.

After a short time of loading all this equipment on to local trucks we were ready for the trip to the desert. First stop was the Public Affairs Office (PAO) at the military base at White Sands to obtain the proper credentials for access to the restricted area. Following our check in and processing it was off the



*I am the one on the right making final checks on the camera platform.*

the "Strip" as it is called. About an hour and a half later we arrive literally in the middle of nowhere.

We began the arduous task of unloading the equipment and setting up. Setting up the video switching equipment and the audio mixer was the easiest part of the task. Two dozen or so video monitors were set up for the director and speakers were set in place for the audio portion.

Now the *hard* work began. NASA made

available to us 20 of their video feeds and we had a few of our own to the local cameras. The source location for these feeds was about two hundred feet away which, when added to a few bends and turns, added up to about three hundred feet per run. Add to this audio cables that had to make the same run as well as the location where we had our own local cameras and correspondents and we used up about ten thousand feet of audio and video cable.



*Uplink trucks for audio/video plus telephone.*

There is no such thing as the last wire being put in place. The construction went on right up to air time and then some. When we thought we were about ready for anything that could come our way, we made the mistake of relaxing just a bit as we looked up at the horizon and watched the picturesque mountains disappear. Being a "city boy," I thought it was strange to get a fog on the dessert. The locals were all heading for cover and I shortly found out what a sandstorm was all about.

We put plastic over the cameras and covered all that we thought the sand could get into. During the storm I had a chance to witness some unbelievable events. First, I could not see the ground with all the gypsum from the dessert blowing around. Next, the screens in the trailers were arcing little bolts of static electricity and sand seemed to be coming right through the window edges. The gypsum flowed in like water and soon there were little mounds of the stuff all over the trailer. The storm soon passed and back to work we went. The fine white gypsum was in everything and it took hours to get most of it cleaned up. We never got it all out but most of the equipment was workable.

Four days of the set up were completed with 12-hour work days and 5-hour commutes off the base and into town. We rolled in the satellite uplink trucks for both the video and audio of the television broadcast as well as a second uplink truck that gave us telephone service provided by AT&T. Each television network had five phones with 914 area codes in the middle of the New Mexico dessert that had to be run through a satellite. Now *that's* a long distance phone call.

On Day Five we checked out our equipment and waited for the shuttle to appear in the sky. We did not have long that morning as we heard the sonic boom that is made during re-entry and began to get the NASA pictures. Soon our own cameras were locked on and our broadcast began. It was a beautiful landing and our crew captured it all and sent the results back to New York where it was distributed by the networks for all to see in the comforts of their homes.

Following the broadcast we were all headed back to the motel for a hot shower and sleep. I think we all had about five hours sleep a night for the previous five days and we were all fatigued.

The next day was our last trip to the strip where we began the teardown, only this time at a more humane start time like 8 a.m. We had to undo all that we built and repack all the equipment. That part of the job always seems to be the fastest as everyone is giving 120%. All was loaded on to the waiting trucks, back to El Paso we went for the trip home.

This is how it was done in the world of electronic journalism and is repeated many times a week wherever news is breaking. Realize that it takes many people to bring you live coverage of any type of event. The people that do this type of work are of a very special breed.

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# LISTENING POST

BY GERRY L. DEXTER

## WHAT'S HAPPENING: INTERNATIONAL SHORTWAVE BROADCASTING BANDS

**W**e make a point, here at the *Listening Post*, of bringing you the "big" news items of shortwave broadcasting, the international stations bringing new high power transmitters on the air or building relay stations in new spots, new countries suddenly making use of shortwave for broadcasting purposes and so on. But, in the process we may unintentionally neglect the little guys.

And yet there is virtually non-stop activity in this area of local and domestic shortwave station activity. Seldom a month passes without some new station coming on the air from somewhere. Most are the stuff of real DX—1 kilowatt or even less—and most show up on the tropical bands. As a result many SWBC listeners don't even bother with them. But they are fun and challenging. With reasonably good quality equipment, some skill and patience, they can be and are heard by North American DX'ers. So, let's take a paragraph or two and catch up on news of some localized shortwave broadcasters that have appeared on the bands recently. As is usually the case, most of them are in South America.

In Peru, Radio Maranon is listed as a new station on 4835, operating from 1100 to 0300. Radio Onda Azul in Puno on 4800 has been heard in North America but it's tough with Radio Popular in Ecuador as well as a strong utility outlet on this frequency. Radio Contumaza in the town of the same name is a recent addition on 4495 where there's also utility station QRM. Radio Acari, in Acari, is on 6304.5 and can be heard when the winds are from the right direction. Radio Naimlap in Lambayeque is new on 4857 and has not been logged in the U.S. so far.

Two new stations have appeared in Bolivia in recent months: Radio Agustin Asplaza with 1 kW on 9600, operating from 1100 to 0500 and Radio San Ignacio on 5024. Neither has been heard here yet and the 5024 station will be very tough with Cuba's Radio Rebelde only 1 kHz up.

The Mexican cultural station, Radio Educacion, has been reactivated on 6115 and can be heard sometimes as late as 0600. But watch out for Radio Union in Peru on the same frequency. In the Dominican Republic Radio Amanecer is a new religious station using 6025. Most of these are challenging targets but can be yours if you work long and hard enough at them.

Every few months it seems All India Radio announces several cities in which it plans to build shortwave stations. The latest list (they never seem to be quite the same) is for Delhi, Panaji and Bangladore, with six 250-kW between them. There's also been a re-



John Holterman in Maryland put together this display of Radio Denmark's "4 QSL's make a picture" series.



Here is ANARC Executive Secretary Don Hosmer presenting an award honoring 30 years of Swiss Shortwave Merry-go-Round to Swiss Radio International's Bob Thomas at last summer's ANARC Convention. (ODXA photo)

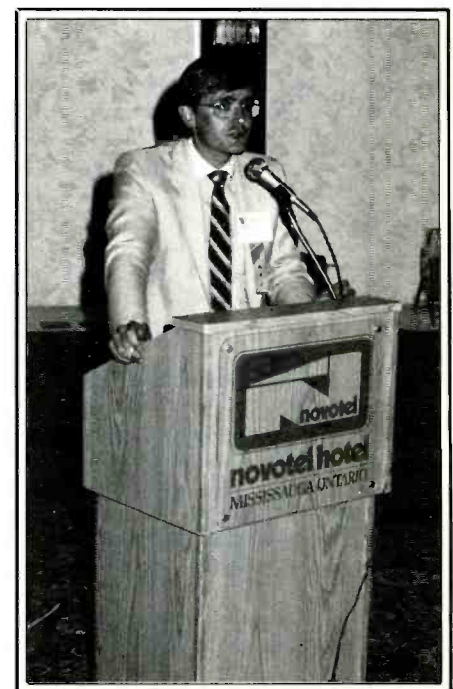
port that a 10-kilowatt regional AIR outlet will be built on Andaman Island.

Back in Central America, the Voice of Nicaragua has added a second transmitter and now uses both 6015 and 6100, although at times there is still only one frequency in operation. The schedule now runs from 0000 to 0700 for Spanish and English programs. On occasion the Spanish language broadcasts are actually relays of various local mediumwave stations.

Watch 15405 between 2000 and 2300 and 7380 between 0000 and 0300 for the new Costa Rica station, Radio for Peace International, which should have gone on the air recently. The station is a joint effort by World Peace University in Portland, Oregon and the University for Peace in Ciudad Colon, Costa Rica. Programs will be produced by station KFIR, 1370 in Sweet Home, Oregon, which is now owned by World Peace University. 7380 is a poor choice of frequencies since there is a utility station there which makes reception of even La Voz del CID difficult. It's possible the new Costa Rican may not stay on 7380 for very long. Reception reports should be sent to Radio For Peace International, P.O. Box 188, Sweet Home, Oregon, 97386.

Radio Discovery, in the Dominican Republic, is still a difficult catch during the daytime on 15045. If you hear it you are likely to hear programming of Radio Television Dominicana, (RTVD) the government station, which is now leasing the majority of Radio Discovery's air time.

The BBC Relay station in Hong Kong be-



Convention chairman Ron Hopkins opens ANARCON '87 in Mississauga, Ontario. (ODXA photo)



At the ANARC banquet, starting third from left: Niel Carleton, Mr. and Mrs. Bob Thomas (Swiss Radio International), Ian McFarland (Radio Canada International), Box Zanotti (Swiss Radio) and David Rosenthal, host of the "Skyline" feature on Radio Earth.

gan test broadcasts and should now be on a regular schedule. The initial operating schedule is 0345-0900 on 15280, 0845-0945 on 7180, 1245-1615 on 7160 and 2230-0430 on 15435. Some hours will be World Service and others will be broadcasts in Chinese or Japanese.

**Another Club First**—by the Ontario DX Association. At least we think they are the first SWL/DX club to have their own ham operating license! VE3SRE (for Shortwave Radio Enthusiasts) has now been assigned to the ODXA which will use the station of ODXA member Steven Canney (VE3FQ). The club's on-the-air efforts will be mostly on 20 and 40 meters and the ODXA will issue a special VE3SRE/ODXA QSL card.

You'll recall that the ODXA also hosted the 1987 ANARC convention near Toronto (see the photos this month). The club is making photo sets available as well as a baker's dozen of cassette tapes of various convention talks and seminars. The list is too long to include here but you can probably get a copy of the list of what's available by writing to the Ontario DX Association, P.O. Box 161, Station A, Willowdale, Ontario M2N5S8 Canada.

**MAIL CALL**—Some months ago *Listening Post* reporter Jim Ross of Vancouver, Washington spotted a name in these pages which jogged some memory cells. He asked us to put him in touch with SWL Robert Palmer in Spokane. It turns out that Robert was one of Jim's old high school teachers (not that Bob is old!) and a chance remark about shortwave radio that Bob made in front of the class one day was the spark that got Jim into shortwave listening, only Bob never knew that. Now that former teacher and former student have re-established contact.

Randy Bradford of Bellevue, Nebraska says that after a 20-year lay-off, he is back into shortwave listening and using an old

Hallicrafters SX-130. Thanks for the QSL copies, Randy, and we hope you'll check in with your logs.

John F. Holterman in Laurel, Maryland used to be an intercept operator and intelligence analyst. He was also a ham and an SWL for awhile. He had to give up the ham call due to some of the places he was sent to overseas. Now he has returned to the SWL'ing end of things. John says that, regarding Andy Johns' recent request for info on Radio Kuwait QSL's, the station does have a nice QSL folder and should send it on request. He suggests that a full data card can be had if you give the station a reason, such as working for an award.

John also notes that Radio Denmark has a series of four QSL cards which, when arranged in a square, comprise a painting symbolizing the Danish National Anthem, "There is a Lovely Land."

Jerome Jacques (P.O. Box 7059, Omaha, NE 68107) would like to get in touch with other SWL's and radio monitors in the area so, if that geography fits you, drop Jerome a note. Jerome plans to upgrade his shack by adding a Kenwood R-5000 receiver soon.

Thanks to James Kline of Santa Monica, California for the clandestine information he sent along. It's appreciated and it will get used.

A couple of readers have asked about deadlines for this column. If you can try to have your logs and etceteras into the Hicksville Headquarters around the first of the month they should reach the *Listening Post* in time to be included in the column being done that month. As you no doubt know, it takes a couple more months for the information to appear in the magazine. Incidentally, we request that you include only logs made over the preceding four weeks and not over a two or three month period as some have been doing.

Speaking of loggings, let us have regular reports on what you are tuning in. All we ask beyond that is that you include your last name and state abbreviation after each and provide some room between the logs so they can be cut apart for sorting. It makes our job a whole lot easier!

We also welcome your comments, questions, shack photos, other pictures related to shortwave broadcasting, schedules, news clippings, quality copies of QSL's or originals you do not need returned and what have you. If you want to make contact with other listeners in your area or are trying to start a local or regional club or need publicity for such a club just say the word and we'll be happy to help where we can.

Here are this month's logs.

**SWBC Loggings**  
All Times Are UTC  
Programs are EE Unless Specified

**Alaska:** KNLS, 11700 at 1640 w/big band oldies (Kline, CA); ID at 1930 (Loran, CA); 11860 w/50's mx at 0833, also 0900 on 11820 (Jacques, NE).

**Albania:** R. Tirana, 7075//9755 s/on & nx 0230 (Gilbert, CA); 7300 at 0230 w/AA-like mx, no ID (Northrup, CT); 9760 at 0330 (Robbins, CA)

**Antigua:** BBC relay, 6175 on 0120 (Diercks, IL). DW relay at 0121 on 6040 (Diercks, IL).

**Argentina:** RAE on 9690 at 0401 w/nx & ID (Ross, WA); 0403 w/"News from Buenos Aires" (Gilbert, CA).

**Australia:** ABC Brisbane, 0701 w/mx, horse race results (Kline, CA).

ABC Perth, 9610 at 1502 w/ABC nx; 15425 at 0603 w/football (Kline, CA); 0600 nx/mx (Robbins, CA).

VNG time sto at 1441 on 4500 (Robbins, CA). R. Australia at 1500 w/nx on 6060 (Ross, WA); 9580 at 0800 (Jacques, NE); 1625 w/propagation report (Loran, CA); 11710 at 0730 wmx & nx (Robbins, CA); 15160 at 0342 w/pop mx, nx (Colter, TX); 15320 at 2223 w/nx (Gilbert, CA); 17795 at 0357 w/mx (Diercks, IL).

**Austria:** R. Austria Int'l., at 0430 w/"Postbox 700" & end of EE at 0453 on 9550 (Kline, CA).

**Belgium:** BRT at 1134 w/mx on 15590 (Diercks) RTBF in FF on 17675 at 1612 w/nx (Ross, WA); Radio 4 Int'l. svc at 1706-1805 in FF (Holterman, MD).

**Benin:** ORTB Cotonou, 4870 in FF at 0518-0606 w/nx & mx (Holterman, MD).

**Botswana:** R. Botswana on 4820 w/usual barnyard IS at 0356 (Diercks, IL); 0510 w/nx in EE (Gilbert)

**Brazil:** R. Anhangero at 0809 in PP on 4915, animated announcer w/many ID's (Kline, CA). R. Nacional Amazonia, 6180 at 0933 w/mx, many PP ID's (Kline, CA).

R. Brazil Central, 4985 at 0740 w/mx, commercials, nx, ID's in PP (Van Waarde, CT).

R. Inconfidencia, 6010 at 0805 w/mx, commercials, nx, ID's all in PP (Van Waarde, CT).

R. Nacional/Radiobras on 11745 at 0215 (Loran, CA); 0050 to 0115 w/nx & mx on 11745//11765 (Robbins, CA).

**Bulgaria:** R. Sofia, 7115 at 0259 w/ID & IS (Jacques, NE); 9700 at 2317 (Kline, CA); 11840 at 0342 w/nx (Gilbert, CA).

**Burkina Faso:** RTB on 4815 w/IS at 0528, anthem & s/on in FF (Gilbert, CA).

**Cameroun:** R. Cameroun, Yaounde on 4850 at 0508 w/nx (Gilbert, CA).

**Canada:** CFRX Toronto, 6070 at 0700 w/nx & mx (Robbins, CA).

RCI on 15440 at 1503; 17820 at 1812 (Ross)

**Canary Islands:** R. Exterior de Espana's Tenerife relay is apparently being used for locally produced programs for Canary Islanders abroad. Heard in SS on 15365 from 2200-2250 w/nx, mx, story of famous Canary Island expatriates. Comments were requested to REE, Santa Cruz de Tenerife, Islas Canarias, Spain (Holterman, MD). Very good!-- Ed.

**Chile:** R. Nacional, 15140 in SS at 0002 (Loran, CA); at 0345 (Van Waarde, CT); at 1737 (Ross, WA).

**China:** R. Beijing at 1200 w/"4 Generations Under 1 Roof" on 9535 (Kline, CA); 15165 at 1537 w/CC-type mx (Ross, WA); 15180 w/"Listeners Calling" at 0309-0355 (Holterman, MD).

Fujian Front (PLA) on 5770 at 1052 w/CC opero & YL/CC (Bush, OH).

**Colombia:** R. Caracol Neiva, 4945 at 0833 w/mx, commercials, nx & SS ID's (Van Waarde, CT).

**Costa Rica:** Adventist World Radio's R.

**Abbreviations Used in Listening Post**

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

Lira, 15460 at 2030 w/rx pgm & ID in SS (Van Waarde, CT); 2154 w/ID & address in EE, close down at 2156 (Kline, CA).

TIFC on 5055 w/rx pgm & ID in SS at 0526 (Van Waarde, CT); 0535 in SS (Gilbert, CA).

R. Impacto, 6150 at 0400 in SS w/mx (Robbins, CA); at 0515 (Gilbert, CA).

R. Relaj, 4832 at 0400 w/talk in SS, mx (Robbins, CA); at 0709 (Gilbert, CA).

Cuba: R. Havana, 6035 at 0511 (Ross, WA); 9730 at 1230, 6140 an 0215, & 9695 at 1135 alk in SS (Northrup, CT).

Czechoslovakia: R. Prague on 5930 at 0103 w/nx (Diercks, IL); 15110 at 1804, 11700 at 0305 (Ross, WA).

Dominican Republic: R. Clarin, 11700 at 2000 w/ID for V. del CID pgm & commentary in SS (Van Waarde, CT); 0200 w/same pgm svc (Gilbert, CA).

East Germany: RBI at 0406 on 9560 (Ross, WA); 0330 w/Dixieland & African mx (Kline, CA); 9770 at 2137 w/comments (Diercks, IL); 0045 in GG (Gilbert, CA).

Ecuador: R. Quito, 4920 at 0426 w/nx & ID in SS (Van Waarde, CT).

HCJB on 6025 at 0225, 11740 at 1135, 11775 at 0230 (Northrup, CT); 9870 at 0625 (Jacques, NE); 9870 at 0508, 17890 at 1531 (Ross, WA); 15270 at 2100 (Colter, TX).

Egypt: R. Cairo, 9475 in EE at 0245 (Gilbert, CA); 11665 at 1920 in AA (Ross, WA).

England: BBC (various sites) 15070 at 1722 (Ross, WA); 9590 via US at 0102, special "Outlook" bc from Minneapolis-St. Paul area celebrating pgm's 21st anniversary (Kline, WA); 6110 at 0230, 5975 at 2300, 6120 at 0300, 7325 at 0230, 6195 at 2250, 9510 at 1135, 9515 at 1246, 11775 at 1130 (Northrup, CT).

France: RFI on 11845 at 1145 in FF (Northrup, CT); 11995 in FF at 0410, 15300 in FF at 1747 (Ross, WA).

French Guiana: RFI relay on 9790 at 1116 (Kline, CA); 0314 w/nx, 17720 at 1653 in FF (Ross, WA); 9800 at 0415-0430 w/nx in EE then into FF (Jacques, NE); 0400 in FF (Robbins, CA).

Gabon: Africa #1 at 0514 on 4830, on 15475 at 1751 (Ross, WA); 4830 at 0511 w/mx & talk in FF (Gilbert, CA); 15200 at 1505 w/African nx, cigarette commercial, into FF w/African pops at 1508 (Kline, CA).

Ghana: GBC, 4915 at 608 w/nx (Van Waarde, CT; Gilbert, CA).

Greece: V. of Greece, 7430 at 0143 w/mx (Diercks, IL); 9420 w/Greek mx at 0059, EE nx 0140-0152 (Kline, CA); 0344 w/nx (Ross, WA); 0047 in Greek (Bush, OH).

Via Thessaloniki site on 11595 at 1930-2119 w/nx in Greek & mx (Holterman, MD).

Guinea: R. Nacional on 4900 at 0559 w/guitar-like IS, anthem, s/on at 0600 (Gilbert, CA). This is in FF-- Ed.

Honduras: HRR1 Sani R., 4755 at 0145 w/pgm on health care & ID in SS (Van Waarde, CT).

HRVC . Evangelica, 4820 at 0212 in SS (Diercks, IL); at 0330 (Robbins, CA); 0403 w/rx pgm: & SS ID (Van Waarde, CT).

Hungary: R. Budapest at 0105 on 9520, nx & "Hungarian Week" (Bush, OH); 9585/9835 at 0200 w/DX pgm (Colter, TX); 9835 at 0130 s/on in Hungarian & into EE (Gilbert, CA); 12000 at 1540 (Ross, WA).

Indonesia: V. of Indonesia, 1500 on 11790 (Robbins, CA); at 1509 (Gilbert, CA).

India: AIR, 11620 at 2118 w/nx, ID, mx (Van Waarde, CT; local mx at 1912 (Ross, WA).

Iran: VOIRI on 9022 at 0212 in SS (Bush, OH); 15084 in Farsi at 1640 (Ross, WA); same at 2054 (Diercks, IL).

Iraq: R. Baghdad, in RR at 1515 on 11705 (Ross, WA); 11740 in AA at 2245 but QRM from VOA (Diercks, IL); 13650 at 1840 w/mx & ID in SS (Van Waarde, CT).

Israel: Kol Israel, 9435/9857 at 0000 (Robbins, CA); 9855 w/nx at 0003 (Jacques, NE); 9435 at 0024, 11655 at 1928 (Gilbert, CA); 11655 at 1919, & in Georgian on 15585 at 1516 (Ross, WA). Reshet Bet home svc, 15095 at 2046 in Hebrew (Diercks, IL).

Italy: RAI at 0325 s/off on 9575 (Gilbert, CA).

Ivory Coast: RTV Ivoirienne on 6015 at 0610 in FF (Gilbert, CA); at 0647 (Van Waarde, CT); 0558-0653 in FF-- tentative logging (Jacques, NE); 11875 at 0700 in FF (Robbins, CA).

Japan: R. Japan on 5990 at 1453, 9695 at 1403 (Ross, WA); 11800 at 2335, 15300 at 2305 (Loran, CA); 11815 at 1730 (Colter, TX); 11875 at 0730 (Robbins, CA). Includes relays via Canada-- Ed.

Kuwait: R. Kuwait, 15505 in AA at 1754; at 2051 (Ross, WA; Diercks, IL).

Lebanon: V. of Lebanon at 0204 in AA on 6550 (Bush, OH).

Liberia: VOA relay on 3990 at 0643 (Loran, CA); 15600 at 1601 (Diercks, IL).

ELWA on 4760 at 0652 w/mx (Ross, WA); 11830 at 0730 (Robbins, CA).

Malta: DW relay on 9565 at 0150 s/off w/ID for Malta site (Gilbert, CA).

Mexico: R. Universidad de Sonora, Hermosillo on 6115 at 0603 w/mx & talk in SS (Gilbert, CA).

Morocco: RTM, Rabat in AA w/nx & mx at 2100 on 15105 (Haltermann, MD).

Netherlands: R. Netherlands, 9650 at 1050 w/nx (Northrup, CT); 0738 on 9630 w/nx (Ross, WA).

Netherlands Antilles: R. Netherlands at 0617 on 6165 w/DX pgm (Loran, CA); 9590 at 0229 w/nx & mx (Jacques, NE).

TWR on 9535 at 0308 (Ross, WA); 9535 at 2010, 11815 at 1125 (Northrup, CT).

New Caledonia: RFO Naumea, 7170 at 0707 w/mx, nx, ID in FF (Van Waarde, CT).

New Zealand: R. New Zealand, 11780 at 0520 w/mx (Gilbert, CA); 0631 in EE, 0700 vernaculars, then 0800 EE again (Kline, CA); 15150 at 0237 (Van Waarde, CT); at 0300 (Robbins, CA); 0305 to 0330 s/off (Loran, CA).

Nicaragua: V. of Nicaragua, 6100 at 0300-0355, but heavy interference (Jacques, NE).

Nigeria: V. of Nigeria, 7255 at 0530 w/mx pgm (Robbins, CA).

North Korea: R. Pyongyang, 6756 at 1132 w/report on how Kim Il Sung has turned the place into a "paradise on earth." Closed at 1149 (Kline, CA); 9977 at 1536 (Ross, WA); 11730 at 2100 s/on (Gilbert, CA); 11830 at 0800 (Robbins).

Northern Marianas: KYOI Soipan at 0820 w/pop mx, ID, Boston address (Van Waarde, CT); 11900/117780 at 0730 & 0800 (Robbins).

Norway: R. Norway Int'l., 0330 on 9590 in NN (Gilbert, CA); 15310 w/ID at 1359 (Ross, WA).

Paraguay: R. Nacional, 9735 at 0205 in SS w/mx & talks (Gilbert, CA).

Peru: R. Union, Lima, 6115 at 0738 w/mx, commercials, ID in SS (Van Waarde, CT).

Philippines: FEBC at 0840 on 15350. OM & YL w/rx mx (Kline, CA).

R. Veritas Asia, at 1358 w/ID on 9540 (Gilbert, CA).

Poland: R. Polonia w/"Comment Roundup" at 0343 on 9525 (Gilbert, CA).

Portugal: R. Portugal at 0310 on 9705 (Diercks, IL).

Qatar: QBC Doha at 2100 to s/off 2130 on 11820 w/nx, mx, ID & anthem at close (Haltermann).

Romania: R. Bucharest on 9510 w/start of nx at 0400, also 0201 on 9570 w/talk (Gilbert, CA); 0408 w/nx on 11940 (Ross, WA).

Sarawak: R. Malaysia, Kuching, 4950 at 1401-- OM playing mx (Kline, CA).

Saudi Arabia: BSKSA in AA at 1704 on 9720 (Ross, WA).

Singapore: BBC relay on 9740 at 1303 (Kline, CA). R. Singapore's Radia 1 svc, 11940 at 1445 w/pop mx (Kline, CA).

Solomon Islands: SIBC, 9540 in EE at 0733 w/nx of the islands (Ross, WA).

So. Africa (Rep. of): Radio 5, SABC svc on 4880 at 0400-0430 in w/pops, Elvis' mx (Rotondaro, CT); 0455 w/pops, commercials, nx & ID (Van Waarde, CT).

Capitol R., Transkei on 3930 at 0400 w/mx & nx (Robbins, CA).

R. RSA on 6010 at 0158-0256 w/IS & ID (Jacques, NE); at 0200 being QRM'd by BBC/6005 (Kline, CA); 7270 at 0400-0430 mx/nx (Robbins, CA).

South Korea: R. Korea on 9575 at 1355 w/pgm re the Olympics (Gilbert, CA); 9750 at 1300 w/unusually strong sigs (Kline, CA).

Spain: Spanish Foreign R., 9630 at 0009-0059 w/nx & mx (Jacques, NE).

Swaziland: TWR w/rx pgm at 0500-0600 on 7210 (Robbins, CA).

Sweden: R. Sweden Int'l. on 9695 at 0227 w/IS, multi-lingual ID, into EE 0230-0258, poss into RR after that (Kline, CA); at 0300 (Loran, CA).

Switzerland: Swiss R. Int'l. w/"Dateline" at 0200 on 9885 (Kline, CA); 0425 w/DX pgm (Gilbert, CA); 12035 at 0245 in GG (Northrup, CT); nx at 0402 (Ross, WA); nx/mx at 0430 (Robbins, CA).

Syria: R. Damascus, 12085 at 2100 w/nx & ID (Van Waarde, CT); at 2123 (Gilbert, CA); 1841 in GG, 1908 in FF, & 15020 at 2058 in presumed AA (Ross, WA); both freqs at 2052 in AA (Diercks, IL).

Tahiti: R. Tahiti on 15170/11826 in FF at 0517 (Loran, CA); 15170 at 0432 in FF & Tohitian (Van Waarde, CT).

Taiwan: VOFIC (via WYFR) on 5985 at 0250 w/nx & ID, "Let's Learn Chinese" (Van Waarde, CT); 0700 w/nx (Robbins, CA); 9680 at 0202 (Jacques, NE).

Thailand: R. Thailand 0200-0030 w/mx on 11905 (Robbins, CA). Presume this is EE-- Ed.

Togo: RTT Lome on 5047 at 0602 w/talks in FF, ID as "Radio Lome" (Gilbert, CA).

Turkey: V. of Turkey, 9560 at 2249 (Loran, CA); at 2326 (Ross, WA); 0204 in Turkish (Gilbert).

Ukrainian SSR: R. Kiev, 7260 at 0220 w/"Ukraine Today" (Northrup, CT).

Unidentified: At 0400 on 7475 in AA (Diercks, IL). It's RTV Tunisienne, Tunisia-- Ed.

United States: VOA on 6130 at 0225, 6190 in SS at 0225, 9455 at 0240, & 9760 at 1220 (Northrup, CT).

AFRTS, 6020 at 1135, 9730 at 1035, 15345 at 0230 (Northrup, CT).

WMLK Berthel, PA on 9455 at 1952 w/rx pgm (Diercks, IL).

KGEI at 2200-2258 on 15280 in SS (Jacques, NE).

WHRI, Indiana on 9770 at 2130 (Jacques, NE); 9850 w/multi-language rest 0300-0400 & promises of special QSL (Holtermann, MD); 5995 at 1135, 15105 at 1930 (Northrup, CT).

WINB Red Lion, PA at 0054 on 15145 (Jacques). R. Marti (via VOA) at 2200 in SS on 11930 (Bush, OH).

WRNO New Orleans, LA on 6185 at 0404 w/mx (Ross, WA); 0500 s/off (Jacques, NE).

WYFR on 6175 at 1140 in SS (Northrup, CT); 11875 at 2120 (Jacques, NE); 15565 at 1756 (Ross, WA).

KVOH on 9495 at 0250 w/UPI nx (Northrup, CT); 0116-0250 (Jacques, NE).

WCSN on 9465 at 0400 (Jacques, NE); 11980 at 0000 (Robbins, CA).

USSR: R. Moscow on 7165 at 0230, 9600 (via Havana) at 1145, 7115 at 0225, 11780 at 2010, 6180 at 0230, 7185 at 2350 (Northrup, CT); 7345 at 1630 w/nx (Ross, WA); 9870 at 1625 (Colter, TX); 11710/12030 at 2317 (Loran, CA).

Ufa R., 4485 at 0705 in RR (Ross, WA).

Magadan R., 5940 in RR at 0717 (Ross, WA).

Vatican: Vatican R., 4850 at 0350 in SS w/mx & ID (Van Waarde, CT).

Venezuela: R. Capital, 4850 at 0350 in SS w/mx & ID (Van Waarde, CT).

Ecos del Torbes, 4980 at 0307 w/mx & ID in SS (Van Waarde, CT).

YVTO time sta on 6100 at 0630 w/pips & ID's in SS (Van Waarde, CT).

R. Tochira, 4830 presumed, in SS at 0159 (Diercks, IL).

R. Rumbas, 9660 at 2335 w/mx, commercials, talk in SS (Gilbert, CA).

Vietnam: V. of Vietnam at 1602 on 15010 (Ross).

West Germany: DW, 6120 at 0459 & 0510 (Jacques, NE, & Ross, WA); 7285 ending in GG at 0245 (Northrup, CT); 0302 in RR (Diercks).

Sudwestfunk, Baden Baden, 7265 at 0340-0438 in GG w/early morning nx, rock, time checks (Holtermann, MD).

RFE, in Czech at 1617 on 17835 (Ross, WA).

Yemen, South: DYBC, 11950 from 2140 to 2300 off in AA w/nx, mx, maybe drama. No positive ID but freq/time is OK, & many mentions of "yamaniye" (Holtermann, MD).

The players—to whom go our thanks: Jerome Jacques, Omaha, NE; Warren Gilbert, Sherman Oaks, CA; Jim Ross, Vancouver, WA; John F. Holtermann, Laurel, MD; Mark A. Northrup, Danbury, CT; Aren Van Waarde, New Haven, CT; Roger Diercks, Plainfield, IL; Ron B. Robbins, Newbury Park, CA; David Bush, Sebring, OH; Michael Loran, Azusa, CA; Len Rotondaro, Newington, CT; Donna Colter, Houston, TX and James Kline in Santa Monica, CA.

'Til next month, good listening!



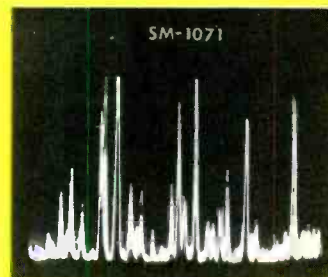
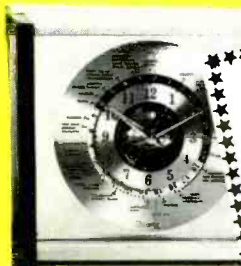


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## GETTING STARTED AS A RADIO AMATEUR

### "Junk" Works, Too

As *Emergency* columnist Gordon West pointed out in October 1987 *POP'COMM*, a high-quality Amateur Radio transceiver can cost only a hundred or so more dollars than the price of a good general coverage shortwave receiver. At that rate, if you're in the market for a solid shortwave receiver (and if you're a ham or thinking of becoming one) you'll probably get the most bang for your buck by buying a transceiver that includes a general coverage receiver. This is pure economics: Modern rigs give us more value for our dollar than ever before. Not only are the cabinets smaller, but the knobs on the front panel control circuits that simply didn't exist 20, 10, or even 5 years ago.

There's another approach to Amateur Radio that I like to keep in mind, however. It can be summed up simply: "Junk" works, too. Assuming that your equipment meets today's technical standards for stability and spectral purity, the operator at the other end can't know whether you snazzy signal emanates from a T-40 tube or a pair of 2SC2590 transistors. If you're into experimenting on the technical side of radio, this is big news. It means that you're free to build radio transmitters and transceivers at your workbench—and put them on the air for two-way fun—as long as their signals meet the technical standards set forth by FCC in Part 97, the rules for the Amateur Radio Service.

Antennas account for most of the home-built radio gear constructed today. Many hams and SWL's have a pet antenna project planned or already in the air. Once upon a time, as long-time hams may recall, most radio amateurs routinely built even their receivers and transmitters from scratch. But that time is farther in the past than we think. By the late 1930's or so, most radio amateurs were using homemade transmitters and factory-made receivers. Not long after World War II, ready-built transmitters and receivers became the norm in most ham shacks. Nowadays, when hams build, it's mostly antennas, RF power amplifiers, and interconnection and control devices. (They're also building systems—networks—of high-efficiency linked stations, but that's a topic for another column.)

But I did say "mostly." There's no question that building your own receiving and transmitting equipment is a heck of a lot of work. There's also no denying that you can't beat the manufacturers of today's high-tech radio gear at their own game. But you can still make hay at the workbench if what you're after is fun, learning and the thrill of transmitting and receiving electromagnetic waves with the products of your own labor. Your

privilege to do so is written right into the Amateur Radio rules!

With just about everything but the kitchen sink built into general coverage ham transceivers, many home ham builders go the other way: They build relatively simple—some would say impossibly limited—equipment and try to get the most out of it. I'm talking about transmitters with one tube, or two or five transistors—simple receivers with a couple of tubes, or a couple of transistors and an integrated circuit or two. This generally means low transmitter power output (a fraction of a watt to a few tens of watts) and a receiver so simple that your brain and ears provide most of the selectivity! It can also mean surplus parts, hand-me-downs and cannibalizing discarded TV's, stereos and car radios—in other words, junk. Radios made in this way, with these features, would never make it on the mass market. They aren't festooned with glitz, lights, bells or whistles. All they do is work—simply.

### Six Countries – With Junk

Christmas, 1978—Chicago. I'm home on holiday vacation from college at Western Washington University in Bellingham, Washington. My job: Build a ham transmitter for next to nothing so I can get on the air from the Pacific Northwest. The solution: Search through the secondhand radio parts in my father's "junk box"—a generic ham term for a long-nurtured collection of electronic odds and ends that "just might be useful some day"—and build something, anything, to get me on the air.

Later that vacation: The transmitter is done. It's built into two butter-cookie tins soldered back to back and punched full of holes! It uses five tubes and puts out about 30 watts of CW. I lug it out to Washington with me on Amtrak's Empire Builder.

March, 1979—Bellingham. No one said it would be easy. A couple of months of trying to build a simple receiver in my scarce spare time haven't panned out. I hook up my trusty Panasonic RF-2200 AM/FM/SW receiver instead. It works, but there's an ear-splitting *blam!* in my headphones every time I press the key. The Panasonic's all-plastic case provides no shielding! I rewire my transmit-receive switching so my headphones are entirely disconnected from the receiver during transmit.

Okay, I'm ready to go on Sunday, March 18, 1979. It's just after 9 Pacific Time. The antenna is about 40 feet of wire strung around my rented room in a wooden house on Bellingham's Forest Street. As they say in show biz, "This had better be funny!" I call a CW CQ on 14.064 MHz. . .

. . . and K6HQ, Marion, in Anaheim, California, comes back! We talk for a half hour. A few minutes later, I contact UA0QDH in the Asiatic USSR! Later in the day, I work KL7HR, Alaska, and JA9YBA, Japan. Over the next few days, I make more contacts in the U.S., Canada, Romania and Singapore. The Singapore contact—with Peter, 9V1TL—is especially exciting because he answers *my* CQ! When I finally tell him I have to sign off to go up to school for a final exam, he says, "I know all about that—I'm a teacher from England!"

There you have it: Six countries contacted with a transmitter made of junk, and an antenna barely worthy of the name. Nothing was optimal. Every contact was tough. The receiver I used was never intended for two-way communication. I didn't have a digital frequency readout, keypad tuning or an automatic antenna tuner—and the operator at the other end would never have known this if I hadn't spilled the beans. (I did, of course—wouldn't you?) That reminds me: The cookies were delicious, too. **PC**

### Novice Net News

Way back in August *POP'COMM*, I asked for reports of 10-meter nets open to participation by Novices and Technicians. Here's what I've received so far; all are upper sideband:

*The Partytime Net* meets every Friday and Saturday at 7 p.m. Eastern Time on 28.400 MHz. Net control is KA8ZNV, Columbus, OH. (Reporters: Richard G. Chatos, Jr., KA8ZNV, and John R. Unverzagt, Jr., KB8CFI)

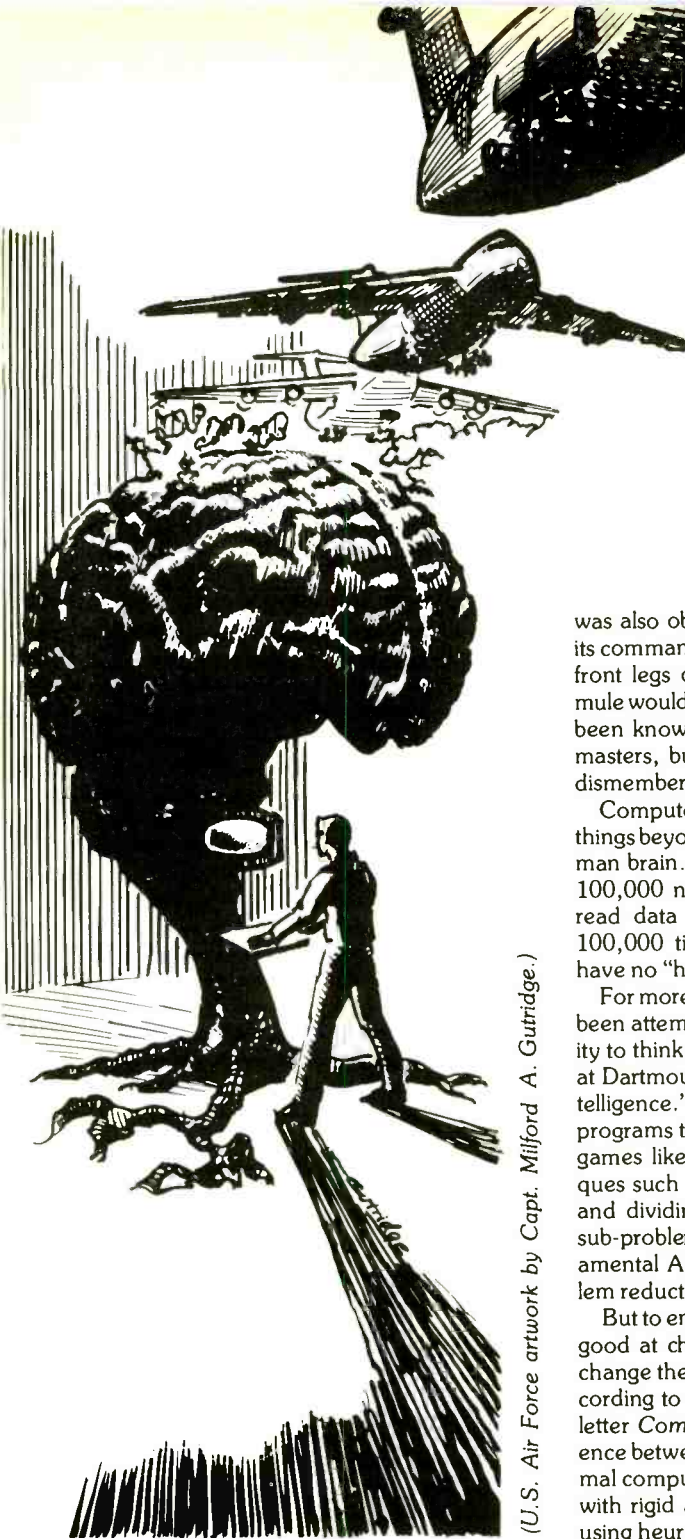
*The 10-Meter Rag Chew Net* (TMRCN) meets every Sunday night at 7 p.m. Eastern Time on 28.400 MHz. Net manager and net control is NM1K, Enfield, CT. (Reporter: Russell T. Hack, Jr., NM1K).

*The Jefferson Parish Radio Net* meets every Thursday night at 7 p.m. Central Time on 28.450 MHz. Net control is W5GAD, Metairie, LA.

Thanks, folks. I know that there are scads more 10-meter nets open to Novices and Technicians, but I can't publish 'em if you don't report 'em! Send your net info to The Ham Column, ARRL, 225 Main St., Newington, CT 06111. See you on 10!

**The USAF Thinks About:**

# Artificial Intelligence



(U.S. Air Force artwork by Capt. Milford A. Guttridge.)

**BY CAPT. MILFORD A. GUTTRIDGE**  
AISD Public Affairs, USAF

**A** mule is smarter than a computer.

In 1977, a team of Ohio State University scientists constructed the world's first walking machine—the OSU Hexapod. With a joystick, an operator could send the computer-brained contraption right or left, forward or backward. The walking computer was so smart it knew how to place its feet, once given a command to move. The walking computer

was also obedient, and very eager to obey its commands—so much so that it ripped its front legs off early in the experiments. A mule would not have done that. Horses have been known to injure themselves for their masters, but the most loyal horse will not dismember itself with obedience.

Computers can, of course, do many things beyond the mental capacity of the human brain. Computers can add more than 100,000 numbers in a second. They can read data and make choices more than 100,000 times a second. But computers have no “horse sense.”

For more than 30 years, researchers have been attempting to give computers the ability to think—to grant them what was called at Dartmouth College in 1956 “artificial intelligence.” The first big successes in AI were programs that could solve puzzles and play games like chess. They employed techniques such as looking ahead several moves and dividing difficult problems into easier sub-problems, which evolved into the fundamental AI technique of search and problem reduction.

But to enable computers to become really good at chess, programmers have had to change the way the computers “think.” According to N.N. Sachitanand, in the newsletter *Computers and People*, “The difference between the working method of a normal computer programmed conventionally with rigid algorithms and a human expert using heuristics (rules of thumb) can best be illustrated by considering the game of chess. Today’s biggest computer working full-time would need a decade to consider all the potential moves early in a game and arrive at the best move. A human expert on the other hand, would consider only the most likely moves, weigh their potential based on his storehouse of chess knowledge and determine which move to make, all within the time allotted in the rules of the game.”

When researchers recognized this fact, they were a step closer to developing the first breed of marketable “intelligent” machines, called expert systems. These computers use a combination of a knowledge base and rules of thumb to solve problems in limited areas. Expert systems must neces-

sarily use very large knowledge bases, the capacity for which has only recently become widely available.

The Air Force Institute of Technology began a program of research in AI in 1983. Since then, a successful AFIT project has been conducted on AI to plan the routes of cruise missiles. Another system, for maintaining electronic circuit boards from F-15 planes, has also been developed.

Within AFCC, in March of 1985, the commander of Airlift Information Systems Division tasked his automation support organization to develop an artificial intelligence capability. Working full-time on the project to apply AI toward Military Airlift Command missions are programmers 1st Lt. Timothy M. Tinker, 2nd Lt. Martin Hunt, and SSgt. Mark Tittle.

“He wanted us to get familiar with AI and ‘thinking engines’ in general and LISP in particular,” said 1st Lt. Timothy M. Tinker, Acting Chief of Applications Management and Technical Support. LISP, for “list processing,” is a computer language designed for AI. It is the oldest computer language besides FORTRAN in use today. LISP is one of many languages developed to use heuristics, rather than taking mathematical approaches toward problems. It operates by linking lists of data. It can match, link, and shuffle lists—or take them apart. Most expert systems in the United States use LISP. In Europe and Japan a language called “Prolog” is preferred.

The lists of knowledge used by expert systems require huge knowledge bases, implying not only better programs but larger computer memories. “We need better software and hardware,” said Lieutenant Tinker. “However, some progress is being made to make such software work on existing hardware.”

AISD is using a few applications of AI to test its potential in Military Airlift Command missions. The applications include a scheduler, a tariff rate maker and a Honeywell problem solver. The scheduler program is being written by Air Force Systems Command’s Electronic Systems Division. It will set up the schedule of aircraft for an operations plan, as for a contingency or war.

"It's for making sure you have all your bases covered," said the lieutenant. "It's and aid to human planners. We hope to have a prototype early next year. It will learn and get better and better as time goes by."

The anticipated loss of the Headquarters MAC tariff rate expert has stimulated a search for an expert system to capture his knowledge and use his rules for setting tariff rates for MAC. Lieutenant Tinker's office plans to build this program themselves.

"We don't have the tools at the moment," said Lieutenant Tinker. He explained that AISD must procure an expert system development program. The lieutenant hopes to have this \$3,000 tool by the end of this year, and to have the prototype program ready 12 months later. The MAC expert retires in about two years.

Personnel turnover in Headquarters AISD's Automation Support Applications directorate has hindered debugging programs for the Honeywell mainframe computer at Scott AFB. AISD Applications has already begun work on an expert system to overcome that problem. Lieutenant Tinker and his people know enough about the Honeywell computer themselves to design the program and test it. Once they have a working expert system, they will seek additional knowledge from AISD's 'maintenance programmers' to build a composite expert.

The emergence of the expert system as a practical approach to complex problems has launched a rush to move AI from the laboratory to the marketplace. At least one analyst has predicted that the market for expert systems will rise from \$20 million in 1985 to \$2.5 billion by 1993. Expert systems are already being used or are being designed for use in medical diagnosis, insurance underwriting, credit planning, prospecting for minerals, production scheduling, equipment maintenance, and battlefield intelligence.

The Fifth Generation of computers will reportedly give AI researchers vastly greater capabilities—faster access to huge memory banks, and faster task performance than the current breed of super-fast computers. W.S.E. Mitchell reported in an *Electrotechnology* article that where current computers can perform 1,000 to 10,000 of the inferences used in expert systems per second, Japanese researchers plan to build Fifth Generation machines by the 1990s performing 100 million to one billion inferences per second.

One might naturally ask if and when computers really will possess intelligence. *Computers and People* Editor Edmund C. Berkery offered the following thoughts on the ability of computers to truly think:

- Real intelligence includes thousands of instances of artificial intelligence.
- Machines are already more intelligent in certain ways than great numbers of human beings.
- But, human beings have great capacities of intelligence that machines do not yet have, and may not have for centuries. **PC**

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## THE EXCITING WORLD OF RADIOTELETYPE MONITORING

Last month this column featured Amateur Radio station WB9AGH, Northeastern Illinois Communications Assn., which, as a service to the local community, sends unedited teletype weather bulletins originally released by the National Weather Service, office, Chicago.

It was said in the story that I had been unable to pick up any of the station's transmissions while writing the column. That all changed when, in one day, Chicago became drenched under a record-setting 9.5 inches of rainfall. Tuning in the station at 2153 on 147.06 MHz, I sat back and watched WB9AGH send NWS's weather statements and forecasts for a few hours. Transmission was 170/45N and was received by connecting a RTTY demodulator to the external speaker jack of a VHF/UHF scanner.

A printout of one of the transmissions is included with this month's column, an example of domestic weather copy usually sent over landlines to the news media and other agencies needing the services of the NWS. They cannot be found on HF radio.

David Agnew of Delaware joins us this month and submits the following logging (among many others) for our enjoyment. He found WB290 on 8824.4 sending RYR RYR to "Rock" at 850/45R. "Foxes" and "all good men" also were part of the test tape. No time was indicated for reception.

He further states that the tape would be sent twice then the station would go off the air. It would return, send the tape twice again, and go off the air. This pattern was repeated a number of times.

I remember coming across WB290 a long time ago, possibly using voice communications. I have no recollection of what this station is. I believe "Rock" refers to Rockwell International Corp. Maybe one of our readers could shed light on this reception.

Can anyone enlighten me as to what type RTTY transmission makes this pattern, "WQSAPJWWCXJQH8TD DTXFEZN "I(,3)& ZPJ UTLYULZWQKVNS," and constantly repeats it? This "footprint" was found running at 850/75R at around 1710 UTC on 14675.3 kHz.

Both Fred Hetherington of Florida and I need help in determining the name of the news agency that uses the logo of JPS. Fred has sent me loggings of this station at 0830 UTC on 14547.9, which would be JAL44, Tokyo, Japan, and at 0900 on 18460, JAV88, Tokyo. Fred tells me that reception is clear and the broadcast is in English. None of the usual reference material lists JPS, and my specialized list says only that the logo is sometimes used by the Jiji Press Service. We usually see it as just Jiji.

Fred further states that the agency writes occasionally with a "Communist flavor" and calls the South Korean government a "facist" one.

The Kyoto news agency has been known to occupy the two frequencies in question, but Fred swears on a stack of palm trees that it's not Kyoto. Yet I can't see the Japanese government allowing one of the country's news agencies to broadcast with a Communist tone.

Furthermore, calls placed to the Japanese Consulate in Chicago and the Japanese embassy in Washington, DC failed to shed light on JPS. Personnel at the two diplomatic posts said they never heard of such a news agency in Japan, and agreed with my assessment that a Communist oriented



This QSL from WOO was just received by Tom Kneitel for the new FEC transmission service on 8051.5 kHz. The station has been asking for reception reports describing signal quality. See this month's listings for more information. Similar broadcasts are expected from KMI (Pt. Reyes, CA) and WOM (Miami, FL) later this year.

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RYRYRYRYRY HGX21 HGX21 HGX21 DE KNY26 KNY26 KNY26 RYRYRYRYRY
RYRYRYRYRY HGX21 HGX21 HGX21 DE KNY26 KNY26 KNY26 RYRYRYRYRY
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RYRYRYRYRY HGX21 HGX21 HGX21 DE KNY26 KNY26 KNY26 RYRYRYRYRY
```

KNY26, the Hungarian embassy in Washington, DC, is trying to make contact with HGX21, MFA, Budapest, Hungary. Communications never were established. This test tape ended a short time later and no further contact was attempted. This test tape ran from 1305 to 1313 UTC on 13628 kHz, at 425/50R. (From Robert Margolis.)

```
WB9AGH
CH19H 150323
ZCZC CHISPSCHI
#WUS35 KMKE 150301
```

SPECIAL WEATHER STATEMENT  
NATIONAL WEATHER SERVICE CHICAGO IL  
PREPARED BY MILWAUKEE WI  
955 PM CDT FRI AUG 14 1987

...SHOWERS AND THUNDERSTORMS CONTINUE TO ROLL ACROSS THE WEST AND NORTH THIS EVENING...

A TROUGH OF LOW PRESSURE AND AN UPPER LEVEL DISTURBANCE ARE PUSHING SHOWERS AND THUNDERSTORMS NORTHEAST ACROSS ILLINOIS THIS EVENING.

AT 945 PM...RADAR INDICATED THAT THE MAIN RAIN AREA WAS CENTERED BETWEEN MOLINE AND MARSEILLES AND WAS MOVING NORTHEAST AT 30 MPH.

MORE SHOWERS AND ISOLATED THUNDERSTORMS WERE MOVING TOWARDS THE CHICAGO AREA...BUT DID NOT APPEAR TO HAVE ENOUGH INTENSITY TO CAUSE ANY ADDITIONAL PROBLEMS FOR THAT AREA.

THE SHOWERS AND THUNDERSTORMS SHOULD BEGIN TO DECREASE IN NUMBER AND INTENSITY LATER TONIGHT AS THE WEATHER DISTURBANCE PASSES OFF TO THE NORTH.

LITTLE IN THE WAY OF WEATHER HAS BEEN OCCURRING IN THE SOUTHEAST HALF OF ILLINOIS...WITH WARM AND MUGGY CONDITIONS CONTINUING THERE THIS EVENING.

A VERY WARM AND HUMID AIRMASS WILL HOLD OVER THE STATE THROUGH THE WEEKEND AND THE SULTRY WEATHER HOLDS THE PROMISE FOR MAINLY AFTERNOON AND EVENING THUNDERSTORMS THROUGH SUNDAY.

Last August, Chicago was ravaged by a record setting 9.5 inches of rain. These are five of the many National Weather Service weather reports that were issued in the aftermath of that storm. They were received on 147.06 MHz on VHF radio, and were sent by WB9AGH, Northeastern Illinois Communications Assn. See story for details of this RTTY intercept. (From Robert Margolis.)

AMERIKANSKE HELIKOPTERE S#GER EFTER MINER I DEN SISKE BUGT FORAN EN KONVOJ AF KUWAITISKE SKIBE UNDER AMERIKANSK FLAG OG AMERIKANSKE KRIGSSKIBE P# VEJ GJENNEM BUGTEN TIL KUWAIT. HELIKOPTERNE TR#KKER SONARLINER EFTER SIG OG P# DEN M#DE REGNER DE MED AT FINDE MULIGE MINER. ; ;

IRANS FN-AMBASSAD#R SIG R I ET INTERVIEW TIL AMERIKANSK TV, AT B#DE IRAN OG IRAK HAR LAGT MINER UD I FARVANDET SOM LED I DERES FORSVAR MOD HINANDEN, MEN VI HAR IKKE LAGT MINER UD, SOM HINDRER DEN INTERNATIO NALE SKIBSFART, SIGER IRANEREN. ; ;

News in Danish is sent to ships at sea by OXZ, Lyngby Radio, Denmark. Broadcasts begin at about 1630 UTC and are to be found in the FEC mode on 17212.5 kHz.)

1349100887 447787  
46116 BTGKA G  
46116 BTGKA G  
892728 UBCMAC G  
0149 IUAPIAQP QRCTP  
MASTER  
M.V. ██████████

SELDCALL ██████████  
PORTISHEAD RADIO  
THANKS YR TLX 578 A ALL NOTED./IN HAND.  
1) THE HYDROGRAPHIC DEPARTMENT AT TAUNTON HAS PASSED THE FOLLOWING ADVICE TO SHIPPING FROM DMAHTCHTC, WASHINGTON:  
SSQM IN RESPONSE TO THE RECENT ATTACK ON THE "USS STARK" AND THE CONTINUING TERRORIST THREAT IN THE REGION, US NAVY VESSELS OPERATING WITHIN THE PERSIAN GULF, STRAIT OF HORMUZ, GULF OF OMAN AND THE ARABIAN SEA, NORTH OF 20 DEGREES NORTH, ARE TAKING ADDITIONAL DEFENSIVE PRECAUTIONS. IT IS REQUESTED THAT RADIO CONTACT BE ESTABLISHED ON MF 2182 KHZ, VHF CHANNEL 16 (156.8 MHZ), 121.5 MHZ, OR UHF 243.0 MHZ WHEN APPROACHING US NAVAL FORCES. UNIDENTIFIED SURFACE OR SUBSURFACE SHIPS OR CRAFT WHOSE INTENTIONS ARE UNCLEAR OR WHO ARE APPROACHING US NAVAL VESSELS, MAY BE REQUESTED

This advisory to a British ship was sent by GKE 6, Portishead Radio, England, on 17198 kHz at 1527 UTC in the ARQ mode. The transmission was broken off by GKE 6 while the message was being sent and the advisory was never completed. (From Bob Margolis.)

news agency would not be tolerated there.  
A mystery solved: In last month's loggings, it was noted that a station using "ZKX" call letters was sending foxes on 7477.3 kHz. The station is Whenupai Radio, New Zealand, according to ITU files.  
Happy New Year to you all. May your DX'ing be great throughout '88.  
Now for the stuff that makes for great revelry—the RTTY loggings!

**Intercepts**  
(All Times are UTC)

- 196: Beacon DIW, Dixon, NC at 2328 (Dave Bass, NC).
- 206: Beacon TEL, Tell City, IN at 1219 (J.M., KY).
- 215: Beacon CLB, Carolina Beach, NC at 0146 (Bass, NC).
- 248: Beacon HZP, Zionsville, IN at 1228 (J.M.).
- 260: Beacon HAO, Hamilton, OH at 0458; Beacon BVQ, Glasgow, KY at 1250 (J.M., KY).
- 321: Beacon UR, Covington, KY at 1251 (J.M., KY)
- 326: Beacon PKZ, Pensacola, FL at 0541 (J.M., KY).
- 351: Beacon SI, Covington, KY at 1259 (J.M., KY).
- 356: Beacon VES, Versailles, OH at 1302 (J.M.).
- 382: Beacon YPL, Pickle Lake, ONT at 0616 (J.M.).
- 393: Beacon XYC, Irvine, KY at 0449 (J.M., KY).
- 2221: 5L grps in CW at 0334 (Tom Kneitel, NY).
- 4030: YL in un-ID language, USB at 0359 repeating something like "Fadum ugnah see nu dubah diez siri," then into 5F grps (Kneitel, NY).
- 4031: Beacon P in CW at 0215 (Kneitel, NY).
- 4042.5: NNNODDD, USN MARS sta in western MO in USB at 0324 wkg hams (A. Nonymaus, MO).
- 4070: SS/YL w/5F grps at 0404, USB (Kneitel).
- 4111: SXH32, Greek Navrad, Khania, Greece in CW at 0406 w/VVV (Kneitel, NY).
- 4428.7: NMN, USCG Portsmouth, VA w/wx till 1020. At 1022 NMF (USCG Boston) called USCGC Cherokee. Then NMC (USCG San Francisco w/wx from 1030-1040 (Watts, KY).

**Abbreviations Used in The RTTY Column**

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

- 4475: Beacon P in CW at 0354 (Kneitel, NY).
- 4562.5: JWT, Norwegian Navrad, Stavanger, Norway in CW at 0131 w/VVV (Kneitel, NY).
- 4593.5: AFF1PA, USAF MARS net control sta to AIR, AFA1GU, AFA1OA, AFD1HN & others, USB at 2255 (Kneitel, NY).
- 4627: Beacon E in CW at 0135 (Kneitel, NY).
- 4640: CW sta at 0100 w/5F grps (cut #'s) addressed to #418 (D.P., NC).
- 4764: CCS, Santiago, Chile w/CCC in CW at 0940 (Peterson, IN).
- 5046: YL/EE in USB running 3/2F grps at 0020. Also heard CW 5F (cut #'s) at 0110 (Panak, NC).
- 5091: 5L grps here in CW at 1207, very strong sigs (Kneitel, NY).
- 5098: CFH, Maritime Command R., Halifax, NS in CW at 0702 (Hunter, CA).
- 5175: N N N sent in CW at 1905, then YL/FF w/5F grps, ends w/"Fin" (Mason, England).
- 5224: YL/EE in USB at 0505 repeating "387 387 387" followed by a 1-0 count (Kneitel, NY).
- 5239: YL/SS calling 545 in LSB till 0110, then off (Panak, NC).
- 5286: Un-ID CW sta at 0758 w/5F grps (cut zeros) (Hunter, CA).
- 5305.5: FSB, INTERPOL Paris, France at

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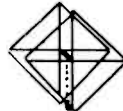
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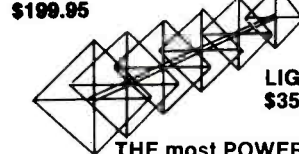


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1455 w/CW marker followed by data bursts (Kneitel, NY).

5315: YL/GG in AM-mode at 0511 sending 3/2 grps (Kneitel, NY).

5413: YL/EE in USB at 0235 sending 3/2 grps (Kneitel, NY).

5547: KMA7, San Francisco Aeradio, CA in USB at 1337 w/kg Japan Air #4 (Szalony, CA).

5628: United 150 at 1246 w/kg Honolulu w/pas report (Szalony, CA).

5692: YL/EE in AM-mode w/5F grps to 070 at 0109 (Bass, NC). Sure that wasn't sent to 007?-- Ed.

5696: Coast Guard 2135 in USB at 0310 to Commsta Portsmouth (Ross, ONT). This is a rather active USCG aero channel almost every night-- Ed.

5955: ZT & AR, two broadcast jammers grinding away here (Mason, England). Time not stated-- Ed.

6516: OM in un-ID language, AM-mode at 0205 and very weak. Kept repeating some words over and over. Faded 0208 (LeSesne, PA).

6577: Czech airlines OK-576 at 0317 in USB w/kg Boyeras (Havana, Cuba) w/pas rpt in EE (Pat O'Connor, NH). Pat, the scuttlebut is that you recently got a scanner, good luck with it-- Ed.

6605: New York Aeradio w/aviation wx in LSB at 0413 (LeSesne, PA).

6655: Northwest #2 w/kg Honolulu in USB at 1318 w/pas rpt (Szalony, CA).

6674: Trumpets & drums at 0308 followed by YL/SS 5F grps in AM-mode. Weak sigs (LeSesne, PA).

6730: Air Force 2 at Muskegon, MI airport during VP's visit. In contact w/Andrews AFB, USB at 2026 (Tramp, MI).

6762: Tuned in on a net at 0316, LSB mode. Snowplow was NCS. Also heard Sonar 78, Hardwood, Alpine, Shadow 202, Crystal Palace, 44, & 54. Sta 54 reported that because of contaminated fuel tanks he had only 35 minutes of fuel remaining (LeSesne, PA).

6808: YL/EE repeating 288 & 71 starting at 2000. At 2010 "Attention" then 5F grps each said twice, then "Attention" again. Each digit very carefully pronounced mil style ("fower" and "niner," etc.) w/apparent oriental accent (Mason, England).

6810: 5F grps in SS, LSB at 0603 (J.M., KY).

6812: Aircraft 970 in USB at 0008 colling Andrews AFB (A. Nonymous, MO).

6832: "738 738 738 2" repeated in CW at 0046 followed at 0050 by 5F t/c (Kneitel, NY).

6833: YL/SS w/5F grps in AM at 0704 (LeSesne)

6840: YL/EE in AM-mode w/5F grps at 2338 (Bass, NC).

7382.5: NNNODBR, northern FL, USN MARS w/kg semi-duplex to hams. USB at 2025 (A. Nonymous, MO).

7724: KRH50, US embassy, London, England w/CW marker at 0205 (Tramp, MI).

7832: YL in un-ID language, AM-mode at 0404 send 3/2 grps (LeSesne, PA).

8365: CNCM, Moroccan allocation, calling PCH42 in CW at 0058 (Tramp, MI). CNCM is assigned to a vessel called the Er Rif-- Ed.

8473: SUP, Port Said, Egypt in CW at 1950 w/VVV & CQ marker (O'Connor, NH).

8504: ZLB, Awarua, New Zealand in CW at 1150 w/VVV (Peterson, IN).

8532: LZW42, Varna, Bulgaria w/CW marker at 0135 (Tramp, MI).

8577: SUH, Alexandria, Egypt in CW at 0310 (Peterson, IN).

8722.4: LPL, Gen. Pacheco, Argentine in USB w/5-note signature followed by YL/SS announcement (Liscomb, CA).

8748: Ship *Conquista* in USB at 0223 w/patch to shore sta (Hunter, CA).

8765.4: NMO, USCG Honolulu w/wx at 1155 (Watts, KY).

8828: ZKAK, Auckland, New Zealand at 0350 in USB w/Sa. Pacific Valmet (O'Connor, NH).

8894: Un-ID o/c calling McGuire AFB (NJ) in USB at 0138 & asking for wx info (Hunter, CA).

8903: Air Chad HT-2043 at 2245 w/kg Brazzaville (Congo) w/pas rpt (O'Connor, NH).

8961: B2J, un-ID sta in CW at 0032 w/5L grps. Msg began TLOAD QRA DE B2J -P-T 050030Z JUN GR120BT. Similar t/c intercepted on 8613 at 0436, on 8788 at 2358. K6M called P5M in USB on 8790 at 0001, then Q0P in CW at 0518 w/5L grps (J.M., KY).

9211.2: "37110/26 II 37110/26" in CW at 0110 followed by 5F t/c. All zeros were sent cut. (Kneitel, NY).

9325: YL/GG in USB at 0113 w/5F groups, each grp repeated twice (Kneitel, NY).

10156: N05, un-ID sta, in USB at 1739 trying to work N31 (Tramp, MI). Probably mil-- Ed.

10388: 4 low buzzes, then 5 kloxon tones, 2 more buzzes, followed by "FSB" in CW. Sequence then repeated. Noted at 0015 (Bass, NC). See the logging on 5305.5 kHz for the identity of this station. Actual freq is 10390 kHz-- Ed.

10454: VOA feeder, Greenville, NC at 1700 w/EE on USN, RR on LSB (Watta, KY).

10694: SOK269, PAP Warsaw, Poland in CW w/nx in Polish at 2151 (Kneitel, NY).

11176: AK1, Elmendorf AFB, AK at 1933 w/kg o/c Toby 31, (O'Connor, NH).

11232: USN sta USU w/SAC EAM in USB at 0044. Also noted at 0052 on 11267 kHz (J.M., KY).

11550: MKK, RAF Landon, England in USB at 0945 running 'phone patches (Bob Margolis, IL).

11610: GL, a jammer sta at 2000 (Mason, England).

12235: YL/SS in AM-mode at 2009 w/5F grps ended at 2019. A minute later it started again & ran for a minute & then some number rptd over & over (LeSesne, PA). Sounds like an equipment malfunction-- Ed.

12313.9: YL/GG w/5F grps, lively flute intro. USB from 0505-0517 (Liscomb, CA).

123287.5: Beacon U in CW at 2240 (Kneitel, NY).

12429.2: USB activity here-- **Marine Collection** clg Real Estate at 1853; US yacht *Colly Poly* clg Terminator at 2026; Brava Charlie clg Brava Rameo at 2104; WSD481 of Williams & Wright Co., Hylas, VA clg Terminator (Margolis, IL).

12750: CWA, Cerrito, Uruguay clg CQ in CW at 0320 (Peterson, IN).

12826: JCS, Chosi, Japon in CW clg CQ at 1515 (Peterson, IN).

13008: JOR, Nagasaki, Japon in CW clg CQ at 1220 (Peterson, IN).

13224: Aircraft #829 running a patch thru MacDill AFB to Miami Monitor in USB at 1713 w/5F grps (A. Nonymous, MO).

13270: CGZU, Cruise ship *Saga Fjord* w/kg KMI w/pas discussing poor condx, then into patches. USB at 1111 (Hall, WA).

13387: KKN39, Dept. of State, Wash, DC clg un-ID sta 6DJY, asking to QSY 12207 kHz. CW at 1520 (Margolis, IL).

13390: At 1910 a sine wave test sig to off at 1922. At 1930 YL/EE rptd 619 until 1934 then 485 485 32 32, then 5F. Ended with 00000 (Mason, England).

13415: PCWJ, MFA The Hague, Holland at 2307 running a marker consisting of a CW ID followed by data burst. Was //9118 kHz (Kneitel).

13705: LPL, Gen. Pacheco, Argentina 5-note flute intro then YL/SS annc, USB (Liscomb, CA).

13730: Jammer SU at 2000 (Mason, England).

14446: Pass Canadian Forces MARS-type comms running 'phone patches in USB at 0009 (Hunter, CA).

14458: VXV9, Canadian Forces, Galon Heights w/patches & QSO's to CIW806, CIW84, & VXE9. Was USB at 1956 & the ap reported it was his last time at the controls of VXV9 before returning to Montreal-- and he wasn't at all unhappy about that (Kneitel, NY).

14468: CLP1, MFA Havana, Cuba in CW w/5L grps for CLP5 Algiers, Algeria after some RTTY at 1839 (J.M., KY).

15048: A mil exercise involving aircraft produced Cricket, Lovejoy, Sparky, & Speedway in USB at 1636. One sta simulates bright light above it, plays back the recorded voice of Dr. McCoy's clone, & terminates comms. This exercise went for a couple of hours (A. Nonymous, MO). Beam me up, Scotty-- Ed.

15175: Jammer LS at 0633 (Mason, England).

16125: Very powerful 60 Hz sig cycling 10 sec on & 5 sec off. Knocked out even Soviet OTH "woodpecker." Sounded like someone connected AC power lines direct to speaker terminals. Still going at 1900 (Mason, England).

16463.1: C4RV, ship *Great Harmony* at 2208 in USB t/c via GKT52 (O'Connor, NH).

16587: KHT, Collins Radio w/kg tanker fleet w/patches to KHBA, the Exxon Houston, to WWND, the Overseas Juneau enroute Valdez, AK. Later KHR (Collins Radio) wks KIYP, Exxon Lexington near PR (Hall, WA).

16730.4: IBJD, ship *Karbarossa* clg IQX in CW at 1947 (Margolis, IL).

16733: ZEOM, Hong Kong flog reefer Fleet Wave clg WNU in CW at 1545 (Margolis, IL).

16743.2: UERN, Soviet ship *Nade Rybakovayte* in CW at 1851 clg UDH (O'Connor, NH).

17007.2: PCH61, Schevenigen, Netherlands w/CW marker at 1910 (Tramp, MI).

17081.6: JFA, Chuo Gyogyo (fisheries), Japon clg CQ in CW at 1855 (O'Connor, NH).

17084: IQX, Trieste R., Italy in CW w/VVV at 2037 (Kneitel, NY).

17171: PJC, Curacao, Neth. Antilles clg CQ in CW at 1502 (J.M., KY).

17189: D3E, Luanda, Angolo clg CQ in CW at 1500 (Peterson, IN).

17414: KKN30, Dept. of State, Wash. DC w/CW marker at 1640 (Tramp, MI).

17940: KEP5, Houston Center, TX w/patch for Continental #35 to sta giving wx for Albuquerque, USB at 2140 (J.M., KY).

22396: CLA50, Cojimar, Cuba clg CQ in CW at 1822 (J.M., KY).



## NEW AND EXCITING TELEPHONE TECHNOLOGY

### Is This A Turbo-Laser Digital Call?

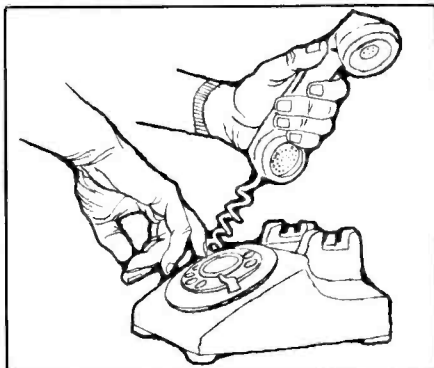
**W**atching and listening to advertisements can be an amusing and informative experience. Over the years, Madison Avenue has taught us that it is okay to squeeze bathroom tissue and that our fears about "ground in dirt" are quite rational. Obviously some advertisements are tongue-in-cheek, some are just strident. The worst and most deceptive are Techno-Babble ads. Spurious claims that modern ingredient K3PG makes your whites whiter must fool some people. Unfortunately, this sort of Techno-Babble advertising has now crept into the world of telephones.

To illustrate how Techno-Babble can confuse, consider the baby boomers that grew up listening to records played on one-tube record players. In large letters on these record players would be the term "Hi-Fi." Can any of those baby boomers today define the term Hi-Fi? Do they really know what "Stereo" means? We have since had to put up with: Solid-State, Stereo, State-of-the-Art, Turbo, Laser, Digital, Quartz, and a host of others. All these words do mean something, but to the public they were just fancy words on the side of a new toy. What a shame! Out there is a flashlight with the word "Turbo" on its side—this is a light, not a fan—but there is possibly a fan out there called "Quartz".

The de-regulated competitive phone industry is also falling victim to hype and misapplied buzz words. Note their overkill use of the words fiber-optic, digital, computerized, state-of-the-art, etc.

The phone industry by its very nature has always been the leader in electronics and communications technology. Two decades ago the Bell System started using digital technology on their high-speed and high-capacity trunk lines. The buzzword for this was "T1." A cellular phone company in Southern California is doing its ground linking with T1 and is advertising to the public that it uses "Digital for clear sound like stereo Compact Discs." There is no way a narrow bandwidth phone call is going to sound like a full frequency Compact Disc. This is not a lie, but is not the truth either. The truth is that digital links will give clear noise-free connections. Trouble is the cell to car link tends to be much noisier than any landline link. They are probably using T1 because it is the cheapest way to buy landline capacity from the phone company.

One of the discount long-distance carriers that has been plagued with poor connections and limited capacity in the past is now, at long last, improving its capacity. They are



doing this by bringing on line fiber-optic cable that has been laid in the past couple of years. They claim in their advertisements that because they are using fiber-optic cable you can hear a pin drop. This isn't a lie, but you can hear a pin drop over *anything*, even barbed wire if you amplify it enough before transmission!

Here is how to do your own "Pin Drop Commercial"—but first, why it may not work with a regular telephone, even if you do have a fiber-optic link. A regular telephone has a carbon transmitter (microphone). This device is well suited to transmitting voice under normal circumstances. The carbon microphone works best when held up to an upright head. At other positions, the carbon granules either pack too much or too little, affecting sound quality and level. This is why if you are lying on your back while talking on the phone, the other party may have trouble hearing you.

The other think about a carbon transmitter is that it has a "threshold," this is the point below which it will not pick up sound. The reason for the high threshold of carbon microphones has to do with the size of the granules and the pressure of the sound waves, etc., just regular old physics of the Isaac Newton type. This is useful for excluding extraneous sound such as office noise. It is also handy and unconsciously used by all the people who have learned that they can cover the mouth piece or walk away from the phone and have private conversations. Because of this, a regular phone laid on its side (wrong position) will not even pick up the sound of a pin dropping—the sound is below threshold. If the phone picks up no sound, there is no way it is going to send it across the country, even if you do have a fiber-optic link.

The way to pick up the sound of a pin is to use a sensitive microphone. The cheapest and possibly most sensitive microphone is

the electret. These devices cost about thirty cents each. Carbon microphones are used as the built-in microphones in cassette recorders, telephone answering machines, speaker phones and electronic phones. Remember the threshold of electrets if you have an electronic phone, you are never out of earshot, try not to make offstage comments about the caller. Some manufacturers, Walker being one, sell drop-in electret microphones that replace the carbon elements in standard handsets.

The key to the "pin drop test" as you may have figured is the electret microphone element. Also essential is the right surface to drop the pin on. You will have little success dropping the pin onto the carpet. Try not to drop it onto a real wood table, what you want is a hard smooth surface, use wood grain Formica. You can't see the difference between wood and wood grain Formica in a photograph. The surroundings must also be quiet, this won't work if *Iron Maiden* is practicing next door. So, to sum up, a phone with an electret microphone (it can be a speaker phone), a hard surface, a quiet room and a pin are all you need.

At the receiving end, you also need special conditions. A good telephone held to the ear in a very quiet room will work. What will guarantee success is some amplification. You can use an amplified handset, or better yet, so more people can enjoy the experience, a speaker phone with the volume cranked all the way up. This will guarantee that you will hear the pin dropped at the other end. With speaker phones at both ends, you can spend the whole day taking turns dropping pins. Between the two ends you can use whatever you wish, satellites or barbed wire. If you want to prove that Sid's midnight discount fly-by-night long-distance service is just as good as the big boys, just show 'em the ol' pin drop test.

To end on a serious note, is there a way to tell whether a call is being routed via fiber-optic or string? Not really, but you can tell whether a call is being routed mainly via digital methods. A digital call is clear and static free. The fact is that digitized phone calls travel over copper wire, fiber-optic cable, radio links, coaxial cable, terrestrial microwave links, satellites, and lasers through the air. A call could travel part of the way as a digital signal and part of the way as an analogue signal. The last six miles of a two thousand mile call could be where all the noise and crud is introduced—so much crud that you couldn't hear a hammer being dropped on a plate glass window, let alone a pin. **PC**

## INSIDE THE WORLD OF SATELLITE COMMUNICATIONS

### Cable TV's Satellite Ground Stations: A Tour

**M**ost of us take for granted the mechanics of the cable systems which brings us a never-ending parade of diverse programming. These cable systems are little more than a complex TVRO station, well, okay, a very complex TVRO station which is connected to a cable distribution network.

Time Inc., one of the countries largest communications companies, operates a nationwide network of cable TV systems known as American Cablevision. Mike Jones, American Cablevision's Special Projects Manager, was kind enough to grant us access to the Indianapolis receiving station and distribution center.

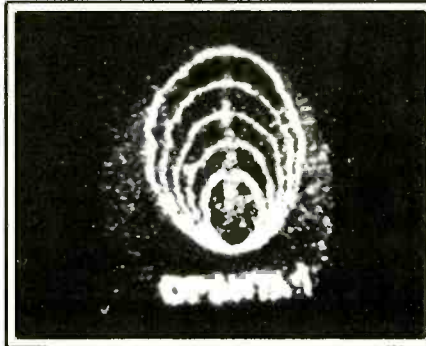
Most cable companies will use the services of four to six satellites. This requires a high gain dish antenna for each satellite. The American Cablevision company uses the Galaxy I, Satcomm 3 and 4 and the Telestar 303 satellite. Each of these spacecraft carry 24 transponders, or channels, which are received simultaneously.

To help reduce adjacent channel interference, alternating channels on the transponder use a different polarity, usually vertical or horizontal. To further reduce interference between satellites, the polarity of any given channel is reversed on every other satellite. This means that each dish antenna at a cable TV's ground station must be equipped with an Ortho mode transducer and a circular "V" assembly. This allows simultaneous reception of both polarities on all channels. The incoming TV signals are fed into 75-ohm hardline which leads to the head end, as it is called. This is the name of the room which contains all the receivers, amplifiers and descrambling equipment.

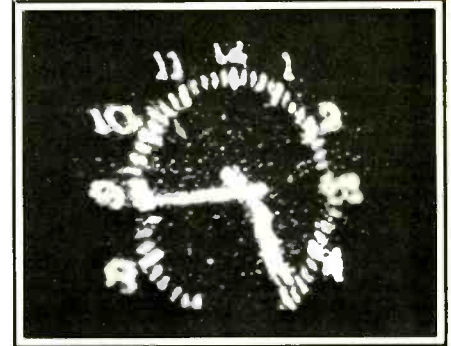
For each channel of each satellite you want to receive and feed into a cable system you must have a separate receiver, amplifier and descrambler. The head end will have at least 25 receivers, usually more. Here the signal quality is monitored and controlled. It's then descrambled, amplified and again fed into a 75-ohm hardline cable system for distribution. The cables carrying the TV signals to your community require an amplifier at 2000-foot intervals to maintain signal quality.

Local VHF and UHF TV stations also receive special attention from cable companies. To maintain picture quality and minimize interference, American Cablevision uses remote repeaters to relay local TV signals to their studios. In theory, your cable company can provide better video quality than your local station can.

A computer-operated Master Control



A photo taken in the U.S. shows the TV images received from a Soviet broadcast satellite. Below the design is the name of the service, "Orbita 1." Photo by Steve Gomez, KE5O, Beaumont, TX.

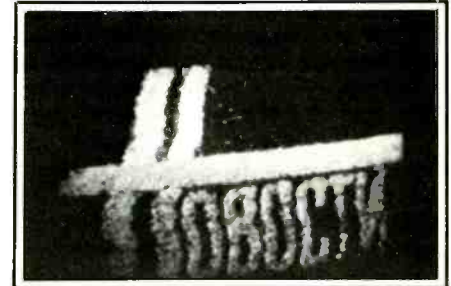


It was 4:45 somewhere in the USSR when Steve Gomez snapped this photo from the Soviet TV satellite. This satellite is used in a manner similar to those employed by North American cable TV networks.

room sits next to the head end. It automatically makes complex program and satellite changes on a predetermined schedule. The control room is usually unmanned except during special events. Your local cable company also provides studio space for programs which can be produced locally by anyone who wants to buy the cable time.

As a public service (and as required by law) Time Inc. provides satellite communications services free to public institutions such as Universities, Law Enforcement agencies and public service organizations. Known as I-Net, these systems are flexible enough to allow almost any communications bridge you require to be constructed with relative ease. Seminars, training classes, special study groups and video teleconferencing are common uses.

Your cable company usually offers a wide variety of services you may not be aware of. If you are an owner of a personal computer, you may be able to receive live stock market information, international news, in English,



This word, broadcast by the Soviet TV satellite, reads "Novosky" (News). Photo by Steve Gomez, KE5O.

from such news services as Tass, UPI and the BBC and others are available. Your cable company will supply the appropriate interface. One service I find particularly interesting offers a combination of International News, Stock Market reports and live video from the Goes weather satellites. The services offered by cable vary regionally.

Satellite Sampling				
Satellite	Position	Freq	FDM Channels	SCPC
Galaxy I	134°W	Downlink 5.9-6.4 GHz Uplink 3.7-4.2 GHz	39	none
Satcomm 3	67°W	Downlink 14.0-14.5 GHz Uplink 11.7-12.2 GHz Beacons 11.7/12.1/14.0 GHz	7	13
Satcomm 4	83°W	Downlink 5.9-6.4 GHz Uplink 3.7-4.2 GHz Beacons 3.7/4.1/6.4 GHz	26	10
Telestar 303	125°W	Downlink 5.9-6.4 GHz Uplink 3.7-4.2 GHz	6	16



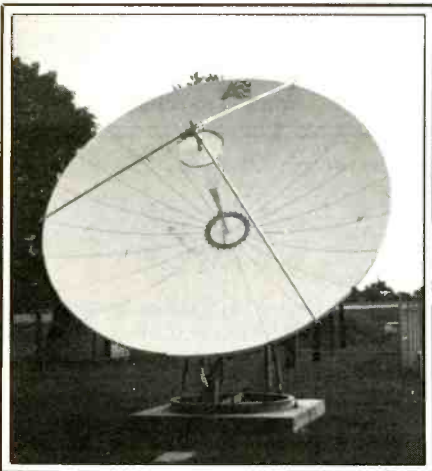
The control board for locally produced programs at the Indianapolis station.



Mike Jones, Special projects Manager for American Cablevision, points out some of the features of the equipment at the Indianapolis facility.



The computerized master control center in Indianapolis.



An American Cablevision ground station antenna.

In the future we will take a look at TVRO SCPC (Single Channel Per Carrier) and other special service signals you can hear on domestic satellites.

### Letter Department

The *Satellite View* letter department has been busy with the response we got from our August column on TVRO descrambling. Edward Silcox of Westland, Michigan; Mercer Gilmore of Wanchula, Florida; Bruce Ottenwalder of Bremerton, Washington; Leon Jones of Thomasville, North Carolina and H.L. Padgett of Clayton, Illinois requested more information on descrambling and how to order the publication mentioned in our August issue. For the rest of you who may be interested in ordering *Video Scrambling and Descrambling for Satellite & Cable TV*, it can be ordered directly from the publisher at the following address; Howard W. Sams & Co., 4300 W. 62nd St., Indianapolis, Indiana 46468.

James Taylor of Lexington, South Caro-

lina writes to express his interest in the military uses of space. That being the case James, you will want to keep your eye on *Satellite View* during the next few months. As usual I will try to cover a wide variety of space communications subjects including more TVRO in the future.

Another *Satellite View* faithful, Stephen Young from Beaumont, Texas writes to say some very nice things about POP'COMM.

And finally, from Port Orange, Florida, Larry Shumway laments the demise of Miami Metro weather station WBR 70. It was, until recently, an HF RTTY weather station.

Larry wants to know if any SCPC or other satellite service can provide a similar service. I know of none. You may want to set up a weather station to intercept video directly from NOAA weather satellites. If any of you know of such a service or a HF RTTY station which could provide similar information for Larry's part of the country, let me know and I'll pass the information along.

Do you have questions about outer space or communications subjects? Write me care of *Popular Communications*, 76 N. Broadway, Hicksville, NY 11801, include an SASE. See you next month.

PC

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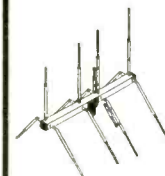
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Length: 5 Ft. (Top Loaded)  
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DEALER INQUIRIES, PLEASE CALL

## FOCUS ON FREE RADIO BROADCASTING

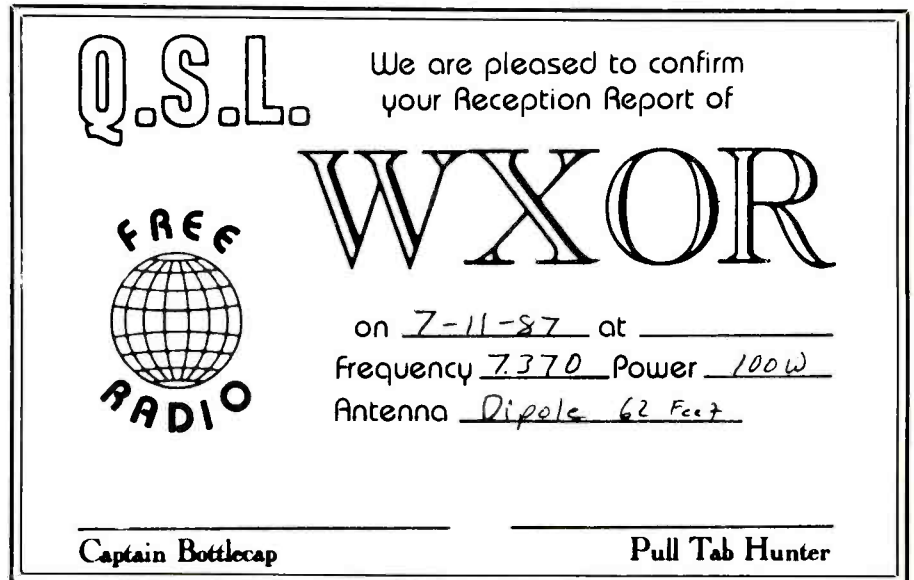
**B**elieve it or not, I am, at this writing, still receiving a steady stream of logging and newspaper clippings about **Radio Newyork International's** brief life and close-down by the FCC. Fast developing stories such as the RNI affair are difficult to keep up with in a monthly magazine but, in case you missed the news, federal authorities dropped all the charges against RNI's operators on 27 August, saying that the closure of the station affirmed that the FCC's authority to regulate the airwaves extend to offshore broadcasts.

The operators of Radio Newyork International continue to see it differently and maintain they were within their rights. The group says that they will return to the air, possibly by the time you read this! Some readers have reported receiving QSL letters and a business card QSL from RNI. A regular QSL is promised at a later date. Thanks to all of those who sent in loggings and news clippings on RNI.

"Dave" sends in the info that the **Voice of Free Long Island** is a new pirate using 7465 and 7415 for broadcasts at 0130 and 0230. The Voice of Free Long Island is into politics, advocating support for such groups as the Afghan freedom fighters, UNITA in Angola, Poland's Solidarity organization and the rights of Soviet Jews. The programs also include political skits and rock music. Power is 150 watts into a vertical antenna. This station was heard by Lara Abshear in Franklin, Ohio at 0135 on 7465 and again two days later. The station gives out an address of: Tagar, Union Building, Stony Brook, NY 11794 and asks for a self-addressed, stamped envelope.

In Muskegon, Michigan, Tim Tromp heard a station at 0138 on 7465 with an ID he copied as something like the **Voice of Free Loar**. The time, frequency and date on this are identical to Lara's second logging of VOFLI and the names are similar, too, so that's probably what he had.

Steven L. Sachs in Highland Park, Illinois has been hearing the **Voice of Foomar**. He noted the station the first time from 0130 sign-on to 0145 sign-off and the second date from 0300 sign-on to 0325 sign-off, both times on 7465. Steven notes that there was a lot of talk about the *contra* affair and Russia. An address was given in "Bonnybrook" New York. This, too, would certainly seem to be the Voice of Free Long Island, although with an alternate identification. The "Foomar" ID—or something like that—has been reported off and on by several people in various sources for many months now. So, is the Voice of Free Long Island just a new name for an older operation or are there really two or more stations involved here? Maybe "Dave" can clarify



Steven Sachs got this QSL from WXOR, which he heard ID'ing as "The Hunter Society."

things for us. Some have heard this as the Voice of Fubar.

Steve also forwards a QSL from **WXOR** which is the reply he got for his reception report on the Hunter Society he reported to this column recently.

Mark Carlsen in Massachusetts heard a station on 7465 around 0446 which was giving call letters sounding like "**WLSB**". There was a brief segment of vocal blues music before an abrupt sign-off. Does anyone know what station this might have been?

**The Voice of Tomorrow's** Bristol, Virginia address is out of date according to Bradley C. Lucken of Cincinnati; he had a letter sent back as "unknown" by the post office. Bradley has tried the station's Ferdale, Michigan address but so far has received no reply from that.

We have some clarification on **Radio Caroline** and **Radio Monique** which were mentioned in the June column. Jerry B. Edwards, who is with the U.S. Air Force in England says that both stations operate from a ship called the *Ross Revenge* which is anchored off England's Essex coast. Radio Caroline is on 558 kHz, Radio Monique on 963. Radio Monique airs programs in Dutch until 2130 when it switches to English to broadcast "Caroline Overdrive," an album rock format which runs to 0400. Radio Caroline is on the air from 0400 to 0000 during the week, extending to 0100 on weekends. Caroline identifies as "Europe's Voice of Loving Awareness, Radio Caroline."

Longtime British BCB DX'er Steve Whitt of Ipswich, Suffolk clarifies further. He says the *Ross Revenge* recently re-anchored beyond the 12-mile point after new legislation extended Britain's territorial waters out that far. Steve says that, actually, Caroline owns both the 558 and 963 transmitters but leases 963 to the Dutch Radio Monique organization. He says that, from around 1800 to 2100, 963 kHz carries various American commercial religious programs, such as Garner Ted Armstrong. Steve says that Caroline used to have a rock music program on 963 at night but that this has been dropped now, so that frequency is silent after around 9 or 10 p.m. in Britain. The 963 channel, notes Steve, has been heard by several broadcast band DX'ers in the U.S. That helps a great deal and thanks to both Jerry and Steve for the information.

The past month's mail brought a number of other letters and "backgrounders" which I'll be bringing you in future columns. Meantime, please keep those cards and letters coming! Use this column to let your fellow pirate hunters know what you are logging and QSL'ing. And station operators: use the column to let your potential audience know your future plans, your station format and "story." I'll welcome information in both categories, as well as station and shack photos, and reproduceable QSL copies. Let's hear from you often!

I'll be back with more information for you next month. In the meantime, keep prowling the usual pirate frequencies as the activity level seems to be picking up.

PC

# NEW! CB Radios & Scanners

Communications Electronics™, the world's largest distributor of radio scanners, introduces new models of CB & marine radios and scanners.

## NEW! Regency® TS2-RA

Allow 30-90 days for delivery after receipt of order due to the high demand for this product.

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Frequency range: 29-54, 118-175, 406-512, 806-950 MHz. The Regency TS2 scanner lets you monitor Military, Space Satellites, Government, Railroad, Justice Department, State Department, Fish & Game, Immigration, Marine, Police and Fire Departments, Aeronautical AM band, Paramedics, Amateur Radio, plus thousands of other radio frequencies most scanners can't pick up. The Regency TS2 features new 40 channel per second Turbo Scan™ so you won't miss any of the action. Model TS1-RA is a 35 channel version of this radio without the 800 MHz. band and costs only \$239.95.

## Regency® Z60-RA

List price \$299.95/CE price \$148.95/SPECIAL  
**8-Band, 60 Channel • No-crystal scanner**  
Bands: 30-50, 88-108, 118-136, 144-174, 440-512 MHz. The Regency Z60 covers all the public service bands plus aircraft and FM music for a total of eight bands. The Z60 also features an alarm clock and priority control as well as AC/DC operation. Order today.

## Regency® Z45-RA

List price \$259.95/CE price \$139.95/SPECIAL  
**7-Band, 45 Channel • No-crystal scanner**  
Bands: 30-50, 118-136, 144-174, 440-512 MHz. The Regency Z45 is very similar to the Z60 model listed above however it does not have the commercial FM broadcast band. The Z45, now at a special price from Communications Electronics.

## Regency® RH256B-RA

List price \$799.95/CE price \$329.95/SPECIAL  
**16 Channel • 25 Watt Transceiver • Priority**  
The Regency RH256B is a sixteen-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to 16 frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH256 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A 60 Watt VHF 150-162 MHz. version called the RH606B-RA is available for \$459.95. A UHF 15 watt, 10 channel version of this radio called the RU150B-RA is also available and covers 440-482 MHz. but the cost is \$439.95.

## Bearcat® 50XL-RA

List price \$199.95/CE price \$114.95/SPECIAL  
**10-Band, 10 Channel • Handheld scanner**  
Bands: 29-7-54, 136-174, 406-512 MHz. The Uniden Bearcat 50XL is an economical, handheld scanner with 10 channels covering ten frequency bands. It features a keyboard/lock switch to prevent accidental entry and more. Also order the new double-long life rechargeable battery pack part # BP55 for \$29.95, a plug-in wall charger, part # AD100 for \$14.95, a carrying case part # VC001 for \$14.95 and also order optional cigarette lighter cable part # PS001 for \$14.95.



PC 22

## NEW! Scanner Frequency Listings

The new Fox scanner frequency directories will help you find all the action your scanner can listen to. These new listings include police, fire, ambulances & rescue squads, local government, private police agencies, hospitals, emergency medical channels, news media, forestry radio service, railroads, weather stations, radio common carriers, AT&T mobile telephone, utility companies, general mobile radio service, marine radio service, taxi cab companies, tow truck companies, trucking companies, business repeaters, business radio (simplex) federal government, funeral directors, veterinarians, buses, aircraft, space satellites, amateur radio, broadcasters and more. Fox frequency listings feature call letter cross reference as well as alphabetical listing by licensee name, police codes and signals. All Fox directories are \$14.95 each plus \$3.00 shipping. State of Alaska-RL019-1; Baltimore, MD/Washington, DC-RL024-1; Chicago, IL-RL014-1; Cleveland, OH-RL017-1; Columbus, OH-RL003-2; Dallas/Ft. Worth, TX-RL013-1; Denver/Colorado Springs, CO-RL027-1; Detroit, MI/ Windsor, ON-RL008-2; Fort Wayne, IN/Lima, OH-RL001-1; Houston, TX-RL023-1; Indianapolis, IN-RL022-1; Kansas City, MO/KS-RL011-2; Los Angeles, CA-RL016-1; Louisville/Lexington, KY-RL007-1; Milwaukee, WI/Waukegan, IL-RL021-1; Minneapolis/St. Paul, MN-RL010-2; Nevada/E. Central CA-RL028-1; Oklahoma City/Lawton, OK-RL005-2; Pittsburgh, PA/Wheeling, WV-RL029-1; Rochester/Syracuse, NY-RL020-1; Tampa/St. Petersburg, FL-RL004-2; Toronto, OH-RL002-3. A regional directory which covers police, fire ambulance & rescue squads, local government, forestry, marine radio, mobile phone, aircraft and NOAA weather is available for \$19.95 each. RD001-1 covers AL, AR, FL, GA, LA, MS, NC, PR, SC, TN & VI. For an area not shown above call Fox at 800-543-7892 or in Ohio 800-621-2513.

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Frequency coverage: 35-54, 136-174 406-512 MHz. The new Regency Informant scanners cover virtually all the standard police, fire, emergency and weather frequencies. These special scanners are preprogrammed by state in the units memory. Just pick a state and a category. The Informant does the rest. All Informant radios have a feature called Turbo Scan™ to scan up to 40 channels per second. The INF1-RA is ideal for truckers and is only \$249.95. The new INF2-RA is a deluxe model and has ham radio, a weather alert and other exciting features built in for only \$324.95. For base station use, the INF5-RA is only \$199.95 and for those who can afford the best, the INF3-RA at \$249.95, is a state-of-the-art, receiver that spells out what service you're listening to such as Military, Airphone, Paging, State Police, Coast Guard or Press.

## Regency® HX1500-RA

List price \$369.95/CE price \$218.95  
**11-Band, 55 Channel • Handheld/Portable**  
Search • Lockout • Priority • Bank Select  
Sidelit liquid crystal display • EAROM Memory  
Direct Channel Access Feature • Scan Delay  
Bands: 29-54, 118-136, 144-174, 406-420, 440-512 MHz. The new handheld Regency HX1500 scanner is fully keyboard programmable for the ultimate in versatility. You can scan up to 55 channels at the same time including the AM aircraft band. The LCD display is even sidelit for night use. Includes belt clip, flexible antenna and earphone. Operates on 8 1.2 Volt rechargeable Ni-cad batteries (not included). Be sure to order batteries and battery charger from the accessory list in this ad.

## Bearcat® 100XL-RA

List price \$349.95/CE price \$178.95/SPECIAL  
**9-Band, 16 Channel • Priority • Scan Delay**  
Search • Limit • Hold • Lockout • AC/DC  
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# SCANNER SCENE

BY CHUCK GYSI, N2DUP

## MONITORING THE 30 TO 900 MHz "ACTION" BANDS

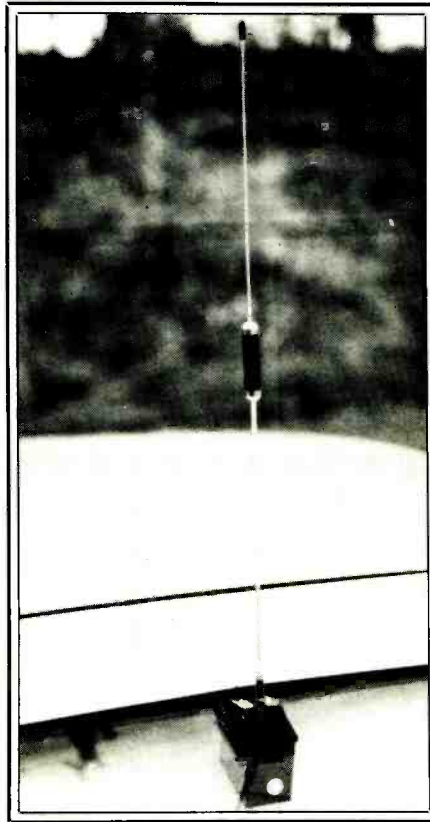
**A** recent mention in this column of a scanner notification group being started in a metropolitan area brought the group a large amount of mail inquiring how to set up similar groups in other cities across the country. In this column, we'll take a look at how you, too, can set up a notification group in your city or community.

First, we should define what a notification group is and what it attempts to carry out. In several major cities in the northeastern part of the United States, including Boston, New York, New Jersey and Philadelphia, notification groups use two-way radios to keep other members in instant contact with each other in the event of emergencies that would make interesting listening on their scanners. Notification group members typically purchase mobile or handheld transceivers and notify other members when there is a major fire or other interesting emergency activity on their scanners.

Some notification groups are established for dedicated reasons. In the New York City metropolitan area, there are a couple of notification groups set up for freelance news photographers and video camera operators who need to know of major news events. The freelancers can jump on the air to find directions to a fire, find out when the president's plane is coming in, etc. Some notification groups are set up by fire buffs who like to chase after fires and take photographs of the firefighters in action. But if you're interested in keeping in instant contact with other scanner buffs, then starting a notification group might be the answer.

First you have to decide whether or not your notification group will be business-oriented or hobby-oriented. If you will be operating in the guise of commercial enterprise, you will be able to obtain an FCC license in the business radio service. If you will be primarily hobby-oriented and no one in the group will be making money out of their participation in the group, you'll be able to operate in the general mobile radio service in the 462 MHz band. For instance, the radio groups that support freelance photographers can obtain a business radio license because the radios would support the business of photography that the users would be participating in. However, if there is no hint of commercial activity in your group, you'll have to seek out other radio services, such as GMRS, for communications.

Depending on the range you need for your members, even CB might prove viable for your group. Another radio service not to be forgotten is the Amateur Radio service. Entry-level Novice licensees now have voice privileges in the 28, 220 and 1270



*On-glass center-loaded UHF antennas work out quite well for use by notification group members for mobile or handheld radio use in their cars.*

MHz bands. Repeaters that have a wide area of coverage can be used in the 220 MHz band as long as the repeater owner agrees to your use of the repeater for a notification group. Just make sure that none of your members would be using the information for commercial purposes because that would be a violation of FCC rules. Although I don't participate in a formal group on the Amateur bands, I do occasionally jump on the local 220 MHz repeater and shout for one of my buddies when I hear something interesting on the scanner they do likewise.

What's the easiest way of going on the air? If you are eligible to obtain a license in the business radio service, you can rent a repeater from a radio shop or tower company. Typically, a radio shop will have several repeaters on the 460-470 MHz band available—all with varying areas of coverage—that you can rent. The repeaters are known as community repeaters because several users will be sharing the same repeater. However, with the use of subaudible tones

built into your radio, you will only hear your own units on the air and not other users. The repeaters are typically located on large towers, large downtown buildings and nearby mountaintops. One thing you can't do is jump quickly into renting a repeater, because you should check out all possible systems before signing a contract.

To get an idea of how much it will cost to rent a repeater on UHF (which is recommended because you'll have wide-area coverage as well as readily available radio equipment), look in the *Yellow Pages* under radio communications service and start calling the various radio shops. Some questions you may want to ask include:

*Do you charge per unit or by air time?* Stay away from any arrangements that the radio shop may want to charge by the amount of time you spend talking on the repeater; mobile phones can be cheaper sometimes under these arrangements. Typically, a radio shop will charge either per radio on the air or so much for the first couple of units and then so much for each additional transmitter. You should not have to spend more than \$10 to \$15 per transmitter for use of a UHF repeater.

*What coverage areas do your repeaters have?* Typically, a radio shop will have repeaters at various locations, each with their own areas of coverage. Decide what areas you'll want your members to be able to talk into the repeater from and pick the repeater that has the closest range of coverage. Larger radio shops also should be able to supply you with maps showing the repeater's primary and secondary areas of coverage. Keep in mind that your power output and antennas will make a difference, regardless of what the maps indicate.

*What frequencies are your repeaters on?* It doesn't hurt to check out the frequencies to see who is using the repeaters already. In fact, you may find some channels crowded because other repeaters are on them as well. Listen to the frequencies for a week to a month and see who uses the repeaters (if the repeater's owner can't tell you who uses them). You may find that one of the repeater's users is very busy and would interfere with your operations by their constant operations. It is best to stay away from repeaters used by cab companies or freight-related services because they will be using the frequency most during your group's peak hours—the evening.

*Can we test out the repeater for a week?* The repeater owner should offer to check the frequency for an available PL tone for your group and should offer to set up the repeater with the tone so you can check out

the repeater's coverage area with your own handhelds or mobiles over a week's period. They should be willing to do this for free. If they don't, be wary of what you may be getting yourself into. At the least, listen to other users on the repeater and see what areas they are transmitting from.

When all your testing is done and you decide to go ahead with plans to rent a business band repeater for your notification group, you'll be asked to sign a contract. Because associations and clubs generally cannot obtain an FCC license in the business radio service, you'll have to prove you are indeed a commercial enterprise. You may want to set up the group as a sole proprietorship, which means whoever is going to run the group should file a trade name registration form at their county courthouse. With the trade name (also known as fictitious name) registration, you can even open up a separate bank account in the name of the business. Use this business' name on your repeater contract and obtain the FCC license in the name of the business as well.

If you've never filled out an application for an FCC license before, the radio shop you rent your repeater from should be able to carry out the licensing paper work for you, but at a cost. If you don't know what you are doing, let the shop do the paper work for you. Otherwise, you'll run into problems that could keep you off the air. The shop also should be able to fill out the frequency coordination forms that you'll need to submit with your license application to the National Association of Business and Educational Radio Inc. NABER then checks over your application, approves your frequency choice and then sends the license application to the FCC for processing. The FCC license runs \$30 and the NABER coordination fee should run about \$65. In addition, other start-up costs may involve an initial repeater set-up fee charged by the repeater owner, as well as any fee to cover the license application preparation.

Make sure you read through the contract and understand all the clauses. Be aware that you will need to notify the repeater's owner every time that you add a new radio to the system so that the repeater owner can bill you an additional amount monthly for the extra transmitter. Also, make sure you have enough people interested in participating so that your repeater bills can be paid by all. You may want to collect the repeater fees from your members on an annual or semi-annual basis to eliminate the hassle and pay the repeater owner on his regular billing period (usually monthly).

After all the paper work is complete, go on the air and have fun! Just make sure your communications are kept businesslike—especially because you are using business frequencies. You may even want to set up your own 10 codes or other on-air terminology.

However, if you are unable to come up with a valid reason to use business radio service channels, you still have an opportuni-

ty—the general mobile radio service. GMRS can be used by individuals for any purpose. The rules for GMRS are expected to come under major revision sometime in the next year, and any commercial use of the frequencies is expected to be phased out. However, individuals can set up their own repeaters on these eight channel pairs from 462.550 to 462.725 MHz. In fact, you may even find that there is a community repeater operating on these frequencies in your area. You might even find a user who would be willing to allow you to use his or her facilities for free on off-hours, such as the evening. A local radio group, such as REACT, also might allow you to use their repeater. Listen to see who is using GMRS in your area.

Putting your own repeater on the air on GMRS might be quite expensive, unless someone in your group is willing to bankroll such a proposition. A repeater can run anywhere from \$1,500 to \$6,000 and then there is the cost of hardware needed to make the repeater operational, such as antennas, cable and duplexers. An additional cost would be for the site itself, such as tower space rental or for climbers to hang the an-

tenna on the tower. If you can find someone willing to let you use their GMRS repeater—even with another PL tone—it would be best. However, you may want to make sure you have a written agreement in such a situation to avoid problems in the future.

While it would be impossible to go into complete details of setting up a notification group, we've tried to give you an overview on how to get such a group started. Used or new UHF radio equipment could be used on business or GMRS repeaters and radio shops can advise you as to the cost. Be sure to check some of the ads in *POP'COMM* as well as scanner dealers who sell two-way radios. Make sure the radio will operate on the frequency range you expect to use. If you set up a repeater notification group in your city, *POP'COMM* would like to know about it. We'll help you find members, too, if you drop a line to *Scanner Scene*.

### Your Turn

We want to hear from you at *POP'COMM*. Send your questions, comments, suggestions, frequency lists, photographs, etc., to: Chuck Gysi, N2DUP, P.O. Box 544, New Hope, PA 18938-9544. **PC**

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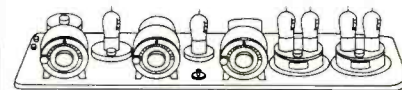
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## GMRS: Signals Of Change At 460 MHz

The General Mobile Radio Service (GMRS) has sometimes been regarded as "the Forgotten Service." GMRS has recently been thrust into the spotlight, however. The FCC, after years of hemming and hawing, has announced some bold new proposals for this little-known slice of the spectrum.

The term "little-known" may not be entirely correct for many readers of this magazine. True radio aficionados will remember GMRS as the former "Class A Citizens Radio," the predecessor of today's 27 MHz Citizens Band Radio Service, the CB with which we are all familiar.

Yes, it's a fact: The first "citizens" radio for personal use was not in a skip band, but in the UHF band 460-470 MHz. When it established Citizens Radio, the FCC intended it to be used by private individuals, families and small groups for personal communications. Transceivers affordable by consumers just weren't plentiful at the end of World War II when "Class A" was created, however, and from the late 1940's until the 1970's the band did not have many personal users.

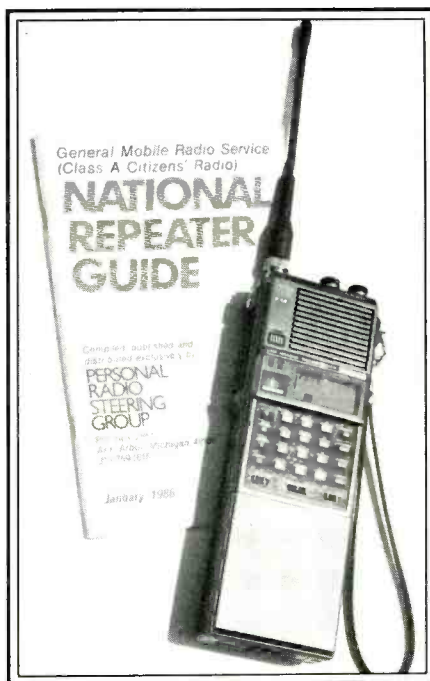
### Spectrum Reallocation

The pressure to allocate spectrum specifically for commercial and industrial use eventually led the FCC to carve out most of the 10 MHz-wide Citizens Radio band and transfer it over to what we now know as Business Radio and its related radio services, used by cement haulers, package deliverers, carpet cleaners and all of the other radio-dispatched enterprises of our mobile society. Class A was left with eight pairs of frequencies (MHz):

462.550	467.550
462.575	467.575
462.600	467.600
462.625	467.625
462.650	467.650
462.675	467.675
462.700	467.700
462.725	467.725

To "compensate" for the loss of more than 90% of Citizens' Radio spectrum, the FCC seized upon the 11-meter ham band, and over the vociferous protests of radio amateurs, created CB. (The Commission also eventually renamed the "Class A" service the General Mobile Radio Service.)

Many of today's GMRS licensees had used CB, but found that their communications needs required more reliable, professional-quality service than was available on CB. GMRS' position in the radio spectrum



The Yaesu FTC-1143 is a synthesized, 10-channel UHF handheld suitable for GMRS use. The National Repeater Guide, issued by the Personal Radio Steering Group, lists hundreds of repeaters available to travelers. (Photo courtesy of PRSG.)

and its FM modulation result in the service being more free from skip-induced interference and noise.

### GMRS Repeaters

A special advantage of GMRS over CB concerned repeaters. With repeaters to provide reliable coverage, low-power handheld personal radios became practical. To be sure, there are CB walkie-talkies, but the relatively long wavelength of CB antennas means that handheld CB units are not very efficient emitters. In GMRS, UHF antennas are quite small by comparison, yet are efficient. A radio hitched to your belt can keep you in touch city-wide, through a repeater—without annoying "breakers" beaming in from half a nation away, as can often happen on 27 MHz during peaks in the sunspot cycle.

Hundreds of GMRS repeaters went up around the country in the 1970's and early 80's, many of them sponsored by local public-service radio teams that volunteer their services in emergencies. Other repeaters were set up by families who got together to pool resources. As the only private mobile radio service in which individuals can li-

cense without having to take technical examinations or pass commercial eligibility criteria, it was appropriate that the service should blossom with these types of communications.

Some GMRS repeaters were established as commercial systems, running fleet-dispatch operations for industrial purposes—often to the consternation of personal, non-commercial users who licensed in GMRS because they had nowhere else they could legally go.

### Commercial Usurpation

Many of these industrial users were put on GMRS by vendors who failed to explain to them that they weren't on a regular business channel—they were operating in a personal radio service with different rules and conditions than those found on business channels. For example, the GMRS rules are rather rigorous when it comes to station identification: every GMRS station must identify, whether it is a mobile, portable or base unit, and whether or not it shares the same callsign with other units under the same license.

Also, personal, non-business messages are as legal as business messages on GMRS. Even if you're "trying to run a business," you must still cooperate in sharing the channel with others.

Those are the rules, but the reality is that lumping commercial dispatch operations and personal users together has led to poor results over the years. According to Randall Knowles of the Personal Radio Steering Group, "In many areas, especially major metropolitan zones of high population density, loading of the eight GMRS channels by commercial operations has been so heavy that personal use is totally precluded."

Knowles observed that while this usually happens during daytime business hours, "in some cases, round-the-clock operation, such as by taxi companies, results in the complete exclusion of personal use at all times. The problem is made worse by the fact that the larger the commercial user, the more money it has to spend on powerful, expensive equipment and superior antenna sites. The individual personal user or family just cannot compete in that setting."

### PURAC

Recognizing that there were some problems with the way GMRS was turning out, as well as with CB, the FCC in the mid-70's established the Personal Use Radio Advisory Committee (PURAC) which was com-



posed of users, manufacturers, electronics journalists, association chiefs and consultants. The PURAC came out with hundreds of recommendations for improving CB and GMRS, one of which was to place limits on commercial usurpation of GMRS spectrum.

Another recommendation was to establish a new, high-technology personal radio service in the high UHF band. The FCC actually began proceedings to establish such a service in 1979. The General Electric Company invested millions of dollars in research and development for the new radios, which incorporated PURAC recommendations. This new service was to be called "PRCS," for "Personal Radio Communications Service," and it received substantial support from radio users and citizens groups.

The GE radios operated in the 900 MHz band and were capable of "autopatch"—that is, they were able to function just like a car telephone. In fact, GE's marketing name for the radios was not PRCS but "Carfone." The autopatch feature angered many manufacturers and service vendors in the cellular telephone industry, who loudly complained to the FCC that PRCS would cut in on their business and use up valuable spectrum that was needed by cellular telephones. In a nutshell, the FCC complied with the cellular industry's requests, and in late 1984 turned down the PRCS proposal.

### Another Attempt

The FCC didn't abandon its attempt to create a "new" radio service for personal use. The agency tried again in 1986. This time, the FCC proposed to dismantle the existing GMRS and turn it into something called the "Consumer Radio Service," which was essentially a scaled-down GMRS with no repeaters, no licenses, and very limited transmitter power and range. "We don't want these on repeaters; we don't want city-wide coverages," and FCC staff member explained at the time.

Having lost the battle for PRCS, GMRS users were astounded that the FCC was now proposing to eliminate some of the most important and necessary features of GMRS in favor of "Consumer Radio," which they regarded as a "high-tech kiddie-talkie." Hundreds of letters and Congressional inquiries poured into FCC offices protesting this proposal, and the FCC saw the writing on the wall. The "Consumer Radio Service" idea was terminated in April of this year.

### The New Approach

In July, the FCC decided to keep GMRS, but to introduce some needed improvements. These improvements were based largely on the PURAC recommendations and on petitions from GMRS users. In a Notice of Proposed Rulemaking, the FCC:

- Proposed to grant GMRS licenses only to individual persons. Existing commercial licensees could keep and renew their licenses, but could not add stations. The FCC

said it wants to "reorient" the regulatory structure of GMRS from a "traditional land-mobile dispatch perspective to a personal-use perspective."

It is believed that this change will provide the necessary incentive to commercial and institutional entities to license in the business radio services for which they are eligible, rather than continue to fill up the GMRS, which does not have the capacity to accommodate them.

- Proposed to eliminate the need to relicense a GMRS system before changing channels. Under current rules, a GMRS license gives you permission to operate on one or two channels and no more (without special justification). The FCC now proposes to let all GMRS licensees use all GMRS channels. A licensee could use only one channel at a time, however.

- Proposed to add seven "interstitial" channels, offset from the main GMRS channels by 12.5 kHz. Four of these channels would be one-way, non-voice channels

used by repeater operators to control their repeaters. Three of the channels would be available for low-power, non-repeater, direct voice communications. For the first time, GMRS users would have special channels they could use for short-range voice without being "stomped on" by co-channel repeater transmissions.

- Proposed to liberalize transient use of repeaters. Under current rules, users are very restricted in the way they may use other's repeaters, unless they have completed previous licensing or written agreements for those particular repeaters. This presents a particular problem for travelling GMRS users who want to communicate with each other through a repeater while away from home. The FCC's suggested new rules would make it easier for the repeater operator to permit travelers to use the repeater.

- Proposed to create a new station category: "Small Base Station." This would enable GMRS users to easily license their handheld units, for example, for use at base

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by Dave Ingram, K4TWJ

A brand new, completely up-to-date handbook on RTTY, covering the latest developments and techniques, plus use of the home computer for RTTY. Illustrated with photos, diagrams, station setups, and RTTY gear. 112 pages, paperback, \$8.95. Order #H211.

## Vertical Antenna Handbook, 2nd ed.

by Paul H. Lee, N6PL

Out of print for several years, this classic has been reprinted with updates, including an addendum on antenna design for 160 meters. Other sections include feeding and matching, short verticals, ground effects, and much more. 139 pages, paperback, \$9.95. Order #H208.

## The Complete DX'er

by Bob Locher, W9KNI

Covers every significant aspect of DXing from how to really listen to how to snatch the rare ones out of the pileups. Also includes advice on siting, equipment selection, and antennas. 187 pages, paperback, \$10.95. Order #H209.

locations, instead of having to buy expensive, dedicated base station equipment and calculate geographical coordinates for the base location.

The GMRS community will probably respond favorably to most of the FCC's proposals, especially the one limiting future licensing to individual persons only. Other proposals, such as opening up all GMRS channels to every user, are likely to be controversial. Some users would like to be able to switch to any of the eight channels to find one that is clear and available for use.

Other GMRS users argue that multichannel operation would encourage people to chitchat with any random station they may find on any channel. With only eight channels, any proposal that could turn GMRS into another "gab radio" service will probably be greeted with considerable skepticism. Instead of spending dozens of dollars on a CB, people who spend hundreds of dollars per radio in GMRS are going to expect a better quality of service and a higher degree of user discipline.

## Getting On The Air

If you believe GMRS may suit your communications requirements, listen to the GMRS channels in your area on a scanner to determine local user density. Listen to the 462 frequencies of the pairs, which are repeater outputs and most simplex communications.

You should also contact the Personal Radio Steering Group, Inc. (P.O. Box 2851, Ann Arbor, MI 48106). This all-volunteer organization provides its subscribers with services and publications, such as copies of the FCC licensing form and detailed instructions for the often complex process of filling it out. The FCC requires payment of a \$30 fee for each license application. Application forms are also available at your nearest FCC office; ask for Form 574.

The PRSG also publishes guides listing GMRS repeaters, local contacts and public-service radio teams, copies of the GMRS rules (FCC Part 95), and a newsletter, the Personal Radio Exchange. Newsletter subscriptions are \$20 per year. A self-addressed stamped envelope will bring details of the organization's services.

GMRS uses the same radio equipment used in the UHF commercial bands. Some POP'COMM advertisers sell equipment suitable for GMRS by mail, and local repeater operators can advise on equipment sources.

## A Birthday Wish

The FCC's long-awaited proposal to upgrade GMRS comes on the 40th anniversary of the creation of personal radio in the UHF band. Let's hope that the next forty years will bring some intelligent improvements in the GMRS rules, and a community of licensees who will defend and preserve this useful service.

*Benn Kobb is a telecommunications consultant in Washington, D.C.*

# POPULAR COMMUNICATIONS

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## 27 MHz COMMUNICATIONS ACTIVITIES

### On The Side

A goodly portion of our incoming mail asks us to delve into the mysteries of Single Sideband (SSB). There's no doubt about the fact that, while it has some things in common with "regular CB," it's something that is quite different in many respects.

SSB stations are authorized for operation on the same channels as all CB stations, and (just as with regular AM-mode CB) no FCC license is required. SSB transceivers for 27 MHz usually include the ability to operate in the regular AM-mode in addition to their capabilities in the special SSB mode. SSB equipment is also more expensive than AM-only 27 MHz transceivers.

The price differential seems small enough to the many operators who have elected to move into this specialized area of 27 MHz communications. SSB operation offers a number of genuine benefits, not the least of which is more (legal) effective power output than AM-mode, increased communications range, and less interference. Those are just the nuts and volts differences, there's still more to SSB than that.

As if the technical differences weren't enough to make a difference, many of SSB's adherents flocked to this segment of 27 MHz operation because of other factors. SSB has long attracted a somewhat different breed of operator than those generally found operating in AM-mode. While AM has serious operators, it has also attracted a strange assortment of little kids, jokers, signal jammers ("chuckers"), and people who revel in 10-codes and corny (alleged) truckers' CB lingo. None of this is tolerated on the

select frequencies where the *sidebanders* (note that these folks prefer not to be referred to as *CB'ers*) hang out. Moreover, on these frequencies, people don't ask for a break in order to start talking.

It hasn't always been easy, but SSB operators have managed to keep their operations devoid of virtually all of the less desirable antics that have plagued AM-type communications over the years. This, when combined with the *substantially* increased communications range, ends up as something with enormous appeal for those who prefer increased communications tied in with a group of operators less rambunctious than usually found using the AM-mode.

SSB transmissions can't even be copied on AM transceivers; they sound like *Donald Duck* with laryngitis to AM operators. Mostly, SSB'ers stick to a selected grouping of channels such as CB Channel 16, and those from 32 to 40 in larger metro areas. Unlike AM operations, where it almost seems like anarchy is often a must, SSB'ers have been able to maintain an even keel in their activities in several ways.

For one thing, SSB'ers are all affiliated with groups or clubs devoted to maintaining the integrity of SSB operations. SSB'ers don't *ever* use AM-type CB *handles*. Anybody showing up on SSB with one, or using 10-codes or so-called CB truckers' lingo, would be promptly laughed off the frequency and thoroughly ostracized by everybody. SSB organizations give out individual membership numbers to their affiliated stations, and those numbers are always used for on-



The great looking SSB Network (in red, white and blue) emblem is available as a large (5 inch) embroidered blazer patch.

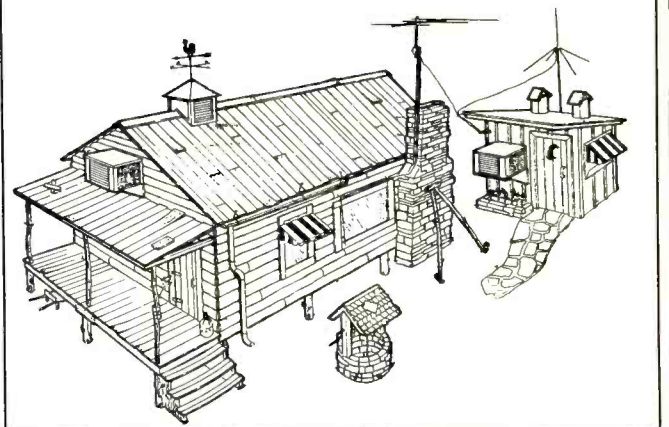
the-air identification so that other stations can readily discern that they're dealing with someone who understands the unofficial and traditional sidebanding operating practices and courtesies. This keeps everything on a very cooperative basis, like a fraternity of friends.

SSB'ers, it might be pointed out, sound very much like what you might hear on a typical ham band, right down to their use of Q-codes and general operating practices. Of course, SSB on 27 MHz is a minority of operators, it has never achieved the mass popularity of AM-mode operations, nor has it sought to do so. The SSB'ers are quite



Fanon Courier's new Galaxy IV SSB transceiver for 27 MHz sells for about \$100 less than a full-featured sideband rig cost only five years ago. This puts the many advantages of SSB within the pocketbooks of many who want maximum communications but didn't want to spring for the cost of an SSB rig.

### BASE STATION OF THE MONTH



Our base station of the month shows a typical neat and well organized sideband station, complete with air conditioned radio room.



This sidebander's QSL displays his SSB Network number in large letters, then adds in several additional groups' numbers across the bottom.

content being with their little communications oasis in the midst of the cacophony that is all too often found on the rest of 27 MHz. In many ways, it's somewhat of a selective group of people who are sometimes considered snobs or elitists by those who neither understand nor agree with what 27 MHz SSB is all about.

Since showing up on an SSB frequency without a membership number from a known source makes an operator somewhat of a non-person, getting one is a must-do. Since the earliest days of sidebanding, there have been hundreds of local, country-wide, statewide, regional and national organizations—all issuing their own distinctive membership ID's. Many operators have collected long strings of such numbers from various groups, primarily because so many of these groups have an exceedingly brief radioactive half-life. They come into existence with the best of hopes and intentions, issue some numbers, and somehow drift off into limbo—thus making their numbers unwanted orphans.

My own number, SSB-295, was issued many years ago by the SSB Network, an international organization that has been in continuous operation since 1964. With more than 125,000 affiliated members worldwide, a record of longevity stretching back almost twenty-four years, it's an ID that I use with pride and the confidence that immediately identifies me with the largest and oldest—the "original"—national/international organization of sidebanders. And I'm not concerned that the organization might suddenly fizzle without warning or known reason. SSB-295 is the only number I have ever needed to have or use!

For those who are present or future sidebanders, the address of *The SSB Network* is P.O. Box 908, Smithtown, NY 11787. A membership application is available to those who furnish a self-addressed stamped (U.S. 22-cent) return envelope. You can also affiliate without a formal application. There is a one-time affiliation fee (no yearly dues) of \$8 which brings you a membership card showing your ID number, a gold/black wall certificate with your name, ID number, and date of affiliation; complete information on recommended sidebanding operating tech-

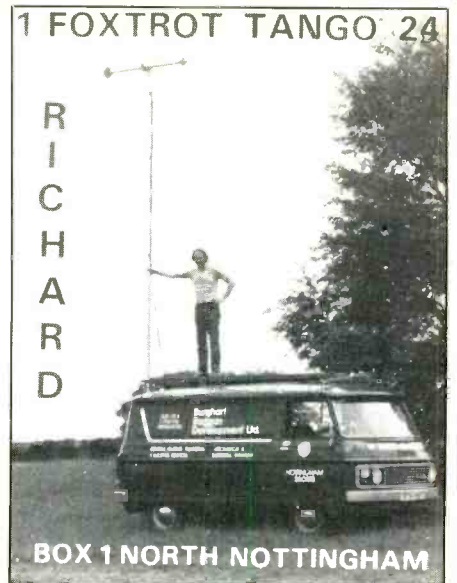


Many SSB'ers, like SSB-2495 in Wisconsin, indicate their primary monitoring channel. In this case, Channel 16, lower sideband ("16L").

niques and practices; plus copies of *The Sidebanders' Creed*, *The Sidebanders' Bill of Rights*, and *The Sideband 7 Deadly Sins*. For \$10.95, you get all of the foregoing membership items, plus the large (5 inch) red/white/blue SSB Network embroidered blazer patch. The patch may be ordered separately (without the membership) for \$3.95, prepaid. Persons who already have an ID number from any other group should mention that number when applying for affiliation.

Insofar as the hardware of sidebanding goes, the good news is that equipment prices are lower now than they were a couple of years ago. Many manufacturers produce SSB transceivers for 27 MHz, and now that you can locate equipment such as the new Fanon Courier *Galaxy IV* SSB rig in the \$150 price range, the golden realms of SSB become more appealing than ever.

The *Galaxy IV*, by the way, is available nationally from Fanon Courier dealers. It offers excellent adjacent channel rejection of better than 70 db down, plus automatic gain



Richard, in North Nottingham (England) has his sideband station in a van topped off with a base station quad antenna!

control, a noise blanker/limiter, full AM/SSB capabilities, large LED channel indicator, Channel 9 priority switch, RF gain control, microphone gain control, SSB clarifier control, all done up in a black/white cabinet. Only five years ago, an SSB rig with these features would have sold for more than \$250! More information on the unit can be obtained from Murray Trotiner, Fanon Courier, 14281 Chambers Rd., Tustin, CA 92680. Tell Murray we sent you!

Next month we'll return with more inside info on 27 MHz and how it can best serve your own communications needs. Let's hear from you!

PC

## 10 Meter Enhancement Is Here

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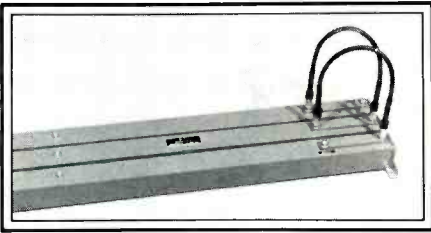
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# PRODUCTS

## REVIEW OF NEW AND INTERESTING PRODUCTS



### Land Mobile Filter

Notch filter model 6040A eliminates transmitter sideband interference to land mobile receivers at the same site. Available from Microwave Filter Company, Inc., the unit is installed on the output of a mobile radio transmitter to notch side band energy at the receiver's frequency.

Notch frequency is 74.15 MHz; though other frequencies are available. The pass transmit frequency is plus or minus 6.05 MHz from the notch frequency. Notch depth is 75 dB minimum and transmit signal loss is .25 dB maximum. Impedance is 50 ohms. The unit will handle 1500 watts at the transmit frequency.

Price is \$1,250 and delivery is six weeks. For more information contact Jean Dickinson at Microwave Filter Company, Inc., 6743 Kinne St., East Syracuse, N.Y. 13057. Call 1-800-448-1666 or collect (315) 437-3953 New York, Hawaii, Alaska and Canadian residents. You may also use reader service card number 103.



### Morse Code Tutor Program

MFJ Enterprises, Inc. announced its new MFJ-1266 and MFJ-1267 Morse Code Tutor Program/Iambic Keyer/Keyboard. This new full feature Morse Code Tutor Program for the Commodore C-64 and C-128 not only teaches Morse code but it is also a full pledge iambic keyer and Morse keyboard! With the optional \$19.95 MFJ-76 interface board you can plug in an external keyer paddle and key a transmitter or transceiver.

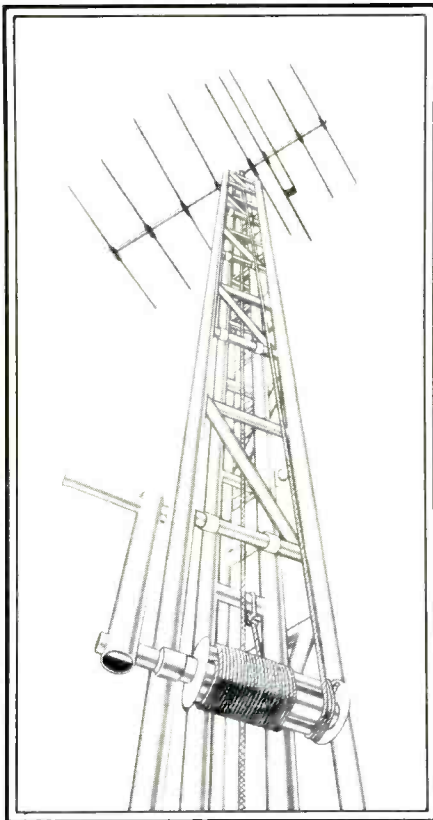
The disk version MFJ-1266 retails for \$19.95 and the cartridge version MFJ-1267 retails for \$29.95.

The MFJ Morse Code Tutor features:

- Select Random—lets you choose the letters you wish to study

- Complete Random—sends all alphabet, numbers and punctuations randomly
- Random Message—sends a plain English message exactly as given on an FCC test or received on the air
- Message Store—lets you enter a message from the keyboard and store for sending

Each mode can use the normal CW spacing or the special Farnsworth spacing that sends characters at a fast pace with longer space between characters. A copy of a test similar to a FCC Novice license test is included in the manual. For additional information contact MFJ Enterprises, Inc. at P.O. Box 494, Mississippi State, MS 39762, (800) 647-1800 or circle number 109 on the reader service card.



### Crank-up Tilt-over Antenna

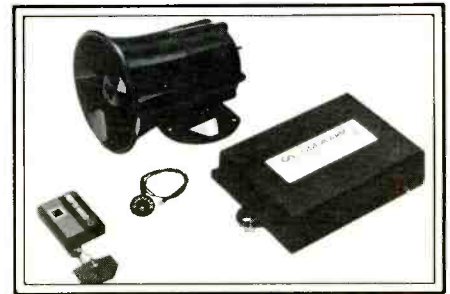
Aluma Towers are again available from McClaran Sales, Inc. of Vero Beach, Florida. Mobile van, trailer and rooftop towers, as well as stack sections are available. The towers are constructed of rust-free aluminum and, according to McClaran, require little maintenance. All towers hinge at the base, and due to the minimal weight can be easily installed or tilted.

Robert D. McClaran, owner and President of McClaran Sales, Inc. also mentioned in a recent news release that Crank-up towers from 35 to 100 feet are also avail-

able in standard and heavy-duty models, and feature stainless steel aircraft cables. Power winches and ground posts are available for most towers.

Although the towers are sold primarily for ham radio, CB or commercial use, they can be designed and manufactured for special purposes. McClaran says that the military, Civil Defense, cable vision companies and TV show producers are among his many clients. McClaran, who is a ham radio operator (W4ZGG) says he is probably the only dealer who will accept amateur radio equipment or computers in trade toward the purchase of an Aluma tower.

For more information including brochures, specification sheets, and price lists, contact McClaran Sales, Inc. at P.O. Box 2513, Vero Beach, Florida 32961; telephone: (305) 567-8224, or circle number 105 on the reader service card.



### Auto Security System

Code-Alarm, Inc. has announced a new affordable and unique Auto Security System. The new, entry level, remote system called Code-Alarm TRX-707SD is built around new "Scan Deterrent" Technology to frustrate even the most sophisticated auto thief. "The scan deterrent technology we designed allows only one security code to be attempted every two seconds and severely limits the effectiveness of frequency scanning," states Code-Alarm Chief Engineer Peter Stouffer.

"In addition, the '707' links scan deterrent with a microprocessor designed system capable of 32,000 possible codes providing a technical level of security not heretofore achieved," added Stouffer.

Code-Alarm's "self diagnostics," another exclusive feature, is also incorporated in the TRX-707SD. "This circuit lets you know when the system is armed, telling you with distinctive 'chirps.' If there is a malfunction the 'chirp' will not be heard and guess work is eliminated," Stouffer said.

All Code-Alarm products are made in the U.S.A. For additional information contact Kenneth Mueller, Director of Public Relations, at Code-Alarm, Inc. 1-313-583-9620 or circle reader service number 101.

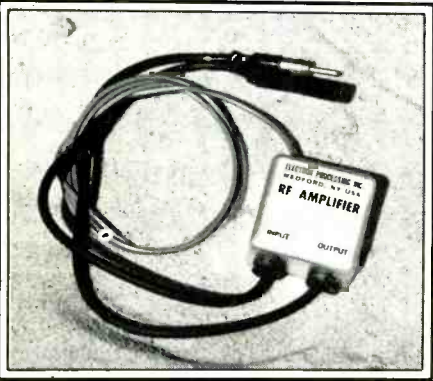
## Super Performance Signal Intensifiers

Electron Processing, Inc., announced the addition of a new model to their popular line of Signal Intensifier™ RF amplifiers.

New series RFSP Signal Intensifiers satisfy the need for super high gain and wide bandwidth amplification all in one package. These high performance receiver or instrumentation preamplifiers are enclosed in a rugged aluminum housing and are complete with an entirely self-contained 110 VAC power supply.



Sporting a gain of 20 dB and a noise figure of 3 dB, the RFSP Signal Intensifier covers 50 MHz to 1000 MHz continuously. Popular BNC-type connectors are provided for input and output connections. Pricing starts at \$69.95 Amateur Net with quantity discounts available.



New series RFC Signal Intensifiers are 12 volt DC powered versions of their popular RFA series. These low cost yet high performance receiver preamplifiers are ruggedly made for lasting performance in the grueling environment of today's automobiles. Available in two versions, the RFC-30 covers 500 kHz to 150 MHz and the RFC-16 covering 50 MHz to 1000 MHz. Both amplifiers provide 13 dB gain and are supplied with convenient Motorola connectors. Power required is approximately 25 mA at 10 to 18 volts DC, negative ground. Pricing starts at \$29.95 Amateur Net with quantity discounts available.

For more details and ordering information, contact the Sales Department, Electron Processing, Inc. at P.O. Box 708, Medford, NY 11763, or circle number 106 on the reader service card.



"New World of Amateur Radio" video.

## Ham Radio Video

A new videotape on the exciting and fascinating hobby of Ham Radio, "The New World of Amateur Radio," is now available from the American Radio Relay League.

In a fast-paced TV magazine format, the show portrays the excitement and growth of the hobby of Ham radio that joins people of all ages, races, and nations in friendship, adventure and service around the world.

Since Ham radio is a truly international hobby, the video includes tape from more than a dozen foreign countries. There's footage of Australian Hams conducting an expedition to desolate Heard Island in the Antarctic accompanied by seals and penguins; aviators Dick Rutan and Jeanna Yeager, two Hams making history in the non-stop around-the-world flight of *Voyager*; and a group of Dutch Hams who communicate with other Hams around the world using the giant international shortwave antenna system of Radio Netherlands.

"The New World of Amateur Radio" has been produced with the support of ICOM America, Kenwood USA Corporation, and Yaesu USA. The ARRL is encouraging extensive use of the video to explain Amateur Radio to groups of all ages and levels of involvement, and thousands of copies will be made available through the auspices of

these leading manufacturers. ARRL affiliated clubs and other interested individuals, groups and organizations may order copies of the half-hour video on a free loan basis or purchase copies for their own use for \$20 prepaid from the American Radio Relay League, Box NW, 225 Main St., Newington, CT 06111.



## Pomona Electronics Offers 1988 General Catalog

The 1988 edition of their annual general catalog of electronic test accessories is now available from Pomona Electronics. The new catalog contains 128 pages, describing and illustrating more than 840 test products, including 28 that are offered for the first time this year. Of special interest to a growing number of electronic circuit design engineers is an expanded line of 33 accessories specifically designed to test surface-mount devices.

Copies of the 1988 general catalog are available free upon request to ITT Pomona Electronics, 1500 East Ninth Street, Pomona, CA 91769. Telephone: 714-623-3463. For more info circle number 104 on the reader service card.

# Delaware Amateur Supply

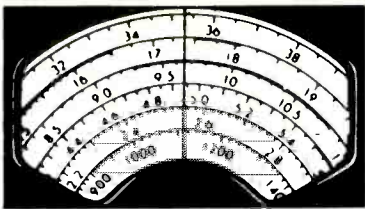
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# COMMUNICATIONS CONFIDENTIAL

BY DON SCHIMMEL

## YOUR GUIDE TO SHORTWAVE "UTILITY" STATIONS

**T**he mailbags were full again this month and we were joined by some more first-time contributors. To all who wrote, thanks for the interesting letters and the great loggings.

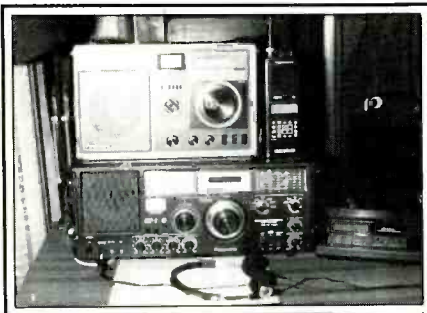
David Bass, NC asked about jammers, what they sounded like and the use of ID's. There are many different types of jamming signals but I guess the one most often heard in peace-time is the buzzing signal which is usually directed against international SW broadcasts when a government does not want its population to hear what another government might be carrying on the airways. An example would be the Soviet Union jamming the broadcasts of Radio Free Europe. On occasion you may run across a sweeping jammer where the noise being transmitted is swept back and forth across the SW broadcast frequency. Identification indicators for jammer transmitters are assigned and used by a government so that their own monitors can take into account their jammer transmitter locations in making an evaluation of the effectiveness of the jamming against a particular SW broadcast target.

Tom Hunter, CA wanted to know if there was any open literature dealing with such subjects as "Radio Traffic Analysis." As a matter of fact there are several sources of related publications and since others have asked about this subject, I will give you the addresses of two mail order firms I have purchased related titles from: CRB Research, P.O. Box 56, Commack, NY 11725 and Aegean Park Press, P.O. Box 2837, Laguna Hills, CA 92654.

I suggest you write to both places and request their latest catalog. I am certain you will find many titles to your liking.

"What can be found below the broadcast band?" This is a question asked frequently. With the proper equipment and antenna there are lots of transmissions to be found in the VLF, LF and MF ranges. To mention a few, there are aeronautical and maritime radionavigation beacons, maritime mobile workings, standard frequency/time signals, and navigational signals such as OMEGA, DECCA and LORAN-C.

I have again received queries from readers for some CW press frequencies but I must confess that since I obtained a Model 33 Printer I have copied only RTTY press material so I do not have any listings for CW press. If any readers do have some current frequencies for CW press transmissions, please send them to me and I will include



Bill Minardi, RI says he is particularly interested in monitoring maritime communications on the HF and VHF bands. Here is a photo of his monitoring post which consists of a Panasonic RF-4800, Panasonic RF-B300, Uniden Bearcat BC175X1 scanner, Realistic Pro-31 portable scanner and a Realistic Pro-32 (not shown). He has an 85-foot longwire for HF and a homebrew VHF ground plane antenna.

them in a future column. Note 10694 kHz in this month's loggings for one in Polish.

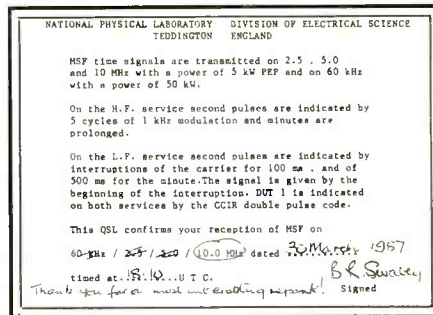
The next subject to be discussed I find extremely interesting. First, let me give you a bit of background information.

About a year ago reader Bartok J., England, contributed an intercept of a "Mad Violin" playing a frantic gypsy tune followed by words "Terminat, Terminat, Terminat." The transmission was on 5110 kHz, on USB at 2100 UTC.

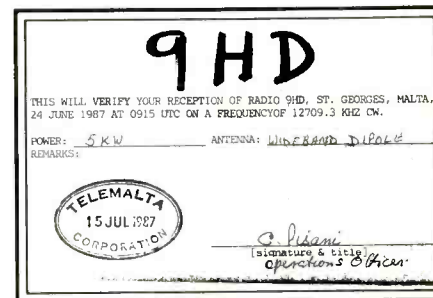
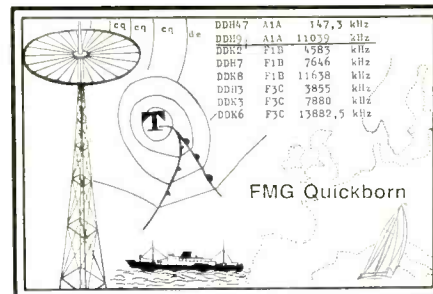
A while later I received a letter from Roland Pop, Australia telling of his interest in such transmissions and he included an informative report on his monitoring of them over the years. Due to space restrictions in the column that month, it was not possible to include all of Roland's remarks.

One popular belief is that short, high-speed, data bursts may be hidden in the musical selection which is a very swift type of melody. The Rumanian Government is the probable sponsor of these communications because "Terminat" is the Rumanian word for "Finished" and when traffic is passed (5F groups) the numbers are given in Rumanian.

The latest news to be received pertaining to this matter came from Simon Mason, England. Simon forwarded a page from the publication of the Radio Budapest DX Club and, lo and behold, there was an entry from V. Skarzhinsky, Moscow, USSR concerning the gypsy-sounding music transmis-



Here is a QSL card received by J.D. Stephens, AL.



Patrick O'Connor, NH shares a couple of his QSL cards with readers.

sions. Here is what Mr. Skarzhinsky had to say in his letter to the Club Newsletter:

"My reply to a question from British club member M. Palmer: The 'very unusual station' you heard was a transmission in Rumanian, which can often be heard in the band up to 10 MHz, on 'outside-band' frequencies, very clearly and distinctly. It broadcasts a 'Sky-lark' melody, which is followed by groups of figures in Rumanian. The transmission ends with the words 'Terminat, Terminat!' There are several similar transmissions, however, these usually are not interesting for DX'ers due to the closed character of their activities."



FRESNO, CA.

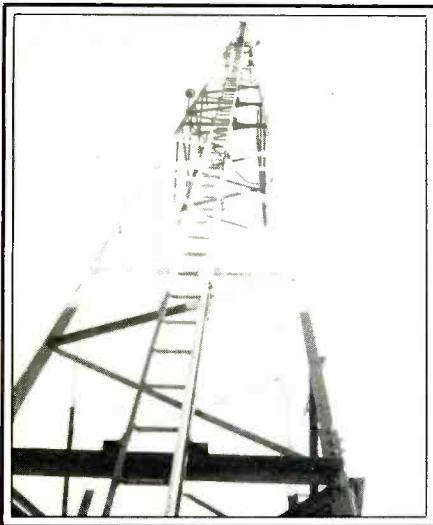
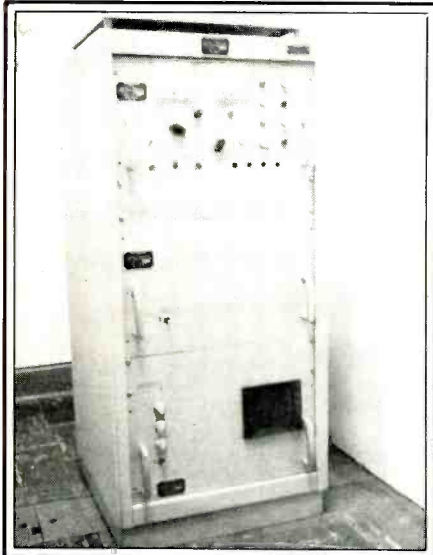
CHANDLER  
MUNICIPAL  
AIRPORT

FCH

344 KHZ

THIS WILL CONFIRM YOUR RECEPTION OF RADIOBEACON: FCH  
ON 344 KHZ AT 0514 PDST ON October 5, 1986.  
BEACON POWER: 500 WATTS  
BEACON ANTENNA: 130 foot Adcock Tower  
REPAIRS:

Jay F. Jacobsen



Simon added the comment, "Not interesting to DX'ers, eh??"

And now let's take a look at what you folks have been listening to.

RTTY Intercepts  
Settings= Shift/Baud/Polarity  
All Times Are UTC

1741.1: Un-ID sta w/faxes & "PAANG," 850/75R at 0034 (David Agnew, DE). There are several stations worldwide here, but mainly for SSB marine/aviation ops. None listed as RTTY. Most can be ruled out because of distance except Palma de Mallorca R., Spain, & CKJ at Halifax, NS-- Ed.

2696.7: GLD3, Lands End R., England w/call marker in ARQ & CW at 0427 (Tom Kneitel, NY).

3196: Prague Meteo, Czechoslovakia w/coded wx at 0213, 425/50N (Kneitel, NY).



US Department  
of Transportation

Federal Aviation  
Administration

Airways Facilities Sector Field Office  
5055 E. Andersen Ave., Suite 1B  
Fresno, California 93727

April 22, 1987

J.S. McDonald

Dear Mr. McDonald:

Thank you for your interest in our radio beacon, FCH. I would be most happy to confirm your reception on October 5, 1986 at 0514 PDST.

I am sorry for the delay in responding to your request, but your letter was misrouted and when it was finally received, we were unable to respond immediately.

I had one of my maintenance technicians take some pictures of our equipment and of the facility site, I hope you enjoy them. The transmitting equipment, which is in operation continuously, was made for the Federal Aviation Administration (F.A.A.) by Nautel (company) and has a model number of FA-9781. It has a maximum output of 400 watts. The R.F. output is impedance matched to the 130 foot Adcock antenna tower via an automatic tuning unit, also made by Nautel, with a model number of NX2000 TUB. The funny looking interlocking donut assembly is actually a lighting transformer, isolating the A.C. power for the obstruction lights on the top of the antenna from the R.F. energy. The ground system consists of sixteen radials of #6 bare copper wire buried approximately two feet below the surface extending outward from the antenna, like spokes in a wheel, for approximately 160 feet.

The site is located approximately one-half mile west of the Fresno (Chandler) Airport, on agricultural land, which is, of course, rather flat. If you are not familiar with this area, Chandler Airport is approximately three miles west of the old downtown Fresno. The airport itself, is used by general aviation (small non commercial aircraft) and has an Air Traffic Control Tower which has been closed for several years. In fact, there are no manned F.A.A. facilities at Chandler airport.

I'm not sure just what other information you would like so I'll pass it back to you. If we can provide you with any other specific information, please ask. Should you or your friends find yourselves in the Fresno area, we would be more than happy to provide tours of our facilities. Thanks again for your interest.

Jay F. Jacobsen  
Jay F. Jacobsen  
Manager, Fresno AFSFO



Edward Warren First American Afloat

Steve McDonald, Canada not only received a QSL from the Fresno, CA radiobeacon, but also a nice letter plus photos of the installation.

3388: Endless RY's w/o ID at 0519, 425/50N (Ed.).

4215: Same as above at 0415 (Kneitel, NY).

4355: WLO, Mobile R., AL w/wx in ARQ at 0034 (J.M., KY).

4489: GFL26, Bracknell Meteo, England w/coded wx at 2345, 425/50R (Agnew, DE).

4549.5: LRO9, DyN Buenos Aires, Argentina w/nx in SS at 2345 (Agnew, DE).

4632.5: DEB, INTERPOL Wiesbaden, FRG in ARQ at 0138 w/text in apparent Italian (Kneitel).

4870.4: TNL, ASECNA Brazzaville, Congo w/RURY at 0034, 425/50N (Kneitel, NY).

5029.6: GYU, Royal Navy, Gibraltar w/faxes at 0559, 425/50R (Agnew, DE).

5159: 5UA, ASECNA Niamey, Niger w/RURY at 2140, 425/50N (Agnew, DE).

5186.9: ETD3, Addis Ababa, Ethiopia w/RURY at 0115, 50R at 0115 (Agnew, DE); RYRY & asking "How do you read-- over" at 0217, 100/50R (Kneitel, NY).

5240: 40C2, TANJUG Belgrade, Yugoslavia w/nx in EE at 0213, 425/50R.

5369.4: FDY, French Air Force, Orleans, France w/"le brick" at 0124, 425/50R (Agnew, DE).

5442.5: 70C, Khormaksar Aeradio, S. Yemen at 0240 w/RURY at 0240. Call incorrectly sent as 70C (numeral zero instead of letter O). Was using 425/50N (Kneitel, NY).

5460: VOA Tangier, Morocco w/book reviews at 0025, 425/75N (Agnew, DE); Same at 0506 (A. Nonymous).

5718: CAI7E, Pascua Aero, Easter Island w/RURY at 0041, 850/50N (J.M., KY). Way to go, J.M.!-- Ed.

6330: Huge dose of apparent wx related data. Never ID'd while I was listening. Was 850/75N at 0445 (A. Nonymous). This is CFH, Canadian Forces, Halifax, NS-- Ed.

6422: NMN, USCG Commsta, Portsmouth, VA w/fc for WTEW, NOAA ship Whiting. At 1934, 170/75R (J.M., KY).

VERIFICATION CARD

Please use a white-shaped (pine) station envelope  
 years old in Hamburg

QSL  
 Location... TRIESTE  
 Wavelength... 5W  
 Date... APRIL 13 1987  
 Time... 0710 U.T.C.  
 Your reception report has been examined and found correct.

STATION  
 RUBBER STAMP  
**STAZIONE RADIO COSTIERA S. POST**  
 34100 TRIESTE  
 DIREZIONE: Via Bellavista 4

Station Manager's Signature  
**F. Boroluss**

VERIFICATION CARD

QSL  
 Location... BARCELONA  
 Wavelength... 5W  
 Date... MARCH 19  
 Time... 1430  
 Your reception report has been examined and found correct.

STATION  
 RUBBER STAMP  
**EMPRESA NACIONAL DE GRUPO CENTRAL TELECOMUNICACIONES REGIONAL JEFATURA**

Station Manager's Signature  
*Alfonso Ratin*

Serving major destinations around the Continental system, the airline's DC-10s feature colorful decor, and a dedicated First Class section, all complemented by high quality Continental headrests, fine food and top quality beverages.

The Proud Bird  
**CONTINENTAL AIRLINES**

TOKYO VOLMET

Mr. A.M. Peterson  
 It is our pleasure to confirm your reception report of our station. you were tuned to TOKYO VOLMET station on 8828 KHz. Date and Time May 22 87  
0910 U.T.C.  
 2863KHz. 6679KHz. 8828KHz. 13282KHz. (each 1.5 kw) Transmitting Station NAZAKI Broadcasting Station.  
 N.T.I.A. AERONAUTICAL WEATHER SERVICE CENTER  
 Aviation  
 N.T.I.A. AERONAUTICAL WEATHER SERVICE CENTER  
 JAPAN METEOROLOGICAL AGENCY  
 NEW TOKYO INTERNATIONAL AIRPORT, JAPAN

Just a few QSL cards from the extensive collection of Adrian Peterson, IN.

7625: HZN47, Jeddah Meteo, Saudi Arabia w/coded wx at 0033, 850/100 (J.M., KY).

7685.2: NNNQZZW req QSL's on 4472 & 7387.5 kHz. Was 170/75R at 2200, but whatzit? (Agnew, DE). It's a USN MARS sta-- Ed.

7756.2: WFB37, ID'ing only as "NY" w/foxes & 1-10 count of 1219, 850/50N (Kneitel, NY).

7812: OBY2, Paita R. Peru w/tfc for ships at 0341, 850/75N. At 0451 there was a November Tres Kilo sending RY/SG to Delta Ocho Tango. Guessing this to be OBZ61, Lima R., Peru (Ed.).

7817.7: 5NK, Kano Aeio, Nigeria w/RYRY at 0407, 850/50N (Ed.).

7980: Y31, Potsdam Meteo, GDR w/coded wx at 0043, 850/100R (J.M., KY).

8051.5: WOO, AT&T Ocean Gate R., NJ w/tfc lists, wx reports & CQ calls at various times in FEC mode (J.F. Armstrong, MS; J.M., KY; Joe Poyer, IN; Patrick Sullivan, CA); This is the new High Seas Teleprinter Data Information Service now on continuously. Runs 900 watts into an omnidirectional antenna. Looking for reports & will QSL. Send signal reports to Paul Newland, AT&T Bell Labs, Room 1G623, Crawford's Corner Rd., Holmdel, NJ 07733 (Kneitel, NY).

8132: KNY29, Egyptian Embassy, Washington, DC w/nx in EE to MFA Cairo. Was ARQ at 0255 (J.M., KY).

8319.3: GNID, who or whatever that is, w/"GYE DE GNID" then foxes & RYRY at 0210, 850/75R. GYE is the Royal Navy, London, England (Richard Gleitz, PA). Good catch! GNID is the British frigate **HMS Amazon** (F-169). Was the 1st of 8 Amazon Class frigates to enter service (1969). Manned by 13 officers & 164 sailors-- Ed.

8344: UTYZ, a Soviet ship w tfc at 0524, the usual 170/50N (J.M., KY). It's the Soviet tanker **Kremenchug**-- Ed.

8710: WLO, Mobile R., AL w/AP nx at 0015 in ARQ (Agnew, DE).

8712.5: WCC, Chatham R., MA w/wx in FEC at 0440 (Sullivan, CA).

8715: Same as above, but at 0452 (J.M., KY).

8949: CLP1, MFA Havana, Cuba w/encrypted tfc re relations w/Ethiopia. Was at 0445 in 425/75N & also 425/50N. Sent RYRY at 0456 (J.M., KY).

9070: 6VU, ASECNA Dakar, Senegal w/RYRY at 0242, 425/50R (Gleitz, PA).

9118.7: GKS4, Portishead, England w/marker in ARQ/CW at 0053 (Kneitel, NY).

9183.7: TLO, ASECNA Bangui, Central African Republic w/RYRY at 0055, 850/50N (Kneitel, NY).

9200: IUV81, INTERPOL Rome, Italy w/police type tfc in SS to South America at 2302, ARQ (Ed.).

9223.5: TJK, ASECNA Douala, Cameroon w/RYRY at 0412, 425/50R (Sullivan, CA).

9225: NRV, USCG, Apra Harbor, GU w/RYRY at 0802, 170/75R (Ed.).

9275//9276.6//9277.3: Same as 6826.8 kHz noted at 2041. Interesting foxes version mentions "a lazy dog" (Kneitel).

9287.5: Telexes seem to be from PTT Lima, Peru at 0255, 425/50R (Ed.).

9368: RFQP, French mil, Djibouti. The ID was fished out of the encryption at 0245. TDM 425/96A (Ed.).

10113: DGT, Part-aux-Francois, Kerguelen Islands w/coded wx to RFGW (MFA Paris). Was 425/50R at 1308. At 1320 s/off w/"DE

FJY2 QSL GRU BYE BYE" (Ed.).

10215: RYRY & foxes + 4 msgs in SS addressed to people in FL & NY, 170/50 (A. Nonymous). It's CML29, PTT Havana transmitting to ITT NY-- Ed.

10383: 5YE, Nairobi Meteo, Kenya w/coded wx at 2258, 850/50N (Ed.).

10669: CLP1, MFA Havana, Cuba w/crypto headed ZZZZ & tfc in SS at 1528, 425/50R (Ed.).

10780: SDN6, STA Stockholm, Sweden w/teleggrams in EE & Vietnamese at 2015, TDM 425/96A. Replies made on Channel B were from Ho Chi Minh Ville. The Swedish handle teleggrams between the USA & Vietnam since direct radio contact between USA/Vietnam isn't permitted (Ed.).

10886: Caught some sta here just as it was signing off w/"13 RQ AVIM NAC GT" at 1342, 425/50N. 5NK is listed here but don't think it was them. Any ideas, gang? (Ed.).

10893: GXQ, British Army, London, England w/RYI tape at 2204, 600/50R (Kneitel, NY).

10920.5: Y2V22A, ADN Berlin, GDR w/RYRY at 2208, 425/50N (Kneitel, NY).

10960: 3MA28, CNA Taipei, Taiwan w/RYRY at 1447, 425/50N (Dallas Williams, CO). Liked your new RTTY book, Dallas-- Ed.

10972: VOA Tangier, Morocco w/RYRY at 2211, 425/50N (Kneitel, NY).

11135.3: PBC, Dutch Navy, Goeree Island w/RYRY at 0112, 850/75R (Gleitz, PA).

11409: RYRY & into crypto at 2020, 500/50N. Possibly CLP1, MFA Havana-- Ed.

11415: FDY, French Ait Force, Orleans, France w/"le brick" at 1925, 425/50R. Also on 11444.5 at 2204 (Ed.).

11419: VNA86, VNA Hanoi, Vietnam w/nx in Vietnamese at 1453, 500/50N (Williams, CO).

11420: Y2V59, ADN Berlin, GDR w/nx in SS at 2225, 425/50N (Kneitel, NY).

11453: IMB3, Rome Meteo, Italy w/coded wx at 1919, 850/50N (Ed.).

11532: "Test de Andrews AFB MD" + foxes at 1450, 85/100R (Williams, CO). Hmmmmmm. Just a casual observation, but isn't this the place where the SS/YL resides? You know the one who reads those long SS # groups!-- Ed.

11606: BZS21, XINHUA Beijing, PRC w/nx in EE at 1526, 425/50R (Ed.).

11638: DDK8, Hamburg Meteo, FRG w/coded wx at both 2228 & 0141, 425/50R (Kneitel, NY).

12108: IRJ21, ANSA, Rome, Italy w/nx in FF at 1146, 850/50N (Ed.).

12131.8: Telexes in SS from Mexico City, Mexico at 0000, unusual 170/57 mode (Sullivan, CA).

12185.5: SQA62, JANA Tripoli, Libya w/nx in EE at 1749, 425/50R (Ed.); running RYRY at 1733 (Kneitel, NY).

12188: Un-ID sta w/5F tfc at 1505, 425/50R. S/off w/o ID at 1507 (Ed.).

12122: RUES, the Dept. of State, Washington, DC w/RYRY & foxes that "jumped...a lazy dogs back." Watching the xmsn closely, there was a pause/gap between jumped & lazy that seems to indicate that the word "over" had once been there but had been deleted from the tape. Was 850/75N at 2130 (Ed.).

12218.5: Un-ID sta w/Polish tfc at 1746, 850/75N. It's is of minimal help to hit the rosters

**Abbreviations Used For Intercepts**

AM	Amplitude Modulation mode
BC	Broadcast
CW	Morse Code mode
EE	English
GG	German
ID	Identifier/callion
LSB	Lower Sideband mode
OM	Male operator
PP	Portuguese
SS	Spanish
tfc	Traffic
USB	Upper Sideband mode
w/	with
wx	Weather report/forecast
YL	Female operator
4F	4-figure coded groups (i.e. 5739)
5F	5-figure coded groups
5L	5-letter coded groups (i.e. IGRXJ)

6695: CCF, Chilean Navy w/RYRY & SGSG to LOL at 0210, 850/75N (J.M., KY).

6737: ETD3, Addis Ababa Meteo, Ethiopia w/wx at 0123, 850/50N (Agnew, DE); w/RYRY at 2147 (Kneitel, NY).

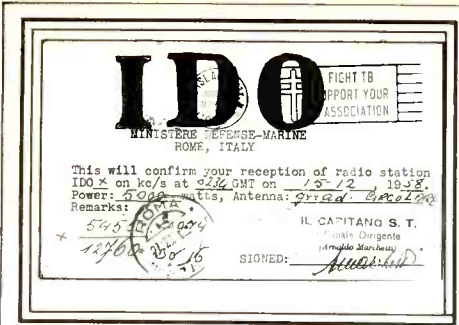
6770: LOR, Puerto Belgrano Navrad, Argentina w/RYRY at 0115, 170/75N (Patrick Sullivan, CA).

6826.8//6827.5//6828: Un-ID sta w/foxes, 1-0 count, no ID at 0242, 170/75N (Kneitel)

6896: CLN48 ID'ing as Radio Havana, Cuba testing to ITT NY w/RYRY & foxes at 1215, 425/50N (Kneitel, NY).

7524: TYE, ASECNA Bamako, Maliw/aero wx at 0424, TDM 425/96B (Ed.).

7582: MKD, RAF Akrotiri, Cyprus w/RYI's & foxes at 0248, 170/50N (Ed.).



Thirty years ago, the Italian Navy sent this prepared reply QSL to Tom Kneitel for reception of its CW station IDO in Rome. The station operated with 5 kW on 5425 and 12760 kHz.

& learn that the only users of the closest freq are Latin Americans!-- Ed.

1223.5: VOA Tangier, Morocco w/RURY at 2235, 425/75N (Kneitel, NY).

1248.5: Text in Korean at 1250-1252, 425/50N. No s/off-- went into CW. Could be N. Korean MFA in Havana (Ed.).

1226.3: TTL, ASECNA, N'Djamena, Chad w/RURY & QJHI marker at 2237, 170/50N (Kneitel, NY).

12284.3: Encryption w/ZZZZZ header at 2140, 500/75N. Tentative ID of CLP65, Cuban MFA in Managua, Nicaragua (Ed.).

13074.5: FFT61, St. Lys R., France w/NAVAREAS in EE/FF, FEC mode at 2105 (Ed.).

13485: Petro, the Jordanian nx agency in Amman, Jordan. Nx in AA at 1042, 425/50N. This is a rough one to nail down-- took me 4 years to do so! (Ed.).

13585: HBD20, MFA Berne, Switzerland w/nx in GG at 1131, ARQ (Ed.).

13628: KNY26, Hungarian embassy, Washington, DC w/RURY to HGX21, MFA Budapest, Hungary, 425/50R at 1305. Negative contact & KNY26 went QRT at 1313 (Ed.).

13649.5: RFQP, French mil, Djibouti relaying crypto t/c from RFFP to RFQWS. Was TDM 425/96A at 1302 (Ed.).

13737: 5YD, Nairobi Aero, Kenya w/RURY at 2252, 425/50N (Ed.).

13752: HZJ, Jeddah Aero, Saudi Arabia w/RURY at 1942, 425/50N (Kneitel, NY).

13765: JAM33, KYODO Tokyo, Japan w/RURY & QRA 1050-1100, 425/50R (Ed.).

13779: BCA95, PTT Shanghai, PRC w/t/c to Cuba at 1149, 425/50N (Ed.).

13820: FSB74, INTERPOL Paris, France w/msg to be an lookout for a rented camping vehicle that wasn't returned. FEC at 1553 (Ed.).

13822.5: CLP1, MFA Havana, Cuba w/msgs in SS at 1141, 425/50N (Ed.).

13826.5: CLN411, Havana, Cuba w/faxes, RY's, QRA/ZHC at 1108, 425/50R (Ed.).

13953: RFGW (a/k/a P6Z), MFA Paris, France w/msgs in FF to H6L (the French embassy at Algiers, Algeria). Was 425/75 at 1158. On another day was calling L4N (un-ID embassy) at 1230. Official ITU call signs here are FLE21 thru FLE38 (Ed.).

14398: Un-ID w/RURY's & 5L t/c at 1012-1042, 425/75N (Ed.).

14547.5: JAL44, KYODO Tokyo, Japan w/nx in EE at 1033, 850/50R (Ed.).

14638: WFK54, USIA New York, NY w/nx in SS at 2213, 425/75N (Sullivan, CA, & Tam Sundstrom, NJ). Welcome to the calumny, Riley!-- Ed.

14719.5: RKB58, TASS Moscow, USSR alternates in FF & AA between 1514-1613. Was 900/50R (Ed.).

14770: Encryption w/ZZZZZ header at 1640, 170/50N. Ended at 1700 w/o s/off (Ed.).

14785: ATP65, MEA Delhi, India w/nx in EE at 1706, 425/50N. Reception was much better than other recent intercepts. An ID marker was run at 1717 reading "ATP six five bar ATJ five eight" - RY. An "evening transmission" began shortly & went to 1805 (Ed.).

14825: Y2V25, ADN Berlin, GDR w/RURY's beamed to southern Asia at 0858 then nx in EE at 0904, 425/50N. Ran //Y2V65 on 14876 kHz (Ed.).

14901: CLN451, TASS Havana, Cuba w/nx in EE at 1400, 425/50R (Sundstrom, NJ).

14989: TNL, Brazzaville, Congo at 1510 w/FF text, 425/50N (Kneitel, NY).

15705: YZJ6, TANJUG Belgrade, Yugoslavia

w/nx in FF at 1410, 425/75R. Usually sends 50-bauds. Several days earlier I noted a 50-baud xmsn under a beacon on 15707.5 kHz repeating the letter "U" in CW (Ed.).

15715.7: VOA Greenville, NC w/t/c to VOA Rhodes, Greece, 85/75N at 1349 (Ed.).

15720: HGX21, MFA Budapest, Hungary w/RURY's to HGX52, an un-ID Hungarian embassy, then encryption, 425/50R at 1315 (Fred Hetherington, FL).

15845.7: SUA289, MENA Cairo, Egypt w/nx in AA at 1809, 425/50R (Ed.).

15999.9: CNM69/1X, MAP Rabat, Morocco w/nx in EE at 1221, 425/50R (Kneitel, NY).

16120: 5L grips at 1223, ARQ (Kneitel, NY).

16348: CLN530, TASS Havana, Cuba w/nx in EE at 1830, 425/50N (Sundstrom, NJ).

16403: Y2V57, ADN Berlin, GDR at 1353, 425/50N w/RURY. Was //Y2V248 on 14799.5 kHz (Kneitel, NY).

16697: UGZM, Soviet vessel Zachtchitnyi at 1528 w/RURY's at 170/50N (Kneitel, NY).

16699.9: Leningrad R., USSR w/msgs in RR to ships & RY's between msg. Was usual 170/50N at 1115 (Hetherington, FL).

17005: S/S Moana Wave w/msgs in EE to "Snug Harbor" in ARQ at 0015. Drilling? (Hetherington, FL). No, Fred, the Moana Wave (callsign not known) is a research vessel owned by the U. of Hawaii at Honolulu-- Ed.

17012: KNY32, Bulgarian Embassy, Washington DC w/tourist visa requests to LZC3, MFA in Sofia, Bulgaria. Was 495/75N till 2000 (Hetherington, FL). An interesting catch-- Ed.

17117.5: PBC317, Dutch Navy, Goeree Island at 1721 w/RURY, 850/75R (Kneitel, NY).

17122.5: PWZ33, Rio de Janeiro Navrad, Brazil w/marine wx & high seas bulletins in PP, 850/50R at 0020 (Hetherington, FL).

17212.5: OXZ, Lyngby R., Denmark w/nx in Danish, FEC at 1632 (Ed.).

17403.4: BAL32, PTT Beijing, PRC w/commercial msg in EE to Budapest, Hungary, 425/50N at 1445 (Hetherington, FL).

17520.2: 4UZ, UN Geneva, Switzerland w/RURY's & QRA's at 1230, 425/75R (Hetherington, FL).

17547.5: HDN, Quito Navrad, Ecuador w/RURY & faxes for CCF, 850/75N at 1325 (Hetherington)

17611: YBU, an un-ID sta, w/5L msg. all having header # "11177." Was 500/75R at 2211 (Williams, CO). I usually attribute YBU to the GDR embassy in Havana-- Ed.

17623: 9KT344, KUNA Safat, Kuwait w/nx in EE at 1430, 350/50R before beginning nx in EE at 1030 (Hetherington, FL).

18040.8: TCY4, AA Ankara, Turkey w/RURY's, 850/50R before starting nx in EE at 1030 (Hetherington, FL).

18181.5: Un-ID sta w/"Corrento allora amico srisa amco L SRI riprendi un rigo VXXM," in ARQ at 1400. Brief CW then RTTY at 1450 w/5L msg. Sent "QSY EO" at 1500, then mag to Italy & Islamabad. Off 1530. Wanna guess who? (Hetherington, FL). I pass-- Ed.

18211.7: 9XK79, DW Kigali, Rwanda w/"DW Relais station" & manually typed msg in EE to FRG. Was 275/50R at 1000. QSY'd to 18212.2 at 1015 (Hetherington, FL).

18226.3: S2N, an in-ID sta, w/faxes at 1410, 850/75N. Strong sig. would seem to indicate someone's embassy somewhere in North America. Was still grinding our foxes at 1645 (Hetherington).

18263.2: HBD20, MFA Berne, Switzerland w/embaassy t/c in GG, ARQ at 1350, then nx in FF/GG at 1400 (Hetherington, FL).

18270: LOL, Buenos Aires Navrad, Argentina w/RURY's at 2027, 425/100 (Williams, CO).

18514.7/18516.1: VOA Monrovia, Liberia w/RURY's to VOA Greenville, 85/75N at 1307 (Ed.).

18546.2: LOL, Buenos Aires Navrad, Argentina w/msgs in SS re ship skeds, 425/75N at 1830 (Hetherington, FL).

18547: Y313, DP Berlin, GDR w/RURY & QRA at 1445, 425/50R (Gleitz, PA).

18600: VOA Greenville, NC calling VOA Munich & RY's at 1426, 85/100R (Williams, CO).



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# BROADCAST TOPIK

BY MARK MANUCY, W3GMG

## DX, NEWS AND VIEWS OF AM AND FM BROADCASTING

**R**ecent years have seen an increase in the buying and selling of radio and TV properties. The Mutual Radio Networks have gone through several owners in the past decade; the current owner is Westwood One. Just recently, the ABC network, originally the NBC Blue net, was purchased by Capital Cities. A few months back General Electric bought RCA which included NBC. Now GE has sold NBC Radio to Westwood One for about \$50 million. It appears NBC will retain its name, as has Mutual, although Westwood does see some visibility through the Larry King show with guests appearing at "The Westwood One Studios" in Los Angeles. It will be interesting to see if Westwood will show through NBC as well. When Ed Noble bought NBC Blue to form ABC in 1943 he paid \$8 million which was probably more actual gold than the \$50 million Westwood paid this past July!

No doubt many networks have been formed and folded over the years but there are so many networks today one would be hard pressed to count them. I won't say SCN (Statesman Communication Network) is the newest kid on the block, but it is an ambitious undertaking by some Maryland businessmen. The net started this past August 3rd—on schedule! The beginning fare included nine hours of talk programming each day plus three hours of taped re-feeds. A real accomplishment when there is no music to fill in-between the lines! For those of you with satellite dishes to point around at different birds, have a look at Satcomm 1R transponder 7 and subcarrier 5.76 MHz. The video SCN is riding on is Prime Ticket.

The satellite company providing the uplink from the World Building where SCN is located in Washington, D.C., saw a one-day installation job of a Ku band dish and transmitting gear turn into five days as problem after problem besieged them. I'm sure this is not a common occurrence, but with our particular installation, Mr. Murphy was working overtime. In the next two weeks we used three modulators before an operating one was found—even though each one had been checked out in California before shipment. They all worked, but not with the quality needed to provide a broadcast network with the level of sound needed. A downlink receiver also died midway into the problems. Technically, it was just one thing after another for the first two weeks. Of course, next year we will all be able to look back and laugh, but the smiles were few last week. Thanks to a persevering team of technicians in California, we made it through the first couple of weeks without any harsh words!

### COMPARATIVE INTERFERENCE-FREE CONTOURS

WIOD contour from field measurements made by Consultant W. J. Holey, 1942. February 1965 proof of performance and measurements by George C. Davis Consulting Engineers and WIOD staff, after directional was rebuilt, confirm this original contour.

WQAM contour from survey by Holey Consultants 1948. Rechecked by WQAM staff 1954.

WGBS contour from maps filed at FCC by WGBS, 1965.

WFUN contour from maps filed at FCC by WFUN, 1961.

WINZ contour from maps filed at FCC by WINZ, 1953.

WVCG contour from maps filed at FCC by WVCG, 1962.

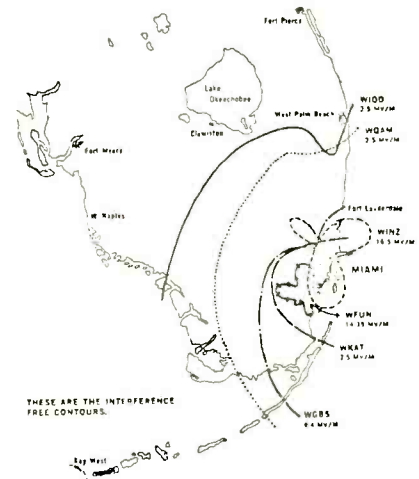
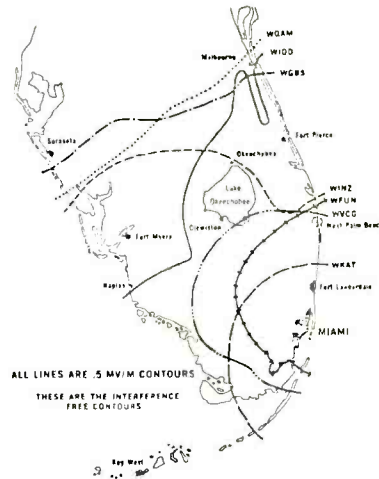
WKAT contour from map published by WKAT.

#### DAY

- WIOD—5,000 watts, 610 Kc, Directional
- WQAM—5,000 watts, 560 Kc, Non-Directional
- WGBS—50,000 watts, 710 Kc, Directional
- WFUN—5,000 watts, 790 Kc, Directional
- WINZ—50,000 watts, 940 Kc, Directional
- WVCG—10,000 watts, 1080 Kc, Directional
- WKAT—5,000 watts, 1360 Kc, Non-Directional

#### NIGHT

- WIOD —5,000 watts, 610 Kc, Directional, protected to 2.5 MV/M line at night.
- WQAM—1,000 watts, 560 Kc, Non-Directional, protected to 2.5 MV/M line at night.
- WGBS —50,000 watts, 710 Kc, Directional, protected to 8.4 MV/M line at night.
- WFUN—5,000 watts, 790 Kc, Directional, protected to 14.39 MV/M line at night.
- WINZ —10,000 watts, 940 Kc, Directional, protected to 16.5 MV/M line at night.
- WKAT—1,000 watts, 1360 Kc, Non-Directional, protected to 2.5 MV/M line at night.



Although some of this data is now outdated with all of the stations except WQAM running much more power than listed, it's still fun to see the differences. Thanks to Bernie Wimmers, Jr. WQAM is the oldest station in Florida and note that they and WKAT are non-directional 24 hours.

Programming ran a little bit smoother. There were some missed cues and a few over-runs, but due to the quality people employed by SCN, things sounded good. I think everyone was nervous but it didn't show on the air.

A letter from Paul Burt of the LN in Baton Rouge had feelings of "I know what you're going through," as he helped start the Louisiana Network some five years ago on the

Galaxy 3 bird. LN is using the SCPC format opposed to SCN's subcarrier format.

The SCPC format stands for Single Channel Per Carrier and operates as an FM station operating monophonically. Two SCPC channels are used for stereo. A subcarrier system operates as an SCA channel would on an FM station. It needs a host signal in order to function where the SCPC is independent. The SCPC requires a much

# Station Update

Call AM	Location	Freq	Pwr	Ant
WBMD	Baltimore, MD	750	.71/0	NDA
KWDF	Ball, LA	840	10/0	NDA
KAFY	Bakersfield, CA	970	5/5	DA-N
KJDJ	San Luis Obispo, CA	1030	2.5/.7	DA-2
KJNP	North Pole, AK	1170	50/23	NDA
KPRZ	San Marcos, CA	1210	10/5	DA-2
WELW	Willoughby, OH	1330	.5/.34	DA-2
KTAN	Sierra Vista, AZ	1420	1.5/0	NDA
WAOC	St. Augustine, FL	1420	4/0	NDA
New	Lancaster, NH	1490	1/1	NDA
WTRI	Brunswick, MD	1520	9.3/0	DA-D
WEHH	Elmira Heights, NY	1590	.5/.46	DA-N
<b>FM</b>				
New	Milwaukee, WI	88.1	.25	776'
WFRW	Webster, NY	88.1	18.6	337'
New	East Lansing, MI	88.9	2.0	279'
New	Santa Cruz, CA	89.9	.2	-316'
New	South Kent, CN	90.1	.28	-197'
KBOO	Portland, OR	90.7	23.4	911'
KCZP	Kenai, AK	91.9	4.9	72'
KBEZ	Tulsa, OK	92.9	100	1318'
KEXI	Walla Walla, WA	93.3	100	223'
New	Little Falls, MN	94.1	3.0	328'
New	Freedom, CA	95.9	2.85	335'
WAVF	Hanahan, SC	96.1	100	1445'
KGCI	Grundy Center, IA	97.7	3.0	328'
New	Big Flats, NY	97.7	3.0	328'
WKYD-FM	Andalusia, AL	98.1	89	1022'
New	Fort Mitchell, AL	98.3	3.0	328'
WYSS	Sault St. Marie, MI	99.5	100	275'
WIOA	San Juan, PR	99.9	30	977'
New	Hilo, HI	100.3	100	-556'
New	Hoxie, AL	100.5	3.0	156'
KIKV-FM	Alexandria, MN	100.7	100	1023'
New	Kentland, IN	101.7	3.0	259'
New	Humnoke, AR	101.7	3.0	299'
KFGO-FM	Fargo, ND	101.9	100	986'
WLIT-FM	Gastonia, NC	101.9	100	987'
KXDZ	Anchorage, AK	103.1	3.0	-156'
KJAN-FM	Atlantic City, IA	103.7	49.5	1305'
WAZZ	Fuquay-Varina, NC	103.9	1.2	493'
New	Hillsboro, NH	107.7	3.0	-276'

Key: D = Daytime, N = Nighttime, DA = Directional Antenna, DA1 = Same Pattern Day and Night, DA2 = Different Pattern/Power Day/Night, NDA = Omni Antenna Day and/or Night, \* = Special Operation or Critical Hours, N/C = No Change.

that Tom Kneitel would like to think he's one of the *most* fanatic. So the only claim to fame we will give you is "Welcome to the Club!" That's what *POP'COMM* is all about . . . the fanatics magazine, and a great group of guys and gals!

With the demise of AM listening, Billy is noticing most stores are listening to the FM band as well. That is except for a few more astute businesses. I was in a glass store to get a replacement pane for my front door the other day and they had a talk station on. I frequent a hardware store that listens to the same talk station (WFBR). I recently started working for a company which currently owns two AM stations and the one in Baltimore has a Big Band Era format with a 2.5 share against the top AM's 6.6. Our station is 1 kilowatt and the other is 50 kilowatts. I expect our ratings to increase with an improved sound in the programming and audio quality. Many people are working to keep AM alive . . . I hope we are successful.

Billy speaks of harmonics around the band where he lives. He hears a 1580 station on 670, 1420 and other frequencies. Here's how to determine whether or not it is a harmonic or a spur in your system. Start with the station frequency, in this case 1580, and subtract the frequency you're hearing them on, in this case 670. The result is 910. The IF frequency of most radios is 455 kHz, although 450 is becoming more popular with digital sets, and 2 times 455 is 910. That means the radio is adding and subtracting frequencies within the set and the only problem with the station is that you live too close for comfort! The 1420 is a difference of 160 kHz which is not an easy one to figure since I'm not familiar with your surroundings. Could it be a mix with a station on 1260? Generally speaking, a station will not have sub-harmonics, it will be proximity or some other explainable situation. Short-wave harmonics will also be a proximity problem and will also almost always be a multiple of the station's frequency such as 3160, 4740, 6320 and so forth.

## Call Letters

Billy also asks about crazy call letters. He can't tell from the ID if it is WRC or WWRC in Washington! Billy, I work in the same building with the station in question, along with two other stations and a network and I don't know the call letters either. In echo I hear "WWRC" on the hour, but all during the hour the only thing I hear is "WRC." If you take the elevator to the tenth floor the glass door has the letters "WRC." The phone book has "WRC" in the listing and "WWRC" newsroom! If you figure it out, let me know.

In Baltimore, on the hour, you hear in echo WWMX. Regularly through the hour is heard "WMIX is Mix 106," whatever that means . . . I haven't figured that one either. They are not WMIX. As far as I know WMIX, in the Midwest, is not "Mix-106" but an AM station on 940! Maybe all these stations are

more expensive downlink receiver and a larger dish for reception. This is why SCN chose the subcarrier system, hoping to allow the prospective affiliates to join the net for much less capital outlay and in some cases the stations already had a video receiver and no additional money was needed to come on line with SCN. However, the subcarrier system has problems as well. No free lunch for anyone in this day and time.

## Challenges

From Robert Nichini comes a challenge to the transistor radio builders. He has a 1938 Stromberg-Carlson floor model radio which he says performs as well as his Sony 2001.

The S/C will pick up anything the Sony will and with excellent fidelity as well. This radio also has the old FM band on which Robert says he hears the cordless telephones "just fine." Best to be on good behavior around Bob's neighborhood!

Who's the biggest fanatic of BC band DX'ing? Billy Sampson says I'm a busy man, which is true, and probably would not want to hear from a "totally locked-in DX nut"! Well now Bill, you've got a challenge on your hands. Why, just the other day I was thinking about all these sports fanatics and realized I'm just as much a fan of broadcast radio as others are of the Orioles or Redskins or whatever. I'd be willing to bet

## Call Letter Changes

Location	Old	New	Spokane, WA Huntington, WV	KXXR WWHY	KSVY WHRD
<b>AM Stations</b>					
Tuscaloosa, AL	WRLX	WRRX			
Homer, AK	KPEN	KGTL	<b>FM Stations</b>		
Tucson, AZ	KHYT	KMRR	Corcoran, CA	New	KLCZ
Fayetteville, AR	KHOG	KOFC	Green Acres, CA	New	KRAB
San Bernardino, CA	KDIG	KLFE	San Francisco, CA	KLOK-FM	KKSF
Sierra Vista, CA	KSVA	KMFI	Denver, CO	KBRQ-FM	KXKL-FM
Falcon, CO	New	KVFR	Stonington, CN	WORQ	WVVE
Denver, CO	KBRQ	KXKL	Immokalee, FL	WIKX	WIKX-FM
West Palm Beach, FL	WIRK	WPBG	Stuart, FL	WRIT	WZZR
Fort Myers, FL	WKZY	WIKX	Tarpon Springs, FL	New	WFCE
Homestead, FL	WRBA	WOIR	Quitman, GA	WGAF-FM	WSTI-FM
Pompano, FL	WWHR	WWNN	York Center, ME	WQMI	WQMI-FM
Maunawila, HI	New	KULA	Lowell, MA	WSSH	WSSH-FM
Buffalo, KY	WLCB	WXAM	East Jordan, MI	New	WIZY
New Orleans, LA	WMKJ	WQUE	Dearborn, MI	WNIC-FM	WNIC
Boston, MA	WMRE	WSSH	Gaylord, MI	WZXM-FM	WMJZ-FM
Gaylord, MI	WZXM	WMJZ	Houghton, MI	New	WAAH
Ishpeming, MI	WUPY	WMVN	Frankenmuth, MI	WGMZ	WGMZ-FM
Meridian, MS	WFEZ	WMER	Zeeland, MI	New	WXYB
Laurel, MT	KNFL	KBSO	Omaha, NE	WRXR	WNUA
Plentywood, MT	KHPN	KATQ	Santa Fe, NM	KIVA	KIVA-FM
Portsmouth, NH	WAVI	WQMI	Fuquay-Varina, NC	WAKS-FM	WAZZ
Santa Fe, NM	KAFE	KMIK	Hickory, NC	WRRX	WRNX
Corrales, NM	KXAK	KIVA	Fostoria, OH	WFOB-FM	WVBI
Franklin, NC	WLTM	WAJA	Van Wert, OH	WERT-FM	WKSD
Canonsville, PA	WARO	WWCS	Millersburg, OH	New	WKLM
Olyphant, PA	WRGE	WWAX	Huntsville, TX	New	KSHW
Lebanon, PA	WVLV	WADV	Robstown, TX	New	KMIQ
Oak Harbor, WA	KISD	KJTT	Mount Jackson, VA	New	WSIG-FM

just trying to make it harder for us to get an ID on them!

There are more old call letters biting the dust, however, some enterprising stations are grabbing up the fallout. WCFL in Chicago changes to WLUP, but a station in Virginia picked up WCFL. WPLO in Atlanta becomes WKHX. WJAX is back to WAPE. WOR-TV becomes WWOR-TV. Who can keep up?

### Otherwise . . .

The big new tower in Baltimore is now complete and tenants are moving on to it. WWMX, 106.5, moves to the top with 7 kW and two bays of antenna, dramatically improving their coverage. WWMX had operated from the candelabra on TV hill with their antenna about halfway up (600') and about 20 kW of power. We live about a mile from TV hill and they were all over the dial. Now with less RF power and over 1200' of antenna height the signal shoots over our heads so there is probably less signal at our house. I'm sure the station is happier with the additional coverage.

Scott Fybush joins the ranks asking, "What happened to 1200 kHz?" He's also noticed that 640 is disappearing very quickly too. I'd like to point out that 1030, 1040, 1080, 750, 1540, 650 and others are being eaten up by new stations as are other frequencies.

It's an interesting time we live in and



While the discussion about misleading call letters goes on, here is the winner for this month. On the back of this sticker are instructions for entering a contest (last year) by mailing information to KISS-FM. KISS-FM is WKQS, WMIX is WWMX and WRC is WWRC. . . do we have it straight?



DX'ing becomes more difficult and challenging everyday. The Northeast will not have nearly as many changes as the Sunbelt, Midwest and western states since there simply are not many frequencies that are not in use. Florida is probably the greatest growth area. The population there has at least tripled in less than 20 years. Sharpen those antennas, fine tune those radios and dig in for the great pastime of broadcast DX'ing! Then take a few minutes to tell me your thoughts and what you're

hearing. The address is P.O. Box 5624, Baltimore, MD 21210.

### So Sorry!

I apologize for being late in returning answers in the mail and plans requests. In the process of changing work places things got kind of hectic for a while. I do all the work myself and sometimes it just takes longer. That's just the way it is, but thanks to those who have been understanding.

**PC**

# It's Back!

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## ANTENNAS AND SIGNAL IMPROVING ACCESSORIES

### CB/10M Vertical

The CB band is not being used widely and efficiently. However, there is renewed interest in its capability, especially in the sideband sector. In fact, in some areas sideband transmission is moving on to some of the channels that were previously all AM. Actually, only a limited number of AM channels would be needed. Inasmuch as sideband operation can be upper (USB) or lower (LSB) there would be almost a doubling of the number of available channels if users would become sideband conscious and manufacturers would extend effort into designing low-cost sideband models. Maybe the unit could be made smaller and cheaper if AM was eliminated completely. Give it some thought and let's have your opinions.

Then there is the matter of point-to-point radio communication which has been just about neglected completely on the CB spectrum. Let us say you have a second business office in the next town a toll charge away and you must be in touch frequently for brief intervals of time. Why not set up a single sideband path using two vertically polarized beams. Of course mobiles moving between the two sites and off to their sides could pick up the signals as well. Between two fixed points only, more reliability and less interference would be possible using two horizontal beams.

Maybe you are just interested in a reliable path between two friends or family members for a safety check-in purpose. Maybe it could be between two or several SWB DX'ers interested in exchanging a DX frequency or two. This is in the way of a brief exchange of personal information about a hobby. Two or several scanner fans could use CB to advantage in the above application as well. In fact, if they were using one of the new all-band scanner antennas such as the discone, Antenna Specialists Discan™, or Austin Ferret they could use this antenna for CB communications, too. All they need do is use an appropriate coaxial switch to change over between scanner and CB radio and perhaps a small CB or ham tuner to obtain the best possible match to a CB transmitter.

Those of you who operate CB sideband should consider ham radio now that the 10 meter band is open to Novice and Technician grade licensees. Some of you are doing just that. The antenna to be described in this article is a broad bandwidth type that permits reception and transmission on both bands. Thus you can use it immediately for CB two-way radio operation and for 10M listening. When your Novice license comes through

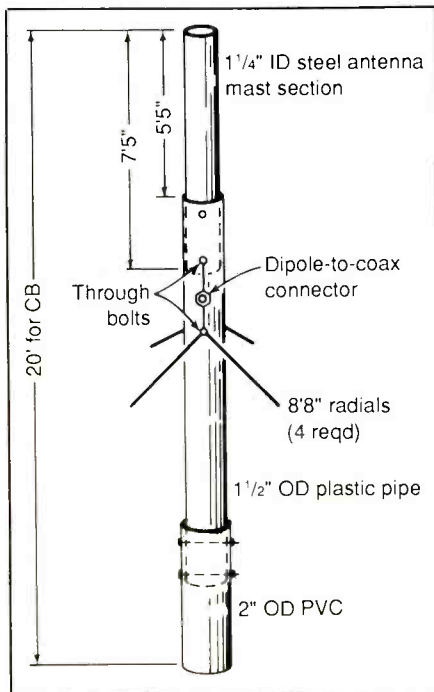


Figure 1: Dimensions and construction details for CB/10M vertical.



Figure 2: TV mast radiator inserted into 1/2" OD plastic pipe.

you are ready for some 10M operation too, and even some long distances overseas DX'ing of the type you cannot enjoy on the CB band.

### Antenna Construction

One way of increasing the bandwidth of a vertical is to increase the diameter of the vertical radiators. In the example, Fig. 1, the radiator was a 7'5" length of 1/4" diameter TV mast tubing. Normally, with wire or thin tubing, a quarter wavelength vertical radiator on the CB band is about 8'8" long. In the example, the mast section was cut to a trial length of 7'11" but it was necessary to saw it back to 7'5" to obtain resonance on the CB band with an SWR of 1.1-to-1. It might be a good idea then to start the length rather long and then cut back in 1/2" steps at a time to find a minimum SWR on the CB band. It was a good performing CB antenna with the top of the radiator just about 20' above ground.

In the installation the SWR on 28500 kHz of the 10M band was 1.421. Why not try it on transmit too! One of my first contacts was PY5IW in southern Brazil despite the low height of the antenna. The antenna also did well on the 12 meter band. On this band the

SWR was above 3-to-1 and a tuner was needed to maintain a proper match to the transmitter. The first four contacts were Iowa, New Jersey, Pennsylvania and J37AJ on Grenada.

In the construction the vertical radiator is dropped 2', Figs. 1 and 2, into a 10' length of 1/2" diameter plastic pipe. Holes must be drilled through the radiator and the plastic pipe permitting the vertical radiator to be held in position by two through bolts. In our construction the two holes were first drilled through the very bottom of the radiator then a single hole was drilled through the plastic pipe exactly 2' down. The radiator and plastic pipe holes were lined up and the drill was dropped through the two holes. The drill was then turned on to cut the holes through the opposite sides of the pair. A 2" long and 1/4" diameter bolt was dropped through the holes and the opposite side nut attached. At the very top of the plastic mast you can drill right through the radiator and plastic pipe and insert a similar length bolt. Screw on the nut and pull up tight.

The bottom bolt serves as a terminal for connecting a dipole-to-coaxial line connector. Check out your connector to make certain that the inner conductor of an attached





Figure 3: Dipole-to-coax line connector attached between bottom of radiator and bolt to which radials are to be connected.

coaxial line will connect to the radiator, Fig. 3. The ground side of the connector is attached to a third bolt to which four radials are connected. Each radial is an 8'8" length of #16 vinyl-covered wire. The opposite hole of the insulator and an associated length of rope pulls the assembly tight to a ground stake. Four ground stakes are spaced evenly around the mast bottom and each is spaced 6' from the mast.

The bottom of the ground-mounted mast is a short length of 2" ID plastic pipe with a length that permits the top of the vertical to be exactly 20' above ground. This is the maximum height permitted for CB operation with a ground-mounted antenna structure. However, you can mount an antenna of the same length to the side of a house or building, or attach it to a chimney strap. One way to do this is to not use the bottom 2" section of plastic pipe. Instead, fasten the bottom of the 1 1/2" pipe to a chimney strap or wall bracket making sure you purchase one that has a U-bolt size that will accommodate the 1 1/2" plastic pipe diameter. When a CB antenna is attached to a building structure the FCC regulation states that it may be no more than 60' above ground.

There are no height restrictions for ham radio operation. However, it is a pleasant lesson to learn just how well you can do on 10 and 12 meters with a ground mounted vertical that is not more than 20' high. It will be an even more revealing situation as the sunspot cycle begins its rise to a maximum. Set your sights on participating in the fun of very long distance communications on these higher-frequency radio amateur bands. Keep listening on 10 and 12 meters and you will become convinced.

PC

# Here's one reason why you may be missing some vital communications on your scanner.

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# CLANDESTINE COMMUNIQUE

WHAT'S NEW WITH THE CLANDESTINES

BY GERRY L. DEXTER

One of the deepest and most fascinating clandestine station mysteries to confound us in many years is still doing so—in the form of the anti-Castro *Radio Caiman*, which operates with a morning and evening schedule on 9960. This powerful station of about 10 kilowatts is believed to be located somewhere in the vicinity of Guatemala City. It has an extremely professional sound, stable frequency, excellent modulation and exactly timed sign-on and sign-off times. All of which is quite out of character for the usual anti-Castro broadcaster. It has never announced the name of the organization which runs or supports it. Security on the station and information about it is extremely tight and almost nothing has been learned about this broadcaster.

Radio Caiman was being researched by the late Ronald F. Schatz who passed away last summer. Over the years Schatz had become an expert on Cuban broadcasting—to the point where he was responsible for the Cuban station listings you see in the *World Radio TV Handbook* each year. Shortly before he died Schatz had a visit with clandestine hunter George Zeller at the ANARC convention near Toronto. Zeller has written of his conversation directly to your editor.

According to Zeller, Schatz had, through a number of his sources, become convinced that Radio Caiman was supported and run by some of the same South Florida anti-Castro groups which are also involved with the Radio Mambi broadcasts carried over Miami's WAQI, a commercial mediumwave outlet on 710 kHz. These groups, Schatz believed, were unhappy with the approach being taken by the U.S. government's Radio Marti. Schatz believed that Radio Caiman was not a direct CIA operation, although he did not rule out an indirect CIA connection with the station.

Caiman research or not, the passing of Ronald F. Schatz is a genuine loss to the radio monitoring hobby.

The *Radio Voice of Ethiopian Unity*, first reported in last month's column, has already made some changes. It continues to broadcast in Amharic from 1900 to 2000 UTC daily but it now uses the frequencies 9430 and 11180. The station is being heard at extremely good levels by some European monitors, but several checks at our midwest listening post have failed to turn up any kind of a signal. The Europeans speculate that the Voice of Ethiopian Unity's transmitters are in Egypt. 11180 is, of course, rather an offbeat frequency. But it isn't the first time this spot has seen clandestine activity. A few years ago the broadcasts of the *Voice of the Free Sons of Yemini South* were heard here.

Last month we also mentioned that

## THE NATIONAL FRONT FOR THE SALVATION OF LIBYA

(NFSL)

### NEWSLETTER

VOL V ISSUE NO. 58 Al-Inqad, 323 S. Franklin Box A-246, Chicago, Illinois 60606-7093, U.S.A. JULY/AUGUST 1987

#### Renewed Terrorism

The murder on June 26 of a prominent Libyan opponent, Yusef Saleh Kherbish, in one of Rome's main streets, is a clear sign that Gaddafi's war against his political opponents abroad has not been called off. The 'liquidation campaign' has been renewed with a vengeance and venom that few but the Libyan dictator could match.

these senseless and brutal crimes carried out by Gaddafi's revolutionary committees. It is almost beyond belief that Italy, and indeed other supposedly civilized and democratic countries, should allow Gaddafi's agents such freedom of action, making a total mockery of those countries' security forces and their claims to preserving law and order on their lands. It is

the murder campaigns against Gaddafi's Libyan opponents and the terrorist networks to carry them out are still in operation.

The other frightening aspect of this tragedy is that Gaddafi is safe in the understanding that as long as he goes after the Libyans only (and at a reasonable rate of, say, one murder every two months and in a different country each time) he can rely on

*The newsletter of the National Front for the Salvation of Libya, which operates the Voice of the Libyan People on shortwave.*

5890, where broadcasts of the United Nicaraguan Opposition's *La Voz de la Uno* were formerly heard, now had a station identifying as *Radio Liberacion*. It seems the latter identification is simply a new name for the *La Voz de la Uno* station—reflecting the dropping of that name by the resistance. The *Radio Liberacion* on 5890 does not carry parallel programming to the medium-wave *Radio Liberacion*, also operated by the *contras*. The resistance has an office at 10753 SW 104th Street in Miami which might work as a source of QSL's for this station. *Radio Liberacion* can usually be heard until around 0200 sign-off on 5890, broadcasting in Spanish.

Although it's very unlikely any of us will ever get to hear a broadcast by the Polish *Radio Solidarity*, we nonetheless make note of the fact that occasional broadcasts from *Solidarity* still occur. Eason Jordan of Atlanta forwards an AP news story to the effect that *Solidarity Radio* "Number 2" appeared on the audio channel of a Warsaw TV broadcast on 15 August. A man and woman read news items, delivered commentaries and played Polish folk music in a broadcast that lasted about ten minutes. The broadcast apparently was aired in observance of the anniversary of the August 1980 strikes which led to the formation of the *Solidarity* union.

The Mozambique opposition, RENAMO, has been in the news lately—having been accused of various atrocities committed by its forces within Mozambique. RENAMO denies these accusations of course, and the controversy has found its way into Congress

and into questions of ambassadorial appointments and funding for RENAMO. Up until about three years ago the Mozambique opposition had its own clandestine station (probably operating from South Africa) which could occasionally be heard on 4765 and later 4772. When South Africa and Mozambique signed an accord the resistance broadcasts were stopped. Now, Thomas Schaaf who heads the Mozambique Information Office—a lobbyist for RENAMO—says that the aid which resistance leader Afonso Dhlakama is requesting from Washington includes money to re-start resistance broadcasts. They were hoping to have something on the air by the end of 1987 or early 1988.

The National Front for the Salvation of Libya operates the *Voice of the Libyan People*, scheduled in Arabic at 0600 to 0700 on 11825, 1500 to 1600 on 17960 and 2100 to 2200 on 11825. Apparently 17960 is also used at other hours—0900 and 1230 have been noted recently by monitors. Now the NFSL is offering a book called "Libya: Steps to Freedom" which consists of excerpts from the Front's newsletter from February 1982 through April 1987. It's available at no charge from Al-Inqad, 323 South Franklin, Box A-246, Chicago, IL 60606-7093.

We are interested in hearing from you with any clandestine station loggings you may have, news clippings, background material, questions or even "inside" information you are in a position to provide. Your name can be kept confidential if you so desire.

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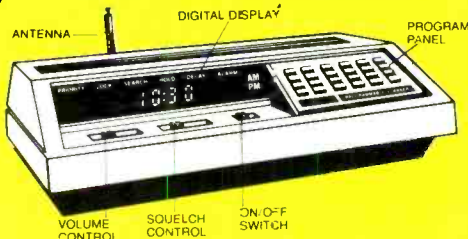
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**DROP IN CHARGER/P.S. stand** for RS Pro-30, Pro-31 or Pro-32. All metal, comm'l grade components. \$26 (add \$4 ship). Mike Huth, 822 N. Spring, Lagrange Pk., IL 60525, (312) 354-2124.

**WANTED:** Good/bad meter for Accurate Instrument Co. tube tester model 257, or whole tester in working condition. Please state price incl. shipping, W.H. Voigt, 60 Russell Road, Albany, NY 12203.

**WANTED:** Old Radio Shack catalogs, 1979 and older, will return postage. send to: Jeff Crawford, 601 S.E. Karrigan Terrace, Port St. Lucie, FL 34983.

**NEED INSTRUCTION MANUAL** for Bearcat DX-1000 receiver. Have COCO with MFJ1225 interface. Need name and address of software dealer that carries programs for this. Pat Scott, 1184 North 2nd St., Silsbee, TX 77656.

**WANTED:** Regency HX2200 scanner modification plans and accessories such as BNC adaptor and ideas from other owners. Jeff S. Henjes, 3730 Cheyenne, Sioux City, IA 51104.

**FOR SALE** Uniden Bearcat BC 175XL from 29 MHz-512 MHz used for 1 week with booklet \$150 postpaid. Highband ¼-wave ant. kit \$25. Neal Balkun, 34 Crescent St., Unit 1M, Stamford, CT 06906.

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**NORTH AMERICAN RADIO-TV STATION GUIDE** by Vane Jones. 15th Edition! Thick 226-page book listing all US/Canadian/Mexican/West Indies AM/FM/TV broadcasters according to location/frequency/callsign, plus TV network affiliation, AM station day/night power, schedule data, etc. Painstakingly complete, accurate, up-to-date. The ultimate broadcast station directory. Only \$9.95 (plus \$1 postage) from CRB Research, P.O. Box 56, Commack, NY 11725.

**WANTED:** Scanner frequencies for Delray Beach, Florida area. I will reimburse for postage and copies. Thank you. Alan Lilien, 140 Northeast 6th Avenue, Apt. #3, Delray Beach, FL 33483.

I would like to buy a used scanner but it has to be a Bearcat with 60 channels and it has to be programmable too. Good condition. No more than \$70. Leigh A. Monroe, RD#1 Box 206H, Galeton, PA 16922. 814-435-2260.

South Texas frequencies ten codes and one codes wanted. Will trade. Danny Ray Carrier, 529 West Wilson, Aransas Pass, TX 78336.

**FOR SALE:** Bearcat 260 programmable 16-channel scanner 8 band, auto search, direct access, illuminated keyboard, mobile or base, new factory replacement \$140 complete. (619) 466-5418. R. Manis.

**WANTED:** Replacement meter movement for PDC 550's, RF Power Scanner Meter used on 3-30 MHz. Write "Smokey", 916 Harrison Ave. S.W., Canton, OH 44706 with price and availability.

Looking for police fire 10-codes of large cities across the country. Ed Noll, POB 75, Chalfont, PA 18914.

**SCANNERS** compiling a list of local and regional scanner clubs and newsletters. Put your group on the list. Also state scanner publications. Ed Noll, POB 75, Chalfont, PA 18914.

**WANTED:** Operating manual for Lafayette model HE-30 receiver or copy. Cam Didestri, 450 76th St., Brooklyn, NY 11209.

**FOR SALE:** Panasonic RF-5000 \$300, Panasonic RF-4900 \$250, Lafayette BCR 101 \$200, all are in excellent condition. Write N4PGU, 718-12th Ave. No., Lakewood, FL 33460. Call 305-585-8596.

**WANTED:** RCA AR88LF Technical manual and schematics. I will reimburse for expenses. Shaun P. Merrigan, 14203 72nd Street, Edmonton, Alberta, Canada, T5C 0R4.

Bearcat DX-1000 general coverage receiver \$200  
217-787-3534.

**WANTED**—Active frequencies for British Columbia and Alberta—Highway Patrol, ham repeaters, S & R, aircraft, weather, etc. Will pay reasonable cost. Write Beck, P.O. Box 577, Angel Fire, NM 87710.

Eighth grader in Stony Brook (Suffolk County, NY) wants to exchange frequency information for frequencies in surrounding metropolitan area. Contact Stephen Marshall, 12 Wade Drive, Lake Grove, NY 11755.

**WANTED**—Information to modify the "Informant" scanner to cover both city and highway bands in a selected state without switching. B. Bowers, P.O. Box 906, Sugarland, TX 77487.

**FOR SALE:** Bearcat 20/20 scanner 40-channel 4 yrs old, aircraft and marina asking \$250 or best offer. Call 612-774-8500 evenings and weekends ask for Steven.

**WANTED RTTY/FAX** info and prices. Limited budget due to being disabled. Mark Westerstrom, 15250 Gray Ridge #522, Houston, TX 77082.

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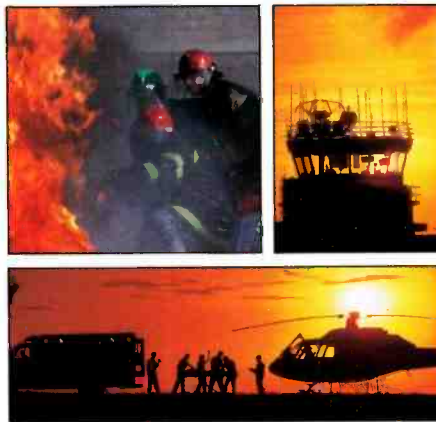


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- **Computer control option.**
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- **Kenwood's superb interference reduction.** Optional filters further enhance selectivity. Dual noise blankers built-in.
- **Direct keyboard frequency entry.**

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#### Optional Accessories:

- VC-20 VHF converter for 108-174 MHz operation
- YK-88A-1 6 kHz AM filter
- YK-88S 2.4 kHz SSB filter
- YK-88SN 1.8 kHz narrow SSB filter
- YK-88C 500 Hz CW filter
- YK-88CN 270 Hz narrow filter
- DCK-2 DC power cable
- HS-5, HS-6, HS-7 headphones
- MB-430 mobile bracket
- SP-430 external speaker
- VS-1 voice synthesizer
- IF-232C/IC-10 computer interface.

More information on the R-5000 and R-2000 is available from Authorized Kenwood Dealers.

#### R-2000

- 150 kHz-30 MHz in 30 bands
- All modes • Digital VFOs tune in 50 Hz, 500 Hz, or 5 kHz steps
- 10 memory channels
- Programmable scanning
- Dual 24-hour digital clocks, with timer
- 3 built-in IF filters (CW filter optional)
- All mode squelch, noise blanker, RF attenuator, AGC switch, S meter
- 100/120/220/240 VAC operation
- Record, phone jacks
- Muting terminals
- VC-10 optional VHF converter (118-174 MHz)



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

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