The Worldradio News

Vol. IV, No. 12 — Adventure in Amateur Radio — June 1975 — 50¢

ARRL proposes sweeping changes

Bill introduced in Congress to reduce interference

Hon. Charles A. Vanik
of Ohio
in the House of Representatives
Thursday, May 15, 1975

MR. VANIK: Mr. Speaker, millions of American families own and enjoy watching more than 120 million television sets. In addition, in this country we listen to over 400 million radios and millions of other electronic entertainment devices. However, all these electronic devices are subject to a growing problem called radio frequency interference, or RFI.

Everyone here has no doubt experienced some form of radio frequency interference. A television may suddenly lose its picture to static or "snow" during a favorite program or important newscast. The audio portion may be replaced by a mysterious conversation or by static noise. Strange noises affect radios and other devices, also. Phonographs, stereos, and electric musical instruments are subject to the same sort of interference. Ministers have reported that their public address systems broadcast police calls in the middle of sermons. The problem of radio frequency interference covers the entire spectrum of audio and visual electronic devices.

Mr. Speaker, as this Nation increasingly relies on television and radio as prime methods of communication, it is essential that we operate free from mechanical and electronic interference. Today I am introducing important consumer legislation that will eliminate 90 percent of all radio frequency interference to all audio and visual electronic equipment. A somewhat similar piece of legislation was introduced in the last Congress by the late Congressman Teague. That bill was designed to clear up RFI in only radio and television receivers. I feel strongly, however, that more encompassing legislation is long overdue to insure troublefree listening and viewing

(*please turn to page 8*)

Interconnection of Amateur Radio repeater stations authorized

The Commission has revised its rules to permit linking of amateur repeater stations.

(An amateur repeater is a station licensed to automatically retransmit radio signals of other amateur radio stations for the purpose of extending their intra-community radiocommunication range.)

On June 5, 1974, the Commission proposed amending Part 97 of the rules by deleting the prohibition against interconnecting more than two repeater stations.

The rulemaking proposal was in response to a petition by the American Radio Relay League, Incorporated (ARRL), which asserted that some amateur radio organizations planning to develop networks of repeater stations for use in times of disasters were unwilling to implement their plans unless the networks could also be used for other amateur operations.

ARRL also contended that in sparsely populated areas of the country, linked repeater stations could provide more reliable communications than could operation in the high frequency amateur bands.

The Commission found that permitting unrestricted interconnection of amateur repeater stations would be in the public interest. It pointed out, however, that certain requirements would have to be observed by the licensees/trustees of all such stations that were interconnected.

It said since at least two different stations would be involved in a system of interconnected repeaters, the licensee(s) of each participating station would be required to submit a system network diagram showing all related stations in the system. This diagram should include any auxiliary link

(*please turn to page 11*)

Drama on the high seas

There was drama on the high seas and 20 meter SSB on 1 June when Amateur Radio effected a rescue.

It began mid-afternoon when an obviously inexperienced operator appeared on the Maritime Mobile Service Net at 14.313 calling "Mayday." Listeners quickly learned that the captain of the yacht *Honeybee*, two days out of the Virgin Islands bound for the States, had had a heart attack. He died soon afterward. Five inexperienced people were on board, and the vessel was rolling badly in heavy seas.

Net Listeners alerted the Coast Guard and WB4SQJ (Miami CG Rescue Service Club station) and WB5KTY/5 (New Orleans CG) came up on frequency. Direction finding stations determined the location of the craft and an on-frequency consultation got it turned around and headed for the nearest land, Grand Caicos. In the meantime a VE7 had found George Thompson, VP5GT, on Grand Turk down the band and brought him on frequency. VP5GT, familiar with both islands, recommended bypassing the difficult anchorage at Grand Caicos and continuing on to Grand Turk where an easier landing could be made the next morning.

The drama continued through the night as the gods of propagation smiled and 20 stayed open. About a dozen active stations and probably hundreds more just listening stood by and monitored the *Honeybee's* progress. Phone patches were run to the passengers' families and to the ship's owner, Sidney Gutkin, K2PSO, — it was his foresight, leaving his on-board TR-4 tuned up on 14.313 and instructing the crew

(*please turn to page 36*)

Remarks of **Richard Baldwin, W1RU**, General Manager, ARRL, at the Pacific Division Convention.

I think we have in 1979 a tremendous opportunity, if we play our cards right.

There is going to be a World Administrative Radio Conference. At this conference all the member countries of the ITU will get together and in effect divvy up the spectrum all over again. It's the first time that this has been done since 1959. It is probably the only time or the last time it will be done until at least the year 2000. There are approximately 150 member countries of the ITU, and what they decide at this conference will set the pattern for the occupancy, the allocation of the spectrum for at least the next 20 years.

I think there is an excellent opportunity, if we do it right, to get additional bands for the Amateur Service at the conference in 1979. But, we have do our homework; we have to plan for this. There are three essentials that have to be carried out. We have to establish a strong United States position in support of the Amateur Radio Service. We have to encourage other countries to do the same thing. And we've got to have strong representation at the conference.

Now, what to date is being accomplished? What is being done? The first thing that we have to do is establish a strong and healthy Amateur Service in the United States. This is of paramount importance. This is part of what the Commission has in mind in its Docket 20282. There is great concern among some people in the government that the Amateur Radio Service is stagnant, even declining. The Commission would like to correct that, and I think that what action the Board takes at its May meeting will have an important bearing on whether or not we do re-establish a strong Amateur Service.

(*please turn to page 11*)

ARRL BOARD MEETING

The Board of Directors of the American Radio Relay League held its second 1975 meeting in Hartford, CT on 15-16 May. It was two months earlier than normal so as to permit formulation of League policy in responding to FCC restructuring proposals in Docket 20282. The Board's decisions, to be outlined in extensive comments prepared for filing with FCC before the 16 June deadline, relied heavily on the views of more than 50,000 members who returned the questionnaire survey of opinion mailed to all members in early March.

The Board rejected Commission proposals for reductions in power, mode, and special licensing privileges for General, Conditional, and Technician licensees, and supported retention of Extra class exclusivity in the 3775-3800 kHz band. The Board also rejected the proposal for a dual track licensing system split between HF and VHF and the concept of an advanced-VHF Experimenter license, but did accept the concept of a new VHF entry class to be called "Basic Amateur."

The Basic Amateur class would require ability to recognize code characters but without a speed requirement; written exam same as Novice; tests given by two proxy examiners of General class or higher; distinctive prefix; five-year term, non-renewable but reobtainable on re-examination by proxy examiners. Privileges would be A-1, A-2, A-3, and F-3, 50 watts maximum input, 145.0-145.5 and 222-225 MHz.

The Board endorsed a five-year term for Novices, also non-renewable but similarly reobtainable on re-examination. Privileges would expand to include those proposed for "Basic Amateur." ARRL will request use of all frequencies above 29 MHz for Technicians, 50.0-50.1 MHz additionally for Generals, and that present Technician and Conditional licenses continue to be renewable as now.

New code speeds will be proposed at 15 words per minute for new Advanced tests, and 10 wpm for Generals, with present Generals and Advanced to get automatic 15 wpm credit. The Board will request no change in present power levels, and that input rather than output remain the basis for measurement.

FCC's proposal for a lifetime Extra class license was endorsed, with a request that holders of the old Amateur Extra First Ticket get credit for the written exam. League comments will propose

(*please turn to page 2*)

Communicators in Germany

Klaus Heintzenberg, DJ6RX

I get the impression that the majority oppose the establishment of the new FCC proposed Communicator Class license.

In 1968 a comparable operator license class was successfully implemented in West Germany. Today our VHF/UHF bands are much more alive than they were before. This is one reason we have succeeded in defending the 144 MHz band in Europe. Many commercial users are presently trying to take over some of our frequencies.

Monitoring the 144 MHz SSB and FM sub-bands in Germany, you find that the majority of call signs start with DB and DC prefixes, which identify the Class C operators. Many of our repeaters on 2M and 70 cm were built and are well maintained by Class C licensees. Hopefully, some day, you will even be able to talk to some European Communicators via Oscar Satellites.

Here are some of the Class C regulations:

Examination: written test, basically the same as the regular examination practiced to obtain the HF license, with some emphasis on VHF/UHF technical questions. No code test. To obtain a license to operate on the HF bands the Class C operator only has to pass the code test (12 wpm copy for 3 min., 3 mistakes maximum).

Modes: all but CW.

Power: maximum plate dissipation rating, (collector dissipation) of final amplifier tube or transistor, 50 watts.

Scouts

The 14th International Boy Scout Jamboree (NORDJAMB-75) will be held in Lillehammer, Norway (approximately 120 miles north of Oslo) from the 29th of July thru the 7th of August 1975. The hosts for this International Event will be Denmark, Finland, Iceland, Norway, and Sweden.

Ten Foreign Instructors were invited to assist the NORDJAMB-75 Radio Scouting Staff in presenting Radio Scouting activities to the 15,000 Scouts and Adult Leaders from over 100 countries attending.I was selected from the United States - an honor to say the least. I will do my best to assist the NORDJAMB-75 Staff, but I also need your help.

On 1 August, during the Jamboree, there will be a special World Jamboree-On-The-Air (JOTA) Conference to exchange ideas and discuss the further development of Radio Scouting in the world, as well as in our own countries. Les Mitchell, G3BHK, and Len Jarrett, HB9AMS, will chair this conference. Please write and let me know of your suggestions and ideas so they may be presented and discussed with Scouters sharing our common interest.

If you have any 35 mm slides available of your Radio Scouting activities, such as JOTA, Council or District Camporees, etc., that you would like to share at NORDJAMB-75, please forward them to me. Place your name and QTH on each slide if you want them returned.

Of interest also are electronic "gadget" circuits that you feel would be of interest to other scouts. Information on QRP equipment would also be of interest. Before sending any actual constructed items, please contact this writer and give me the description of the item you would like to supply.

The NORDJAMB 75 Staff is as follows:

Senior Scout Camp Troop 20 (Radio Scouting) 50 members from the five (5) host countries; Troop Master, Harry Sannaes, LA5QP; Staff Chief, Nic. Holter, LA5CH; Staff Assistant, Stein Erik Ovesen, LA3ZP; Scoutronics, Christian Dons, LQ5OQ; Workshops, Thorbjorn Pedersen; Amateur Radio, Tom Victor Segalstad, LA4LN; LC1J Secretary, Siri Segalstad, LA2SR; Fox Hunting and Finnish Liaison, Bosse Ahlnas, OH2BHU; Swedish Liaison, Birger Fahlby, SM7CZV; Danish Liaison, Kai Stecher, OZ2YS; Icelandic Liaison, Nilhjalmus Thor Kjartansson, TF3DX.

The Foreign Instructors are as follows:

Romeo F. Castanedal, DU1RC (Philippines); Josef Falzeder, OE5FJL (Austria); Noel Lynch (Australia); Ives Margot, HB9AOF (Switzerland); Paul Martin, EI2CA (Ireland); Yorihiro Matsudaira, JA1JAM (Japan); Les Mitchell, G3BHK (Great Britain); Jim Parnell, ZL2APE (New Zealand); Len F. Jarrett, HB9AMS (Scout World Bureau HB9S); and Don Wibel, K9ECE (USA).

Don Wibel, K9ECE
5115 Delaware Avenue
Fort Wayne, IN 46805

ARRL

from page 1

opening 21,250 — 21, 270 kHz to Advanced class phone, and 14, 175-14,200 kHz to Extra class phone.

In other than regulatory areas the Board authorized multiple year League memberships at reduced rates; directed the establishment of an awards fee schedule additional to that for DXCC; created an annual merit award for the best **QST** technical contribution; approved a 1979 national convention in Baton Rouge, LA; authorized appointment of regional emergency coordinators in California; and instructed HQ to prepare instructor guides for code and theory classes in each license grade. The Board ordered committee studies of the Communications Department field organization, a local chapter system in the League structure, cassette tapes for instruction in traffic and network operation, and data processing requirements at headquarters. Minutes of the meeting will appear in July **QST**.

Worldradio

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The Worldradio News is two-way communication. Send in Amateur Radio information and news. Share your knowledge with your fellow amateur and **Worldradio** reader. We are most interested in your comments and suggestions. We would appreciate being placed on the mailing lists of amateur club bulletins.

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Judy Yost, WA6RAN

This---is Amateur Radio

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Mickia Mitchell

When Dick Colwell, W5BFK, of Lubbock, Tex., positions himself before his amateur radio operator's console precisely at 6:45 a.m., it is not just to pass the day sending messages to other operators. Rather, he hopes to help a blind person see again.

As a member of the Eye Emergency Network, Colwell tunes into the network's frequency and jots down how many eyes are needed. After signing off, he calls the eye banks in his area. If the required eyes are available, he radios the network back.

"The time I spend working the eye network is rewarding and exciting," Colwell says. "The network is made up of people from all vocations. Some are retired like myself; others still work."

Colwell's work isn't limited to the search for eyes. Any large-scale disaster glues him to his radio for long, exhausting hours. During Hurricane Hilda in 1964 he relayed hundreds of messages from the devastated area to distraught relatives who had spent anxious hours awaiting word of loved ones.

For his efforts during that catastrophic event, Colwell was awarded the American Radio Relay League Public Service Award "in recognition of meritorious service in connection with Hurricane Hilda." The honor was just another feather in the cap of a man who thoroughly enjoys serving others.

Modern Maturity.

Note: The Eye Emergency network was founded by Alson Braley, M.D. [WØGET] founder member of MARCO. He advised recently that the net passed 6960 eyes, transferred from one eye bank to another. MARCO Bulletin

Honduras

Many hear Dr. John Schmidt, WBØACU/HR5, check into the IMRA Net to list traffic, but few know that Dr. John is an optometrist and Registered Nurse. He is not an M.D., but everyone calls him doctor.

For several years Dr. John has been devoting his skills to the missions in Honduras. He and Frank Savat, WA5YOI, working with the International Lions Club, collected and graded old eyeglasses for the Missions. St. Catherine's Parish in Shreveport, La. (Frank's own parish) shipped 23 barrels containing 45,000 pairs of graded eye-glasses to Dr. John in Honduras for distribution.

Several times Dr. John has selected patients in need of cataract surgery and then, via Frank, WA5YOI, contacted a surgeon from the U.S. to go down and do assembly-line like surgery in Santa Rosa Hospital in Honduras. They would prepare two operating rooms for the surgery, and, while one operation was going on in one room, a patient would be prepared in the other room, until all were completed.

This is kind of hard for the volunteer surgeon, but sometimes he has the joy experienced by Dr. Mike Fajone . . He will never forget the day when two of his patients were teenagers with congenital cataracts. He removed one clouded lens from each one and then listened to their exclamations and astonishment when they "saw" for the first time.

IMRA bulletin

Amateurs help Telethon

Upwards of 40 Central Florida Amateurs provided communications to and from the Orlando Municipal Auditorium for the annual Cerebral Palsy Telethon on WDBO-TV. Members of the Central Florida Repeater Association and others from Orlando and Daytona Beach used a variety of equipment and ingenuity to relay amounts pledged and collected throughout the 18 1/2 hour telethon.

According to Buzz Showalter, W4UJL, the telethon committee was "extremely pleased" with the all-out effort of the amateurs and invited them to take part in next year's fund-raising project.

UJL paid special tribute to VIP Panel Members Sherwood White, WB4HSF; Cecil Poston, K4PWC; Don Harris, WB4YKB; George Blackburn, WA4GGW; Bill Killinger, WB4BKY; Jack Conklin, W4ZNV, and Chris Blake, WB4YFF, who did double duty as both a communicator and a performer in one of the music groups on the program.

Intermod was a persistent bug-a-boo. According to Buzz, the two stations operating in the balcony of the Municipal Auditorium on 34-94 and 22-82 QRMd each other. "Next year we will operate on a single frequency," said W4UJL.

Buzz also had kudos for Mike Connell, WA4FNJ, and Steve Lee, WB4JDA, who performed emergency repairs on the FTU repeater so it could be used in the telethon communications effort.

Florida Skip

Tornado

Herb Stecker, W9ZGQ

An apparent tornado touched down Monday, 19 May, on the west side of Madison, WI, tearing the roof off a large apartment buiding and blowing most of the windows out of the DNR fortress (Pyare Square Building).

On the scene in just 15 minutes were several Madison amateurs, including Ross Hansch, W9BG. The 58 net was activated at once to handle H & W traffic for the Red Cross. 16/76, 94 and 28/88 also were used. Over 200 messages were handled.

Calumet County EC reports: Tornado watch activity on a May date. Reporting into a watch net on 2-meter FM were Otto Meili, WA9CMV; Scott Hollenbeck, WB9LLF; Bob Schmid, WA9-FBO; and Dennis Rybicke, K9-LGU. A tornado was sighted and within 5 minutes the local group was on the air. Nothing further developed.

"Smoke Signals"

Those April Showers

Shades of 1967! The snow began early the morning of 2 April, kept up all day with heavy winds, and really got bad during the evening rush hour.

The city started grinding to a halt as normal 45 minute trips stretched to hours. The smart people gave up early and grabbed a motel room. More than a foot of snow dumped on the northwest suburbs.

Chicago FM Club (CFMC) was there to help, of course. Gary Pearce, WA9NSO, began monitoring at about 3 p.m. and activated a controlled net around 4:30.

Mobiles reported and requested information on road conditions, and several dozen phone calls were made to advise those at home that people would be late . . . sometimes very late.

Base stations checking in to handle the phone calls included Dave Kersten, WA9LCV; Jim Beedle, W9NIN; Kurt Meltzer, WB9KNX; Deborah Williams, WA9INA; Sherman Fisher, K9VLW; Larry Cotariu, WB9MZS; Leonard Knirko, W9MOL; Nikolaz Petrumin, WB9KEN; Leonard Kerns, WA9PJA; Ernest Stuart, W9JVC; Larry Roark, WB9MMW; and several others who stood by in case they were needed.

Ron Kritzman, WA9RPD, took net control at about 10:00 p.m., and the net stayed open until 11:50. At that time there were still many mobiles out on the street, but most of the traffic had been passed. Gary, WA9NSO, stayed up until the wee hours with a few mobiles who became stranded.

How valuable is the WR9ABY repeater? Just ask any of the mobiles who found it good company in that little April shower!

"Squelch Tale"

PICONET

PICONET is an organization of amateur radio operators in the 13 counties of southeast Minnesota.

The net meets each Sunday at 1900 GMT on 3925 kHz. Our purpose is to promote cooperation among area hams in the best interest of Amateur Radio and to build an effective net to serve our communities, our state, and our nation in the case of a natural or military emergency. Close Association with the Civil Defense organization of our state is to be maintained.

If you are interested in joining our net organization, contact this writer or see us on the net.

Dick Baker, WAØDCQ

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The following is excerpted from "Cancer Notes", a newsletter just mailed to all participants in Dayton, Ohio's Cancer Society Bikeathon:

"Salute! To the Amateur Radio Emergency Corps making the control of the ride extremely easy with their very professional communications capability. We worked them hard during the day. The Treasure Hunt worked them into the wee hours of the night.

"Boy, those radio people sure helped make it a slick operation."

XV5-3W8 QRT

At about 2345 Saigon time, 25 April 1975, the last free amateur radio station in Viet-Nam ceased operation. XV5AC was licensed to John Lunsford, American Embassy and had been one of the only calls heard from that war-torn country in years. None can recall 3W8's (Viet-namese civilians) during the many years of hostilities.

Requests were received by SBARC just prior to evacuation time by various individuals in Santa Barbara. During the last days telephone and cable circuits had become hopelessly snarled.

Traffic into Viet-Nam was strongly discouraged on MARS channels due to the lack of facilities in Saigon and greater priority for outgoing traffic. One request came from a recent UCSB graduate who wished to know if his entire family would be stranded in Saigon. Subsequent word was received that some or all of them made their escape to Guam, so some exciting phone patching will soon transpire.

A second appeal came from a missionary group whose brothers had already experienced harsh treatment and death at the hands of the Chinese but who could not depart Saigon for the U.S. without a sponsor. The Santa Barbara sponsors were too late!

Bill Bennett, W7PHO, a strong signal in Seattle, has helped coordinate contacts by American amateurs trying to work into Asia on about 14.224 MHz. In response to our request for information he made the succinct reply: XV5AC QRT 2345! Nothing more needed to be said. Make a note in your log book. History has been written!

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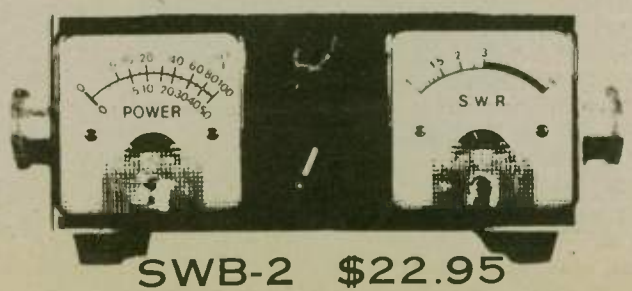

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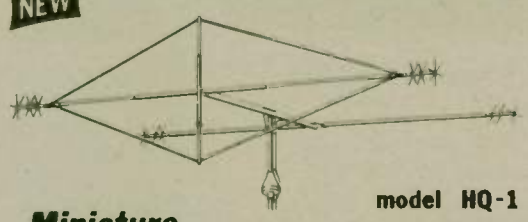

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Big day at Goddard for educators and amateurs

Will Webster, WA2TNC, and Bob Novas, WA3WWR, communicate with OSCAR 6 during the Educators Conference at GSFC.

On 27 May 1975 the Educational Programs Office of the Public Affairs Office had a full and highly successful day with over 120 secondary school teachers and administrators at the Goddard Space Flight Center for a conference on the use of the OSCAR satellite and amateur radio in the modern classroom. The amateurs have developed a program to PAO also had WTTG-TV (Channel 5) and WMAL-TV (Channel 7) covering the affair.

This conference was jointly sponsored by GSFC Educational Programs, The American Radio Relay League, and the Goddard Radio Club. It featured several demonstrations, the most significant of which were live contacts thru OSCAR 6.

The League was well represented by President Dannals, Vice-President Vic Clark, Atlantic Division Director Connie Mac, Don Waters, and Bill Dunkerly. Thanks to the efforts of the NASA Educational Programs Office and the Goddard Club, everything worked to perfection.

The entire program was videotaped and it is hoped that cassettes will be produced for both ARRL and the club to help publicize this aspect of the Amateur Radio Service.

Program

Presiding: Elva Bailey and Richard Crone, *Educational Programs Office, Goddard Space Flight Center*

9:00 WELCOME
Dr. John F. Clark, W3GYH, *Director*
Hugh Turnbull, W3ABC, *President*
Goddard Amateur Radio Club
Harry Dannals, W2TUK, *President*
American Radio Relay League

9:20 THE RESEARCH AND DEVELOPMENT MISSIONS OF THE GODDARD SPACE FLIGHT CENTER
William P. O'Leary, *Head Protocol and Briefing Branch*

9:45 THE AMATEUR RADIO PROGRAM
Harry Dannals, W2TUK, *President*
American Radio Relay League

10:20 INTRODUCING THE OSCAR SATELLITE
William Dunkerly, *Educational Program Manager*
American Radio Relay League

10:43 OSCAR *SATELLITE* DEMONSTRATION
Dr. William Webster, WA2TNC
Robert Novas
Goddard Amateur Radio Club

11:05 VISIT DEMONSTRATION AREAS
Beginners Amateur Station
Robley Sawyer WA3PTO
Richard Coan W3CPU
Goddard Amateur Radio Club
Typical Amateur Station
Karl Medrow W3FA
Hugh Turnbull W3ABC
Goddard Amateur Radio Club
Amateur Satellite Station
Dr. William Webster, WA2TNC
Robert Novas, WA3WWR
Goddard Amateur Radio Club
Mobile Amateur Station
William McAlister, W3AUN
William McDermott, W3CNP
Goddard Amateur Radio Club
Educational Services of the American Radio Relay League
Donald Waters, *Educational Programs Consultant*
American Radio Relay League
Video Tape — "OSCAR and the HAM"
William Spencer
Public Broadcasting System
Video Tape — "This is HAM Radio"
Harry McConaghy, W35W, *Atlantic Division Director*
American Radio Relay League
ATS-6 Health/Education Telecommunications Experiment
John Chitwood, K3RGB
Telecommunications Systems Branch
Goddard Space Flight Center
Electronics Fabrication Demonstration
Barry Crouch, *Training Analyst*
Bendix Field Engineering Corporation

11:45 Group I — Lunch
Group II — Tour of Goddard facilities

12:45 Group II — Lunch
Group I — Tour of Goddard facilities

1:45 PANEL PRESENTATIONS AND DISCUSSION — HOW CAN THE TEACHER USE OSCAR SATELLITES AND AMATEUR RADIO IN THE CLASSROOM?
PRESIDING:
Dr. Frederick Tuttle, *Director*
Educational Programs division NASA Headquarters and
William Dunkerly
American Radio Relay League
PANEL MEMBERS:
Dr. Martin Davidoff
Mathematics and Physics Department
Catonsville Community College
Catonsville, Maryland
Perry Klein, K3JTE, President
Radio Amateur Satellite Corporation
James Lin
Nashua High School
Nashua, New Hampshire
Dr. Ronald Oines, *Associate Director*
Space Science Education Project
Oklahoma State University
Minot Parker
Space Science Education Specialist
Goddard Space Flight Center
Robert C. Reiley, *Executive Director*
Hall of Science of the City of New York, Inc
Flushing, New York
Angelos Tsiatos
Herkimer High School
Herkimer, New York
Donald Waters
American Radio Relay League

2:45 PROGRAM SUMMARY
Dr. James W. Latham, Jr.
Consultant in Science
Maryland State Dept. of Education

3:00 VISIT DEMONSTRATION AREAS

3:45 DEMONSTRATION AREAS CLOSE

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The new officers for the coming year are:

President — Robley "Buz" Sawyer, WA3PTO
Vice-President — Dr. William Webster, WA2TNC
Secretary — High O'Donnell, W3FUO
Treasurer — David Friedman, WA3MJV

Lou Dod, WA3YWC, will serve as Activities Manager and Hugh Turnbull, W3ABC, will be responsible for publicity. David Faust, WA3POL, and Bob Novas, WA3-WWR, have been selected as the new trustees to the Foundation.

WA3NAN
Goddard Amateur Radio Club
Box 86
Greenbelt, MD 20770

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Contests

The ARRL Contest Advisory Committee continues to solicit ideas from interested contest participants on ways and means of enhancing the ARRL Contest Program.

Numerous items under current study include format for a possible Bicentennial Contest, basic contest philosophy, ethics, and overall recognition in the form of a Master Contester Award. Input is welcomed on any item of contest interest.

Your letters can go to ARRL Headquarters for CAC distribution or to the committee itself: Al Francisco, K7NHV, chairman; Pete Chamalian, W1BGD; George Harrold, WA2BLV; Gene Zimmerman, W3BQV; John Laney, K4BAI; Malcolm Keown, W5RUB; Ken Keeler, W6PAA; Bob Epstein, K8HLR; LaMar Ray, W9LT; Al Vitt, WA0CVS; and VE7CC.

DXpeditions

Per Mosegard Andersen, OZ6MI

In **Worldradio, QST**, and I am sure in a lot of others which I have not read, there has been a discussion about the planning, operation and the conditions on the days KP6KR was on the air.

Even though KP6KR was a brand new one, there are actually a good deal other big and well-publicized DXpeditions which receive far less attention than Kingman.

My ability to judge the various DXpeditions is I suppose not so great, but two of my really close friends, L. Ottosen, OZ1LO, and H. Pyndt, OZ5DX, were operators on ZD3Q. Later I was co-operator on CT3/OZ1LO. I am a member of DXCC Honor Roll and have 5BDXCC.

Various degrees of admiration decrease or increase according to whether it is an entirely new country, perhaps a confirmed DXCC country, or a station already confirmed on another band.

There are three points which come first and last, and which appear again and again. These are:

Point A

Planning right from the original idea until the last QSL has been answered, and sufficient PR has been created to provide capital for the next DXpedition.

Point B

Point B comprises the time the calls'n is on the air — i.e. as many people as possible are given the opportunity to have a QSO. This must be much more important than that a specially chosen few are worked on several bands — here it is often seen that some even attain 5 bands QSO and that some even ask for both SSB and CW. To top it all, the demand for inclusion of SSTV and RTTY, as well as inclusion of 160-meter equipment, has been heard.

Here it is, point A and B, where one says, like Martin from 3CØAN, "Stop, fellows, only one QSO per station during the first days."

Point C

There is not so much to say about point C except that it concerns conditions. Here one must conclude that the operator and the contact station back home agree on which band is best suited for use when conditions are bad or whatever; and what there can be in the way of new DXCC countries for as many as possible the world over.

With regard to the actual planning of the KP6KR operating, there is no doubt that there were persons who had set themselves the goal of giving as many as possible the opportunity of working a new country. Now I know that other parts of the world had problems in getting through but that Northern Europe had no problems in making a QSO. But such was the case this time; at other times it has been difficult for us in Northern Europe. I would also like to express my appreciation and my thanks to Bob Ferrero, K6AHV, for taking the time to listen out for the various continents, e.g. Europe.

In plannning there are many things, but let us look at the operators. Yes, they are known as hot operators from the big contests, from DXpeditions among others to the Caribbean, they know how to handle a pile-up, they know the quirks of the Europeans, etc. With their transmitter VFO on 14.203 MHz they can tune over or under what is known as the American Phone Band. What about those operators taking part who did not go under 14.200 MHz?

On July 1st, at 0530Z I heard how KP6KR came through; I heard how Martin, OH2BH, was let though for a QSO — my thoughts fell on 3CØAN and other things Martin had set up.

At 0820Z I could hear KP6KR 5 8-9. The pile-up was tremendous, even though it was during working hours here in Europe. I put my TX VFO on 14.135 MHz and after a few calls I got through. At around 1900Z signals were so poor that a QSO was impossible.

There were about 20 OZ stations which worked Kingman, helped by the local 2 metre FM DX Net or by landline. Every day there was a bulletin on 3680 kHz. In concluding, I can mention I have received a fb QSL card which confirms that OZ6MI has had radio contact with Kingman Reef — also mentioned on the card are those who had sacrificed their time, money and almost their life in loving their hobby.

Recently I saw that a (DX) operator recommended that operations of that kind could be best run by working W1, W2, W3 etc. — indeed this is just.

Requests for donations even reach us — recently I saw how KC4NI had drawn on the resources of the poor W2s; however, KC4NI was hard to contact for non-Stateside amateurs and one heard about many disappointed operators round about.

Some people have suggested the addition of 160 M, RTTY and SSTV equipment — will one avoid pleasing e.g. 327 JA stations just to show a few SSTV lines of some seagulls on "X" island? Keep the various modes separate — CW and SSB are enough for us; let the others arrange their things as they will.

To conclude may I wish that all those behind the key or the mike follow the tips and advice of the operators of the particular DXpedition. May I also add that I wish all stations which worked them had been just as skilled as the KP6KR team — then I think many of those often used swear words would disappear and we could perhaps live up to the reputation we have in non-amateur circles.

As a final-final, congratulations to KP6KR, to the DXpedition operators, to NCDXF and to all those who have helped to set that example that can be followed again and again.

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10 Meter beacons

DLØIGI	28.195 MHz
3B8MS	28.200 MHz
JA1IGY	28.190 MHz
GB3SX	28.185 MHz
ZC4CY	28.180 MHz
VE3RMR	28.175 MHz
VE3TEN	28.175 MHz
DLØAR	29.000 MHz

Listen for these beacons and make some hot DX contacts on ten.

Ham Hum, Omaha Nebraska

Check 28.170 for ZL2MHF, a 90-watt Beacon near Wellington.

Reports should go to (and will be appreciated by) NZART, Box 40212, Upper Hutt, New Zealand.

Station appearance

This month's station appearance award goes to Per Mosegard Andersen, OZ6MI, and he receives a one-year extension of his **Worldradio** subscription.

This award is made to stimulate interest in constructing a room that reflects a good "image" of Amateur Radio.

What made points for this month's winner was the paneling, the nice Danish modern table (that figures, hi hi), the DXCC displayed in a frame, QSL card shown, and the collection of Amateur Radio periodicals and other publications.

We feel it's important that visitors know there are publications devoted to this activity. That gives it stature to the "civilian" or non-amateur visitor. Unfortunately, most non-amateurs think of this activity as just some people in attics playing with radios. To help dispel this erroneous opinion, the fact that its exploits are recorded is important.

A **DX Callbook**, showing this is an international adventure is most useful and flipping through its pages should be instructive to a visitor. It can be explained that amateurs are licensed by their government and the call prefixes assigned by international agreement.

How important is all this? Well, you never know who, the person you know knows. What impression the visitor to your station goes away with may be transmitted to a city councilman (tower and zoning laws) congressman (legislation that affects us) etc.

It's amazing just what a "low-profile" Amateur Radio has. With so much of our activity depending on the whims of others in governmental agencies, it behooves us to "put our best foot forward" wherever possible.

Also, the kind of people that would be a credit to Amateur Radio are only going to be attracted to something that appears that its participants take pride in.

About a year ago we printed some pictures of stations that Darleen Magen, HC2YL, had visited. Along with the pictures Darleen said, "They reflect well on Amateur Radio. It would do well for many others to emulate the appearance of these. We must make it appear that we take pride in being amateurs and a junky looking station is not the way to do it."

We'd like to make "station appearance and regular monthly feature in **Worldradio** (the last one was Jack Petree, WB4OVX, in the April issue). So send in your pictures, remember the selected station gets a one-year subscription. If you wish to, include what effect you were after, what steps you took, etc.

The first step would probably be, as suggested by Paul Schuett, WA6CPP, to **STOP** thinking of it as, and never refer to it as, "a ham shack" (is that where you keep pigs?). But rather, let us make it the image of a "communications center". What we are talking about is the decor or "presentation factor". Don't forget the ARRL world map with pins in the countries you've worked.

We haven't mentioned it lately so we'd like to bring back 'our "QSL card of the month" award, which also carries a one-year subscription. Let's see those that have some sort of theme to them.

Once you actually use an **ALPHA 374** on the air, we don't think you'll be willing to part with it. *QST* (April 1975) says, in part, "A combination of modern compact components and a judicious use of . . . space has resulted in an amplifier fully capable of continuous operation at the legal power limit. It is also . . . hardly larger than the average ssb transceiver . . . The **ETO ALPHA 374** was used almost daily for . . . months, including two contest weekends when it was subject to constant use. At no time did the writer feel that the amplifier capabilities were even close to being taxed . . . In the BANDPASS mode, high-power operation requires no more adjustment than that involved in operating the exciter."

But don't take our word (or even *QST*'s) for it. You can actually check out a new **ALPHA 374** in your own station without risk! Buy one now from ETO (or a participating dealer). Use it for a few days. Then if you decide that you're willing to go on operating without a '374, return it for prompt refund of your purchase price. If there's any risk involved, it's ours!

Why not call or write ETO or your dealer right now for full details of this limited-time offer, and a reprint of *QST*'s 4-page report? (Dealer participation is optional, and the number of **ALPHA 374**'s available under this offer is limited.) **ALPHA 374, $1295.**

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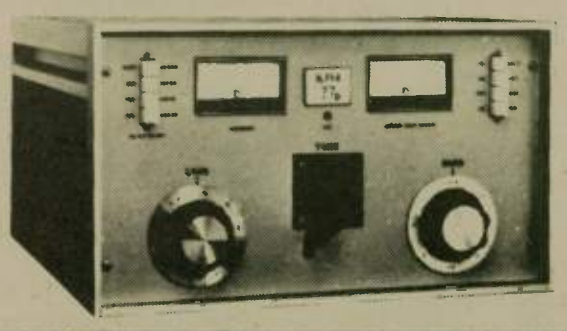

ETO EHRHORN TECHNOLOGICAL OPERATIONS, INC.
BROOKSVILLE, FLORIDA 33512
(904) 596-3711

The International Fox-Tango Club

Objectives: The Club is an international association made up mostly of owners of Yaesu transceivers who have banded together for their mutual benefit through the cooperative interchange of information intended to enhance the effectiveness of their equipment.

Although originally organized in January 1972 for owners of the FT-101 only, the newsletter now includes information about other models as well.

Benefits: Members receive ten issues of the FT Newsletter per calendar year. Although most items are concerned with modifications and improvements, some dealing with new accessories, service and operating suggestions and even social matters are included.

Sources of information are, for the most part, owners of equipment; however, the manufacturer (Yaesu Musen Co., of Tokyo) has been most cooperative in answering questions of a general nature asked by members. Members who ask questions of an individual nature may receive suggestions from the editor and possibly the calls of the nearest fellow-members. Such information can prove helpful in organizing on-the-air tests or even help in trouble-shooting, if required.

Membership benefits prospective owners of FT equipment by enabling them to make objective evaluations based on a study of the unbiased comments of owners in current and back issues of the newsletter. The manufacturer benefits by receiving world-wide customer feedback which has already resulted in suggestions for improvement in design, some of which have been adopted. However, the club has no connection, direct or indirect, with the manufacturer. Hence, it can be and does speak frankly and act, on behalf of its members, as a liaison with the factory. Recently, the club has evolved a plan to protect its members against theft of equipment through serial number registration.

Contributors: Anyone who has a comment, question, criticism or suggestion regarding his equipment or any club activity should make it by addressing the editor in writing. Every effort will be made to publish items of general interest as soon as possible. However, if a reply from the factory is required, publication may be delayed until both the question and the reply can be published together.

Contributors need not be concerned with literary style as the editor reserves the right to modify wording for clarity or to accept or reject part or all of a contribution. No payment is possible: It is expected that items will be offered in the same spirit that the editor contributes his time and effort — for the general welfare.

As dues barely cover expenses, there is no profit (in financial terms) for anyone. However, all members whose articles are published in the newsletter are now eligible for cash awards from a fund set up by the manufacturer to encourage suggestions which may lead to improvements in Yaesu equipment.

Organizer: The club was organized January 1972 by Milt Lowens, WA2AOQ (ex-W2EZR), an advanced-class amateur who started his amateur career in the early 30's shortly after getting his EE from Cornell University.

Since then, he has served as a licensed professional engineer, author, teacher and most recently technical high school specializing in electronics. In his spare time he also operated his own TV service organization for many years as well as a small mail-order business which peddled simple electronic gadgets he designed and manufactured, at home, with the help of his three (sometimes reluctant) adolescent daughters.

Recently retired and now a grandfather of five, he has more time to devote to his three long-time loves: amateur radio, salt-water sailing and his XYL (but not in that order, hi!) And he hopes to travel extensively too.

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Some people never succeed because they are afraid of doing more than their share.

Congress

(*continued from page 1*)

in all audio and visual electronic devices.

The most frequent complaints about RFI come from people who live near amateur and citizen band radio operators. However, radio-frequency energy is generated by many different sources, microwave ovens, automatic garage door openers, industrial heating equipment, medical and hospital equipment, and millions of amateur, citizens band, marine, and other radio-frequency interference. However, each one of these different items, including ham and CB radio, is operating in accordance with FCC regulations. These units are all operating within their licensed, assigned frequencies. They are not at fault in almost all incidences of RFI.

In fact, televisions, radios, and other devices are not manufactured well enough to block out unwanted interference from properly broadcast radio signals. In 90 percent of the incidents of RFI, according to the FCC, the receiver, not the sender, is at fault.

Our atmosphere is flooded by millions of different radio signals, all being emitted at legally prescribed frequencies. For example, AM radio stations broadcast at different frequencies from amateur operators. Each different source of radio frequency energy, including microwave ovens and automatic garage door devices, sends out a unique federally regulated signal. It is then up to the receiving unit, such as the television or radio, to discriminate among the many different signals and the one it was intended to receive. All too often, the television or radio receiver does not pick out only its intended signal. A strong, nearby signal from an amateur radio operator or other source is picked up and broadcast over the sound system on top of the regular program. In 9 out of 10 cases this problem could be eliminated by the installation of shielding or filters. The television or radio would then filter out all unwanted transmissions.

In phonographs, stereos, and electric musical instruments, speaker leads and solid state components act as miniature antennas that pick up unwanted signals. These signals are then amplified through the instrument's own amplifier and broadcast over the speaker, causing radio-frequency interference. In effect, unprotected audio and visual electronic devices act as traps for all sorts of radio signals. Again, RFI can be corrected in most cases by the installation of filtering and shielding components.

Radio frequency interference is indeed a growing problem. In 1974 the Federal Communications Commission received over 42,000 complaints on RFI. In the first 3 months of this year, 75 complaints were referred to the FCC by congressional offices alone. In 9 out of 10 of these complaints the fault lay with the receiver and not the sender. Overall, the number of complaints is up 20 percent since 1970. This number should continue to grow as more and more amateur and citizens band operators are licensed. The FCC has only 400 people in its enforcement force, 5 less than in 1948. The Commission is clearly overburdened by the problem of RFI. In 1974 there were over 119 million television sets in use in the U.S. With so many complaints to contend with, the Commission can do no more today than send out a flier to complaining citizens that explains what corrective steps may be taken in the individual's case. It takes an expensive service call, however, to install the necessary corrective filters.

It would seem only natural that a new television set or other electronic device should work properly. If a ham radio operator moves next door and installs his multiwatt broadcasting equipment, chances are good that interference will develop in the new television. The interference never existed before the ham operated moved in. Therefore, it is only logical to assume that the fault lies with the ham operator's broadcasting equipment. In fact, however, the fault lies with the television. It is not properly shielded and filtered and thus picks up the ham operator's stronger signal next door as well as the area television station broadcast.

Stories of radio frequency interference are frightening. The uninformed consumer will often resort to violence in order to restore his television reception. There have been numerous tales of irate neighbors attacking ham radio transmitting stations with axes. In one case, a neighbor shot down a properly installed and operating antenna with his shotgun. The list goes on and on.

The electronics industry is very reluctant to try to correct the RFI problem itself. The industry reasons that RFI effects less than 1 percent of television owners. This is sheer folly. A look at a map of the locations of amateur and citizens band radio transmitting stations in Arlington, Va., shows that only the National Cemetery is immune from potential sources of RFI. Between 60 percent and 70 percent of the entire population of Arlington is within range of a potential source of RFI.

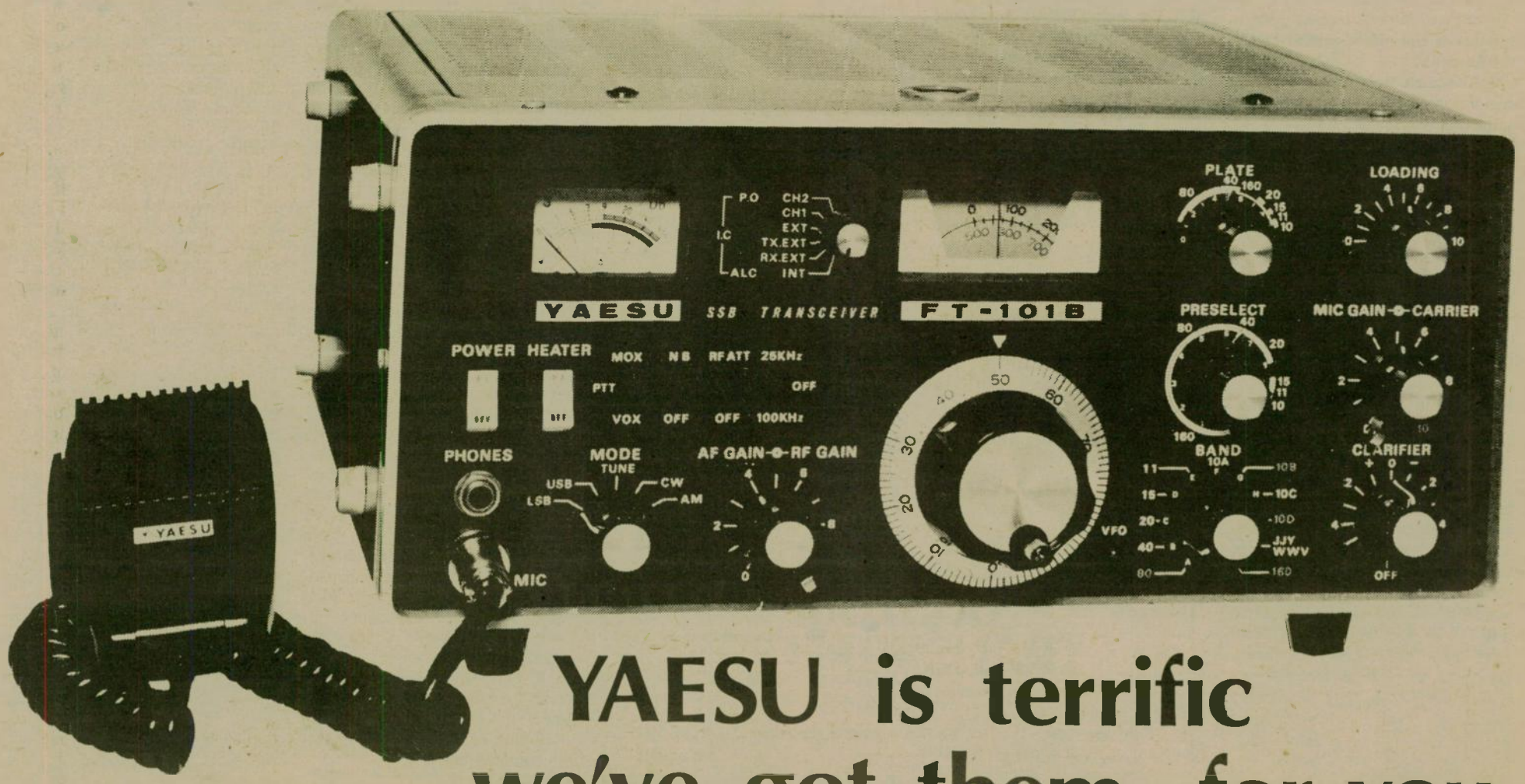
Arlington is merely representative of a fast-growing problem that is nationwide. The FCC received 148,000 applications for permits for citizen band radio in the month of March alone. It is estimated that the number of citizen band operators is increasing at a rate of 2 million a year. This figure does not include the number of unlicensed operators who are operating good equipment but simply have not bothered to file for a license with the FCC. These so-called illegal operators now number between one and two million, and their number is increasing daily. Each one of these units is a potential source of RFI. The equipment is operating according to FCC specifications but it causes interference to non-discriminate radio and television receivers.

The industry further contends that even a 50 cent increase in the cost of building a set would dull their competitive edge against other manufacturers. If all manufacturers were required to install the necessary filtering components, however, this problem would be overcome. All manufacturers would be forced to install the same equipment, resulting in an equivalent cost increase in all sets.

This cost increase is minimal. In most cases, RFI can be eliminated by the installation of a simple filtering device. The cost of such a filter to the manufacturer would be pennies. The estimated additional costs to the consumer, after mark-up for an interference-free phonograph, would be 22 cents. It would cost about $2 to install the necessary filters for a stereo phonograph and AM-FM radio. The cost to insulate a television set from unwanted interference would be $5.

These are small sums in comparison with the costs of installing the necessary filters after the consumer has bought a television, installed it in his home and discovered that he only receives static due to interference from a nearby broadcasting station. The average cost of a home service trip alone is $11. The cost of a high pass filter, which is the most common solution, runs from $5 to $10. A labor

(*please turn to page 35*)



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Save your radio

The rip-off foiler

Vic Higgins, WA6RZJ

After last month's meeting and the theft of a member's IC230 while in that meeting, I decided to share some thoughts on protecting your vehicle from the "bad guys".

There is no 100% fail-safe device for protection. There are distinct grades of protection, but none are absolutely fool-proof. Simple systems detect vehicle motion - as when someone enters a door (or we have an earthquake!). More sophisticated systems have monitor switches on key points (doors and hoods). The elaborate systems include pressure sensitive switches on floor boards and seats. Let's examine some of the systems in a bit more details, pro and con.

Motion sensors: These devices are usually mercury pool or "pinball" machine tilt switch types. They rely on the movement of the vehicle as weight is added to it by the "bad guy". If you sound an alarm when he tries to get in, he will run away. True, BUT NEXT TIME he gets smart. He puts a jack under the car before he gets in. The jack keeps the car straight, the alarm doesn't know what's happening, and the rip-off artist scores. Or, we get an earthquake, someone leans against your vehicle to tie his shoe, etc. and you have a false alarm, Oh well...

Monitor switches: Switches are placed on the doors to detect an 'open' door - as when the baddie gets in to do his thing. When the door opens, alarm! Neat. But why should the thief open the door? The wing vent can be forced open and the window cranked down; then the bad guy goes through the window, rips off the rig, and gets out via the door — radio in hand. Now the alarm - too late!

Pressure sensitive switches: These goodies are sneaky. Slide them under the floor mat and the front seat (under the seat covers). When weight is applied, they close a circuit and turn on the alarm. This is a great thing provided the switch works. (It takes a beating in either location.)

Positive return system: This system uses one of the wires in the harness as a sense line to detect the presence of continuity to ground. If this continuity is broken the alarm is sounded. The success of this system depends on when the wires are unplugged (or ripped) from the radio. If the unit is still bolted in, the alarm will probably work. (You may still have to repair the harness). However, if the unit has been freed from the mount prior to severing the sense line — the bad guy wins again!

Each system has shortcomings, but a combination of them could give you very good protection. A word to the wise, on monitor switches — see if you can detect movement of the wing vent - not the door (the door will trip it anyway). And don't forget the hood. (The bad guy opens your hood and pulls the battery cable - voila, he wins again.) The trunk is another entry point sometimes overlooked. Station wagons are obviously prone to rear entry - but so are many autos. The back seat backrest and front panel are easily kicked out once entry is made to the trunk (crow bar, fire axe, etc.).

Use a combination of systems. Don't rely on one. And check it periodically to be sure it works. One last thought, put an outside switch where "baddies" can see it. Often they "case"a vehicle to see if it is protected. Finding a switch just may make them look at your favorite CB operator down the block!

"Squelch Tales," San Diego Repeater Association

Protect your gear

1. Make a list of all valuable items, with a good description and serial numbers. Your police department can file the serial numbers with the National Crime Computer if it's stolen. A photo of your equipment installed in your car or home is an excellent aid.

2. Engrave an ID number (your call & S.S. number) on the unit case, chassis, or inside the unit so it can be identified if recovered or located at the pawn shop (or Hamfest?). Check up on gear at some flea market, but don't let on. Try to mount mobile gear firmly so that it can't be removed quickly before the alarm sounds, if you have one, or someone notices the tampering. Present ICOM mountings snap off too easily in 4 seconds and the burglar can get away in time.

3. Change the mushroom buttons on your car doors to straight buttons and don't have more than 1/4 inch extruded when it is locked. A coat hanger can open most doors by going around the door seal. That's how the tow truck man gets in.

4. Don't broadcast your whereabouts over the repeaters, that you are going on a trip, or that you are going to park at a certain spot and be in the building for a time. This is essential information for the burglar.

5. Clear any gear with your insurance agent so that your policy will cover it. You may require an additional rider and description details. Any loose gear such as left on the car seat or in the trunk is usually covered by your homeowner's policy with the multiple coverage, but you may have a deductible clause so that you will still lose something.

These are just a few suggestions that may help. We did get a report that one member's car (with an alarm) was entered and the mobile unit was partly pried off, but the alarm must have scared off the intruder. So, mount it firmly so that your equipment cannot be easily removed.

"R F Carrier," Dayton, OH ARA

Rig ripped off? Do this:

Dick Reese, WA8DBW, of Akron, OH has the following advice if you are the victim of a thief "ripping off" your mobile equipment:

1) Be able to conclusively prove ownership by serial number or some other means (this is where the small engraving tools really help).

2) Do not leave the place where you find the rig; advise the owner and request his cooperation to establish your ownership.

3) Should the store owner (or other person) refuse to turn the rig over to you, call the police immediately from that point, if possible, and request assistance while remaining with the rig.

Your positive proof should cause the police to take the radio, give the dealer (if such) a receipt and then determine the lawful owner.

Ron Leedy WB8ONG, at Youngstown found his HR-212 on the shelves at a Youngstown radio store; he explained that it was his radio, established proof of ownership, but left the store. That dealer got rid of the radio quickly and it is still missing; amateurs are warned to be careful and persistent when they get into such a situation.

"Radiops Log," Cleveland OH

Insurance

ARRL's "Insurance Guide" (CD-82) has been recently revised to provide much valuable up-to-date information to hams. If you have ham gear of considerable value, it advised a "Rider" to your main policy (at a cost of around 2 percent - 5 percent of the stated value) and a separate "Floater" for your towers and antennas. Group policies for club activities are discussed. It pays for sure. Write for ARRL's CD-82.

Aim High---
Follow your star
Soon you'll discover
Why you are.

WWV propagation forecasts

Forecasts of radio propagation conditions for north Atlantic paths are issued at approximately 6-hour intervals by the Telecommunications Center in Boulder, Colorado.

The forecasts apply to a six hour interval, beginning about one hour after the time of issue. The issue times are 0100, 0700, 1400 and 1900 UTC.

The basic forecast is in the form of a letter and a number. The letter is a statement of current conditions and it is expressed in one of three grades: N — Normal (or quiet). U — Unsettled (quality 5 on the scale below, and W — Disturbed. The number is the actual forecast portion of the statement. It gives the expected value of the propagation quality during the forecast interval on a scale of 1 to 9. The scale defines radio circuit quality as follows:

1. Useless
2. Very poor
3. Poor
4. Poor-fair
5. Fair
6. Fair-good
7. Good
8. Very good
9. Excellent

For several decades these short-term forecast have been distributed by WWV. For the past several years the broadcasts have included an evaluation of current geomagnetic conditions, as well as a verbal description of what North Atlantic radio quality is expected to be during the following hours.

On the basis of requests of many communicators (largely radio amateurs) it became apparent that up-to-date geomagnetic data and solar activity information would be useful. Therefore, WWV announcements at 14 minutes past each hour now include a 3-hour geomagnetic index and a solar flux value. Additional information is given in order to allow listeners to determine whether the given value is likely to be higher or lower at some time between when the observation was made and when the next update should be forthcoming. A typical forecast might be:

"The radio propogation quality forecast for 0700 UTC is fair. Current geomagnetic activity is quiet. The coded forecast is November five. The K index at 0600 UTC is two tending to increase. The 2800 Megahertz solar flux index is tending to remain constant."

This statement would infer that on the basis of current quiet geomagnetic activity, radio propagation conditions currently are quiet, but quality should deteriorate and be only fair during the forecast interval. The latest K-index is 2, but chances are good that 3 might be more appropriate for use in deriving forecasts within the next few hours. The latest flux value, 87 units, should apply any time in the next 24 hours or more.

The Sept. 1974 issue of **CQ** Magazine carries an article describing a method for preparing forecasts for specific radio circuits. The article, "Short Term Predictions for Ionospheric Propogation," by Ted Cohen, W4UMF, is highly recommended by the Telecommunications Services Center Forecasters.

Kent D. Boggs, Chief Forecaster
Institute of Telecommunications Sciences

Tell us something:

So we may better serve you, the space below is for your comments, suggestions and even criticisms.

Tell us which articles you liked ... and which ones you didn't. Tell us of your interests, and what type of news, articles, features and columns you would like to see. Tell us of your activities. The more we know about you, the better we can tailor this publication to serve you.

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Norm Brooks, K6FO

Baldwin

(*continued from page 1*)

Another part of this preparation for 1979 began to take place about two years ago. That was a committee functioning under a division of the Office of Telecommunications Policy which studied the Amateur Service. It considered our growth between now and 20 years from now and studied the changes in the uses of phone, CW and other modes. Based on what it knew of the use of the spectrum, the committee recommended to the OTP that we have some new amateur bands at 10, 18 and 24 MHz, and that there be an exclusive band, not shared as it is now, but exclusive at 3.5, the 40-meter band widened from 7 to 7.5, and the 20-meter band widened from 14.350 to 14.5. Whether or not this will be the position adopted by the United States, it's far too soon to tell, but we are off to a good start. We're off to even a better start because we have to encourage other countries to adopt a similarly strong position. Already the report of this committee, recommending the additional bands and the widened bands, have been adopted by an IARU regional conference in Hong Kong a mongh ago, and that means that the IARU member societies in that region will go to their government and try to get them to support the same privileges for the Amateur Service. And that report, almost the same, slightly modified, two weeks ago was adopted at a Region One meeting in Warsaw, which means that those amateur societies will also go to their governments and try to get support for the same general plan.

A problem is that there are some countries where there are no amateur societies. There is going to be a considerable amount of traveling by individual amateurs, by members of the IARU staff, the ARRL staff, and in addition there are many meetings at ITU at which we will have representatives in order to try to sell the Amateur Service.

The things I have listed so far are what your representatives can do in this matter, in selling this program overseas. But there are things that you can do as individual amateurs: You can play a very important part in this development of a healthy Amateur Radio Service. For one thing, you, as individuals or through your clubs, can encourage the growth of Amateur Radio by interesting more people, particularly young people, into becoming amateurs. It's quite possible that if each one of us had brought into Amateur Radio one new amateur per year Docket 20282 would never have come to pass, because one thing that certainly triggered off 20282 was the lack of growth in the Amateur Service. So I repeat, an important thing that you can do is to encourage new amateurs.

Another thing that has been talked about many times today, and many times in **QST**, is we've got to clean up the bands. We have got to stop this on-the-air jamming, the obscenities, all of this activity that not only spoils Amateur Radio for us as individuals, but which gives a horrible example to people overseas who may be listening and who may be the ones who influence a vote at the ITU conference. Some of the activities that go on, on-the-air, are, as you know, disgraceful and do nothing to help the image of the Amateur Service. Whatever you can do to improve that situation would be a great assistance to us.

I am really an optimist about 1979. Dannals sometimes gives me heck about being such an optimist, but I really think we have the tremendous opportunity of a lifetime and I for one intend to try and see that we succeed.

•

Burma

The authorities in Burma have prohibited everything that has the slightest thing to do with Amateur Radio.

Even the import of radio parts is on the black list. So if you write to an amateur in Burma, DO NOT USE HIS CALL SIGN. In some cases it is known that the amateur landed in jail because of supposed activity!

Repeaters

from page 1

station that might be used to effect the interconnection, the FCC said. Even though the interconnection might occur only occasionally or on a part-time basis, the Commission said it needed to be aware of which stations were involved in such a system.

The Commission also pointed out that the licensees/trustees and control operators of all interconnected repeater and associated stations should remain aware that the interconnection of their station with any other station would not relieve them of the responsibility for proper operation of their station.

The Commission said these rule revisions should not be construed as eliminating the prohibition of crossband operation of amateur repeaters — use of two different frequency bands — which is being considered in a separate proceeding.

The rule amendment becomes effective July 11.

Action by the Commission May 28, 1975, by Report and Order. Commissioners Wiley (Chairman), Lee, Reid, Quello and Robinson.

1975 ARRL National

The 1975 ARRL National Convention will be held during the weekend of 12-14 September at the Sheraton Inn and International Conference Center in Reston Virginia.

Sponsored by the Northern Virginia Amateur Radio Council (NOVARC), with the cooperation of the Foundation for Amateur Radio, the convention will highlight the public service roll of Amateur Radio. A well rounded program is planned, covering the broadest technical and operational interest, and featuring "Something For Everyone."

The ARRL Forum will be headed by President Harry Dannals, W2TUK, in addition to a number of directors and headquarters staff members. An FCC forum will bring a number of key Commission personnel before the convention. A number of special interest meetings will be held and a special program for the ladies is planned to keep them entertained for the entire convention weekend.

For more detailed information write: NOVARC, P.O. Box 682, McLean, Va. 22101

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The American Radio Relay League

J.A. "Doc" Gmelin, W6ZRJ
Director, Pacific Division, ARRL

continued from last month

The history of the American Radio Relay League is the story of how an organization founded to relay amateur radiograms became, in time, the major national representative and voice of Amateur Radio. Because the League started as a "traffic" operation one of the major functions of the ARRL still remains message handling and operational activities.

The operational side of Headquarters remains a major part of the organizational structure and is carried on by one of the largest departments at Headquarters, the Communications Department.

Head of the Communications Department is George Hart, W1NJM. In the early days, the operational activity of the League involved only traffic handling, that is the "Trunk Line" system, under the direction of a Traffic Manager. The first TM was the late George Snell, W4CF.

When the Communications Department was established in the early 1930s, Ed Handy, W1BDI, became the Communications Manager and remained in this office until the mid 1960s, when he retired from the League.

As the League developed, more and more operational activity was added to the functions of the Department until today it covers a broad range of operation, including the original traffic and network function, with the addition of every activity from club coordination to contests and awards.

The Communications Department is divided into a number of sub-operational areas including traffic and networks under the public service branch, DXCC, contests and awards, affiliated clubs branch, station appointments and section coordination, training aids and the operation of the Headquarters Club Station, W1AW.

Under the Communications Department is the ARRL field organization, which includes 74 sections each headed by a Section Communications Manager. The SCM is in charge of all operational activities within the section, including official station appointments, emergency and network operation and club programs and operational events such as contests.

The SCM sends in a monthly activity report to the Communications Manager to be included in the "Station Activities" section of **QST**. Each section is allotted a certain number of inches of space depending upon the number of League members in the section. The report includes the activities of members in the section and the information from appointee reports. Also included are reports of club activities and a monthly traffic report.

Present Communications Manager Hart, W1NJM, is the CD "boss" responsible for every departmental activity mentioned above. He has been with the League since 1939, when he started as an operator at W1AW. George was one of the founders of the ARRL National Traffic System, which replaced the original Trunk Lines in 1949. He was National Emergency Coordinator before becoming Communications Manager on the retirement of Ed Handy, W1BDI.

Deputy Communications Manager is Ellen White, W1YL, in charge of "getting things done" throughout the department. She is former SCM of San Diego Section as W6YYM and has been at Headquarters since 1952, starting out in charge of training aids and contests.

Bob White, W1CW, is Assistant Communications Manager and is in complete charge of the administration of the DXCC program. He is formerly W6YYN of San Diego and has also been at Headquarters since 1952.

Dave Newkirk, WB9CJS, is DXCC Assistant under White, and his job of tabulating and checking DXCC cards and credits is a major activity of the Communications Department.

The Assistant Communications Manager for Public Service is Bill Mann, WA1FCM. Mann is in charge of all public service operations including traffic and emergency work and is responsible for the National Traffic System and Amateur Radio Emergency Corps. He is assisted by Bob Poirier, WA1QME, Public Service Assistant and newest member of the staff.

Rosalie Cain, WA1STO, heads up the Training Aids and Club branch. The League has a large library of films, slides, tapes and other related training aids available to affiliated clubs. The League maintains a file of clubs which have affiliated, keeping an active list for those clubs who have filed an annual report within the last two years and an inactive file for clubs who have not done so. All club affiliations are approved by the Director of the Division involved and voted as affiliates by the Executive Committee of the Board of Directors. Unless the Board votes to remove this affiliation it remains in effect even though the club may be inactive.

Rosalie formerly handled Public Service and was DXCC Assistant. She came to the League several years ago from Indiana where she was WB9FJT.

New Contest man is Jim Cain, WA1STN, former Assistant Communications Manager in charge of clubs and training aids. Jim was a member of the ARRL Contest Advisory Committee when he was WA9AUM in Indiana. The Headquarters does check over all logs submitted in ARRL contests, another major activity of the Communications Department. Also assisting in contests is Gail Machowski, who has worked part-time during the school year while completing college, and full-time during the summers.

Also aiding the contest branch is Jim White, WA1NNC, a contester in his own right, who works during college holidays. Jim is a former helper in the Secretarial Department and was in the Technical Department as a Lab Assistant during the summer months.

In charge of Code Proficiency qualifying runs, WAS, Rag Chewers Club, Old Timers Club, A-1 Operator program, Satellite Awards and other related programs, is Judy Mann. These awards are available to members who qualify and details can be found in various League Publications including **How To Operate An Amateur Station**.

Arline Bender supervises the clerical crew of the Communications Department and is in charge of administration and records. She is working hard on a Novice license at present.

Also working on her Novice is Rita Tilley, who spends the major portion of her work on Station Activity reports.

Other clerical help includes Judy Petrew, CD secretary, Karen Ripa, who fills orders for CD forms and supplies, and Penny Harts, who handles the Switchboard for the Headquarters offices.

Also involved in the Communications Department, although across the front lawn at W1AW, are Chief Operator, Chuck Bender, W1WPR, assisted by Allan Bloom, WA3JSU, and Chris Schenck, WB2SEZ.

Amateurs and League members can take part in a number of the activities of the Communications Department. Contests and DXCC are obvious, but members may take part in the field organization by holding appointments at the section level, and both members and non-members can take part in the National Traffic System and the Amateur Radio Emergency Corps.

Sections in the field organizations are administered by the Section Communications Manager, elected for two year terms by the membership. Often, however, only one individual member is willing to file for the office of SCM in a section and thus there is no voting.

The SCM may appoint an Assistant SCM, who helps with various activities assigned by the SCM. The Section Emergency Coordinator is appointed by the SCM to take charge of the emergency planning and coordination of the section, including the organization of the AREC.

The SCM also appoints Emergency Coordinators for various towns, cities and groups within the section. These are the local level emergency communications organizers who report on a regular basis to the SEC.

There are a number of station appointments issued by the SCM to interested League members of a section. These are:

The Official Relay Station Appointment (ORS) which is for stations who are active in CW net and traffic operation. The counterpart for phone net and traffic operation is the Official Phone Station (OPS).

The League maintains a corps of Official Observers (OO) who monitor the bands and send "friendly" warning notices to stations whom they note are transmitting improper signals. These are not official citations in any way, but are sent only to let stations know that they apparently have problems. Often they are not taken in this light, however. This is unfortunate since the OO is a volunteer operation and only done to help amateurs improve their signals. There are four classes of OO, Class 4 being for signal conditions only, and the highest Class I for precise frequency checking at band edges.

The Official Bulletin Station Appointment (OBS) is given to stations who maintain regular weekly schedules to broadcast the W1AW bulletins to the membership. This is the only case in which this type of operation is allowed on the amateur bands. OBS monitor W1AW and also receive the bulletins by post card.

The Official VHF Station (OVS) appointment is for stations operating above 50 MHz, whether it be for experimentation, net operation or repeater work.

All appointees send a monthly reporting card to the SCM listing their activities for the month. These are included in the SCM's section report sent to Headquarters.

The Communications Department is that part of the League which serves the membership in operational areas; amateurs and League members are encouraged to take part in the various activities. If you are going to operate in a contest, send to Headquarters ahead of time for log sheets, etc. If your club needs training aids for a program or class, send to Headquarters for the list of training aids. If you are active in an operational area, consider a station appointment so that you can take an even greater part in the ARRL.

For appointment information, contact the SCM of your section (addresses on page 6 of any issue of **QST**) and ask for the application form for the particular appointment you are interested in. If you are able to take part in leadership in a particular area, make your talents known to your SCM.

For further information on the Communications Department activities, write Communications Manager, ARRL, 225 Main St., Newington, CT 06111.

continued next month

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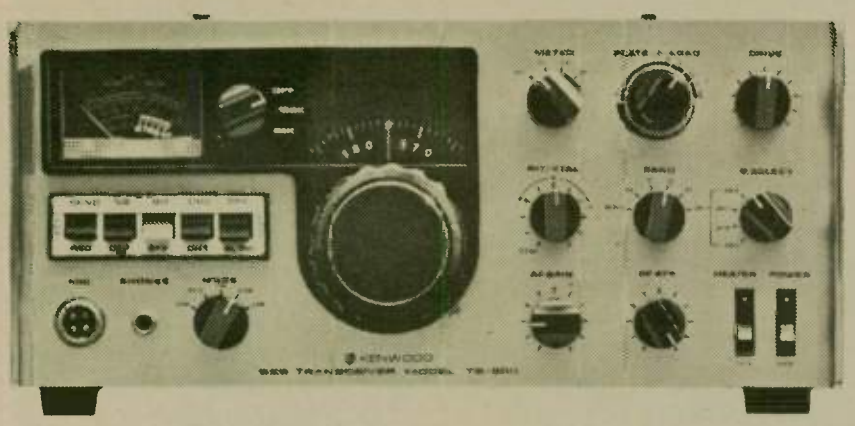

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Emergency Communication

Milt Kohl, W8SLY

All of us who were involved in the Xenia tornado, I'm sure, have a healthier respect for the power of the elements, and the destruction and suffering that can be caused! We should also have been made aware of our shortcomings, individually, and as a group. The question is...How much better off are we now to handle a similar emergency? Perhaps you ought to ask yourself a few questions such as: Are my portable and mobile equipment in ready condition?...crystaled up properly?... on frequency?...audio gain adjusted properly for noisy locations?.. Will it still be distortion free when I start yelling into it?...Do I have other supplies readily available — such as flashlight, raincoat, hat, jacket, spare batteries, antenna adapters, etc?... Have I improved my personal knowledge and operating technique in emergency communications?...Have I participated in public service events in order to improve my ability?...Have I schooled myself to know when to talk and when to listen?...Have I made an effort to know and work with the other members of the club so that I can give and get cooperation?

I doubt that anyone will be able to give the right answers to all of the above — and I'm sure that a little self examination will result in your being better prepared for the next time.

"The FM Scanner"

Would you be ready?

At 5:30 a.m. (local time) a simulated slippage along the Calaveras Fault produced a 7.2 earthquake centered between the cities of Walnut Creek and Concord.

The area has been isolated, and local travel has been made extremely difficult by collapsed freeway overpasses, landslides, downed power poles and wires, plus fault line slippages. The local airport has been closed due to damaged runways. Casualties are 300 simulated dead, 1500 simulated injured, 700 of whom require simulated air evacuation to hospitals in the San Francisco, Oakland Area.

At 6:00 a.m. local time acting on simulated news reports, the President (simulated) declared Contra Costa County a Federal Disaster Area. At 8:00 a.m. the Diablo Chapter of the American National Red Cross, 1301 Ygnacio Valley Road, Walnut Creek, CA 94598 was designated by the Federal Disaster Assistance Administration as joint disaster headquarters for Federal Coordination Officer, the California Office Emergency Service Coordination Officer, and the Disaster Director of the Northern California, Western Nevada Division of the American National Red Cross (all simulated).

Amateur Radio and MARS organizations have been requested to assist these agencies for the next 72 hours.

Disaster Scenario — East Bay Section

Blizzard

I was asked to communicate my thoughts on the Amateur Radio public service activities during the Blizzard of the 10-12th of January 1975.

As you undoubtedly know by now, this storm was considered the severest of this century, according to our weather experts. It certainly was the most unusual one I have ever witnessed — mainly because I was not around yet in 1940 and for that reason can't comment on it.

For us radio operators, in particular, this event provided us with the opportunity to show the general public what good things Amateur Radio is capable of. Ordinarily, the day-to-day message handling goes unnoticed; the isolated emergency situations where Amateur Radio comes to the rescue receive relatively little public attention.

However, this storm was of such a magnitude that the entire Midwest was involved with, concerned with, and interested in this strange meteorological activity. Here the amateurs participating in the PICONET ALL-DAY WATCH provided that necessary function which the public at that time craved: up-to-date, statewide, weather information.

In Brainerd we are most fortunate in having the cooperation of a very public-spirited, "happy-day" radio station known by the call letters of KVBR. Its engineer and announcer, Mark Persons, himself a radio buff, gave Amateur Radio another opportunity to prove that it is in a class all its own.

The phone-patched weather reports provided live by the PICONET participants through my station to KVBR still have members of the community talking in amazement. In fact, frequently I get comments like this: "Gee, I didn't know 'hams' could do all that. I really enjoyed those broadcasts." Just today I received a thank-you card from a person we helped with the PICONET which stated: "I want to thank you so much for the quick response when I needed a radio operator. Our daughter was in the St. Cloud area, but was very well taken care of and got back to Minneapolis at 11 o'clock Sun. evening. Once again thank you so much." Of course that thanks is directed to all of you fellow members of this rewarding fraternity.

There were many other reports of people helping people. In short, this storm affected all of us — I think it brought us all closer in that we were once again able to focus on the needs of our fellow man and, thanks to the storm, this goodness was emitted.

It seems so often that we hear about man's **inhumanity** to man — the news is filled with it daily. At least from the PICONET activities, I can honestly say there is a great deal of man's **humanity** to man expressed not only in word, but also in deed. For these kinds of things I must therefore personally laud you hams of the PICONET and HANDI-HAM SYSTEM.

Of course, we would not like to see another storm like this one, for it caused many deaths and much destruction; however, should such events occur, we amateurs can do our part to help and at the same time utilize the media (newspapers, radio, or television) in our own areas. We must recognize that in order for Amateur Radio to survive, we must make ourselves known to the non-radio world. The media is the best tool, for it needs us and, conversely, we need it — that's the name of the game. Let's get ready to be of service again. . . hopefully on an even grander scale.

Sincerely and fraternally yours in Amateur Radio,

M. Fritz Bertelt, KØMAH

communication program

On 7 March a group of Marin County amateur radio operators met to consider the communications problems of the county in the event of a disaster or other emergency.

Fred Harrison, WA6ULH, represented Marin County communications in the discussions and emphasized the department's dependency on amateurs to provide for much of the emergency traffic handling. The Com Center monitors 27 frequencies and these will be active when the need arises.

Chuck Bock, WA6KBF, moderated the meeting and presented well thought out emergency plans for handling communications in the event of a major disaster or minor emergency.

This meeting disclosed that two organizations, the County of Marin and the Marin Chapter of the American Red Cross, were depending on amateurs to provide much of the needed communications in such an event.

A second meeting was held March 21 to enlarge on this program and establish a wider base of operations. Twenty-one survey forms have been received as a result of the second group effort, listing frequency capabilities, mobility, portability and emergency power sources.

Although Amateur Communications Society (the WR6ACS repeater group) and Marin Amateur Radio Club are actively working with the county and Red Cross, the purpose of these meetings is to establish a pool of 75 to 85 operating units made up of active and qualified amateur radio operators strategically located throughout the county. Schools and medical people will need efficient communications to be able to provide their services in the event of urgent need in a disaster situation.

Membership in a radio club is not necessary in this planning as the main objective is to urge amateur radio operators to fulfill responsibility to provide a public communications service in time of need.

Rally points have been decided on in 21 strategic locations throughout Marin County. Each point will become a center to provide help and to gather for that purpose when the need arises.

The organization has tentatively labeled itself Marin Emergency Amateur Communications.

If you are interested in being part of this communications pool, contact Mike Edwards, W6FCQ; Steve Sartor, WB6DLT; or Len Spencer, WA6CBQ., for further information.

FD

Steve McCallum, K4URX

With the hurricane season upon us, Key West amateurs decided to combine business and pleasure, so to speak.

The club voted unanimously to hold a Field Day Operation in the Civil Defense Bunker — and how much more realistic can you get!

The CD bunker is an underground complex formerly housing gun emplacement crews. Walls and ceiling are some 14 feet thick, mostly concrete. Actually the interior is about at ground level — which has been built up for a considerable area.

For power the club has available two 75 kilowatt generators, with a week's supply of gasoline. However, plans call for employing smaller generators for FD operation.

Considerable experimentation is planned with antennas, and it is hoped the FD exercise will point to some answers on what is best to plan for emergency work.

The club is cooperating with CD in updating the Monroe County RACES plan — which at present it so out-dated that no one seems to have a copy of it!

"Florida Skip"

Monitor RACES frequencies during storm warnings

The DuPage County (Illinois) Civil Defense RACES nets are usually activated during tornado warnings. Several stations have been showing up on frequency during recent bad weather conditions prepared to handle emergency traffic if the net had been activated. The frequencies are 28.650 MHz and 147.24 MHz (same as the WCRA club frequencies). These are good frequencies to monitor **at all times!**

•

Remembering my CW hound

Joe Rice, W4RHZ

Some years back by brother-in-law gave me a puppy. He was like all little dogs and seemed to be always underfoot. He did all those things that small dogs do - get tangled up in a clothes line and liked to be petted.

I had no idea at the time that this dog would grow up to be a real watchdog. I suppose if one were to check back in his personal history you might find he was related to a coyote or perhaps even a wolf. Nothing too unusual about that, I suppose.

By way of physical features, when he was full grown he had the most beautiful brown-shaded hair I've ever seen. He had all the appearances of being a collie. His ears were well-proportioned and in his normal stance they laid back on his head. When his fur was brushed back you could glimpse the pretty coloring of his skin which seemed always to be clean. His paws were large and his eyes brown. He wasn't an over-friendly dog. On the contrary, he was a one-man dog. He and I got along famously.

Being an amateur radio operator it was my wont to stay up late at night, especially on those clear moonlit ones, and talk to a lot of friends on the 80 meter CW band.

Well sir, before long that dog had acquired the habit of lying down across my feet each night while I pushed the old bug for all it was worth. From California to New York and then to New Orleans my signal had no bounds. I found a lot of friends who like to "talk with their fingers," so to speak.

I never dreamed that my little hound was taking it all in. Every night he would wait for me to turn the rig on and with the first "dit" he was right in there. This went on for many months. Finally one night I gave him a test. I had the other station send the letter "R" real slow and sure enough that hound's ears perked up. Then began a nightly session that was to last for many months. First the letter R, then the letter U and on to S, T and Y. And little by little that dog learned his name. I got so that every time I called CQ the other station inquired into the health of old Rusty. It got to be quite a joke, and a lot of my buddies didn't know whether to believe me or not.

We had that dog for 16 years, and he was part of the family. Night after night, and month after month, and even year after year, Rusty and I were pals.

It was inevitable, as mortal things go, that he would finally reach the end of his life. He got so he could hardly manage to navigate back to the radio shack, but somehow he always made it. Same old ritual; lay at my feet and be alert for the code sounds of "RUSTY."

It was in the wee hours of a winter morn of 1970 that Rusty missed his schedule. He tried to get up and come to me, but his old legs just couldn't lift him up. He did manage to get turned around to face me though. He seemed to be in a dream world and not half conscious. I had the idea if I could send some code it would perk him up. I started to send CQ CQ CQ de W4RHZ and before I got the second CQ out sure enough Rusty's eyes found me and I looked at him and he seemed to nod in agreement at something that passed between us, and then he was gone.

We buried him out in the woods, where he belonged with all other things which are wild and natural. In that last look that RUSTY gave me I'm sure he knew that this was "30".

Code practice

M. L. Gibson, W7JIE

In addition to the many amateur stations that transmit code, here are a few of the commercials that anyone can use to improve speed or accuracy. A half-hour a day will qualify you for a 30 wpm sticker:

KPH, (RCA). Speed: 25 wpm. Starts daily at 0818 UTC, sends United Press news. 2045 kHz, 4274 kHz, 5488 kHz, 8618 kHz, and 12.808.5 MHz. Also sends weather on same frequencies at 0500, 1700 and 2300 UTC at 18 wpm.

KFS, (ITT). Speed: 20 wpm. Weather sent at 0420, 1620, 2200, and 2300 UTC. 6348 kHz, 8715 kHz, 12.695 MHz, 17.185 MHz, 22.515 MHz. Also on Sundays only at 0518 UTC, KFS sends short newscasts on same frequencies.

NMC, (USCG Pt. Reys, CA). 16 wpm for all transmissions. 420 kHz at 0330 & 1700 UTC sends weather & notices to mariners. At 0030, 0630, 1900, and 2100 UTC sends weather & notices on 4346 kHz, 8682 kHz, 12.730 MHz, 17.151.2 MHz.

WCC, (RCA, New York). Daily United Press News starts at 0300 UTC on: 146 kHz, 2036 kHz, 4331 kHz, 6376 kHz, 8586 kHz, 13.033 MHz. Around 25 wpm usually.

WSL, (ITT, New York). Daily news starts at 0300 UTC on: 4343 kHz, 6418 kHz, 8514 kHz, and 12.997 MHz. Speed usually around 28 to 30 wpm.

Added info on NMC above. This USCG station receives teleprinter information from national weather service and electronically converts to CW which in turn is sent automatically. Seldom have a person in attendance even for setting up the transmitters as these are computer-controlled. All other stations are commercial ship-to-shore service and will observe the 3-minute silent period at 15 minutes after the hour and 15 minutes before the hour. Plus usually a small break on the hour and half-hour. Excellent copy practice on all of them as they are all machine transmitted. Anyone got any more to add to the list?

"Random Radiation"

INTERNATIONAL FRIENDSHIP

Tales from the Caribbean

Ham Robinson, W1WQC/4

Ben Tomlinson, WA5QYR, and I were hopping down the chain of the Lesser Antilles in Ben's single-engined Cessna.

Hospitality is the word for amateurs. On St. Lucia we were house guests of Prim Bledman, VP2LPB. During the day we operated at the shack of Bruce Dellimore, VP2LL. Most of our meals were courtesy of Maureen, the wife of Bruce, and VP2LM herself. And what a wonderful tour of the island Bruce and his family gave us. Magnificent!

While in St. Lucia we had some good 10-meter openings to the states and did manage 400 or 500 QSOs in all from VP2L — St. Lucia. Ben was doing most of the operating.

We did try loading the 75-meter inverted Vee on 160-meters but evidently we were not putting out enough signal to do any good. We called and called VE1ASJ, W4EX and W1BB to no avail. The last afternoon we started putting up a 160-meter dipole, this mostly by the efforts of John Loader, VP2LAW. A typical tropical rainshower put an end to this so there were no 160-meter QSOs from St. Lucia.

Leaving St. Lucia for Dominica, Ben worked VP2LL on two meters using his walkie-talkie inside the cabin of the Cessna 180 — no external antenna and we had good signals until we descended through 5500' a couple of miles south of Dominica.

Again, this stop at St. Lucia was a special pleasure to me as Bruce, VP2LL, and I first QSOed in 1958 and it was the first time we had met in person. At Dominica we had the pleasure of a visit with Austin Harris, VP2DAJ, (whom I had met on my first visit to Dominica in 1972), his XYL, and the very active Peter Mallalieu, VP2DM. Pete had us to dinner at the absolutely beautiful QTH he and his wife have. Ben was so impressed that he said, "This must be the most beautiful place on earth!"

Through our superior planning I left the microphone on St. Lucia, so the phone operation from VP2DE was courtesy of VP2DM. We did fill quite a few pages in the log on 20-meter CW and on 40 CW. Only KP4AN WS worked on 160-meters, this using a 40-meter dipole.

Each Caribbean island is a different climate and topography unto itself. St. Lucia made its place in my memory book by its flowers, flowers everywhere. Poinsettias by the thousands — great trees in the forest covered with brilliant orange flowers — dozens and dozens of colors and types of flowers. Dominica had less flowers but the most lush green vegetation imaginable, all the way from the rain forest at 4600 feet at the mountain tops down to the beaches. Rainfall varies from 400 inches a year in the mountains to 75 inches at the shore. And the Dominica airport is real cute . . . enough to make a bush pilot work hard.

The flight home was totally uneventful with another stop at VP5-Caicos for two nights. Beautiful from jet altitudes, these waters and islands are fantastic in their grandeur from light plane altitudes.

These were my 25th and 26th flights through the Bermuda Triangle (or Devil's Triangle), and I am still trying to figure out where the fiction writers were who make a living scaring wives about this area. Obviously they were not here.

The flying down the Antilles is simple with good preparations, the rates are reasonable and the hospitality remarkable. The scenery, the climate, the fishing and the swimming are beyond description . . .

Total QSO's by Ben and myself at all stops were over 2500.

West Coast DX Bulletin

Radio Vaticana

Bob Miglionino, K2YFE

We left for Rome on TWA, with a group travelling with the Modern Medicine's Medi-Tours.

The first thing I noticed at the Fiumicino Airport, on arrival, was the Italian paratroopers armed with Sten guns patrolling throughout the building. Our tour was conducted by Richard Magraw, M.D. of Norfolk, Va. who held daily lectures on Neuropsychiatry. Finally my sister and I presented a letter at the main gateway to Vatican State.

Since ordinary tourists are not admitted to the Vatican the Swiss Guard inspected the letter very carefully. He seemed impressed with the Radio Vaticana letterhead. They conducted us, very cordially, to the visitors' center and directed us to one of the multilingual personnel who inspected the letter, made a few telephone calls, gave us an introductory form, and directed us to the Radio Vaticana's offices.

These offices are located on Piazza Pio. on the banks of the Tiber, just across from Castel Saint Angelo. Again we presented our letter of introduction. Soon thereafter we were conducted to the office of Rev. Jorge Blajot. S.J., Director of Programming. He greeted us most cordially and asked what we would like to see and do. We were escorted through the facilities and sat through a Ukrainian language program. Our guide, an announcer in the English section, hailed from Scranton, PA.

Radio Vaticana broadcasts to the USA nightly on 6165 MHz at 8:00 p.m. EST. The broadcast is in English and their QSL card is unique. They send their monthly programs with a fine Vatican postage stamp thereon, much sought after by collectors.

Later in the day Reverend Blajot called Brother Amram, HV3SJ, and Sr. Domenico Petti, HV1CN, to come by and show us the amateur station. Brother Ed came right over and so did Dominico a bit later. They drove us to station HV1CN located inside the Vatican proper. The location of HV1CN is in the Tower of Pope Leo XIII's summer villa. The Vatican Radio FM studios, engineering shops and Telex area are also located there.

Regretfully HV1CN was dissembled due to RFI from the new FM stereo station, which was having SWR problems. The HV1CN rig is the Hallicrafters gear given to him by Bill Halligan, W9AC, a few years ago.

It is rather surprising to stroll in the Papal Gardens and to look up and see a tri-band beam overlooking the area. I was told that Pope Paul takes it in stride and is pro-Amateur Radio minded.

Later we had lunch with Brother Ed at Quatro Porte Restaurant near the Vatican. We discussed radio for hours. Brother Ed is most interested in getting on OSCAR but has problems with an SR-42 and unstable VFO. He would appreciate it if AMSAT members could help him. This is a new and very rare country on OSCAR Satellite.

So in conclusion I can say it was a rewarding visit. Members going to Rome wishing to contact HV3SJ and HV1CN may do so by calling upon Rev. Jorge Blajot, or by letter. Address: Vatican Radio Offices, Piazza Pio, Rome, Italy.

"MARCO Bulletin"

Amateur Radio/Sister City Communication Program

This program is an opportunity for Amateur Radio and Sister City people to participate in a continuing, high-profile international communication experiment. It is a mix of presently proven skills and abilities put together in an ordered program to give and take maximum advantage of the international image presently enjoyed by the organization of Sister Cities whose parent is the Town Affiliation Association (TAA).

The Sister City Program was started eighteen years ago by President Eisenhower to help further international understanding at all levels of the community on a continuing, long term basis. Within this program, cities and their citizens exchange things, ideas, and people in a wide variety of cultural, youth, educational, municipal, professional, and technical projects. This Sister City organization now has more than 500 overseas Sister Cities, each paired with a USA city, that are working together in more ways than can be catalogued here.

The closeness of these ties is directly proportional to the communication link between them and this is where the hams come in. At this time there are two trial programs under way in the San Francisco area and much has been learned concerning the most effective way that the Amateur Radio and the Sister City people can work together. Contact Chuck Towns, K6LFH, 13035 Regan Lane, Saratoga, CA 95070.

Friendship

Dr. Sam Rosen, WA2RAU

Amateur radio has many faces.

Each face represents a large following and they include DX; QSOs of a technical or non-technical nature; phone-patching; service and friendship. It is each individual operator's prerogative to pursue the phase of radio which he wishes to choose. So long as he does not transgress the bounds of decency or violate the rules of the FCC no one has the right to criticize his choice of phase or phases.

Despite my own great exuberance and affection for DX, I feel that SERVICE and FRIENDSHIP predominate in Amateur Radio. What greater feeling of satisfaction can an amateur have than to realize that he was instrumental in helping to save another person's life, or alleviate the pain, suffering or fear endured by another, his family or his friends; that, via the medium of Amateur Radio, he was able to help others in some corner of the world who found themselves in dire circumstances and helpless through no fault of their own?

With so much misery and deprivation in the world any act of compassion toward another human being will help enrich our own lives. Amateurs are notoriously unselfish and will always be present and eager to help in any crisis anywhere.

Many years ago Emerson wrote in one of his essays, "To have a friend you must be one." The spirit of FRIENDSHIP should and does predominate in Amateur Radio. There would be many fewer wars, strifes, and animosities if all the world's people were amateurs. Amateur Radio fosters friendship. Color, race, or creed do not display themselves during QSOs. Most amateurs address each other by first names, be they King or Senator, or just "people". Even King Hussein, JY1, addressed me on the air as "My friend Sam", or on another occasion as "My friend, Doc."

As an amateur, FRIENDSHIP is your great opportunity to enlarge your family. Your thoughts are no longer confined to your immediate family; you now have the means at hand to join a circle of new friends in the four corners of the earth.

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Travel

Amateurs intending to apply for reciprocal operating permission in other countries for travel this summer should not delay sending applications.

November 1974 **QST**, page 92, carries a list of addresses from which detailed information may be obtained for most countries of the world. ARRL headquarters can supply information on others. Forms for U.S. amateurs intending to visit Canada, and for Canadian amateurs intending to visit the U.S. are available from ARRL headquarters.

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Caution advised on work-abroad offers

The U.S. State Department advises students to avoid companies that glamorize work abroad and neglect to mention the hardships. For Guidelines on evaluating job-program sponsors write for "A Word of Caution," a free brochure published by the Bureau of Educational and Cultural Affairs, Department of State, Washington, DC 20520.

Diplomat spreads good will

Eunice G. Bernon, K8ONA

A U.S. diplomat, known affectionately as "Hank" to fellow amateurs, was banquet speaker recently at the largest hamvention in history.

Amateur radio operators from around the world filled the Hara Sports Arena in Dayton to hear U.S. Ambassador Armin H. Meyer, W3ACE, of Washington, D.C.

Meyer's 30-year diplomatic career culminated with ambassadorial assignments to Lebanon (1961-1965), Iran (1965-1969) and Japan (1969-1972).

Meyer said he enjoyed radio operations overseas, using such exotic call letters as YI2AM, OD5AX, YA1AM, EP3AM and JH1DR.

"Operations overseas are more exciting than stateside," he said. "One is at the other end of the pile-ups. Everyone wants to contact you; it's quite a boost for the ego."

Meyer believes his hobby provided an entry to a community of people and ideas refreshingly different from those encountered in normal diplomatic life.

"In most of the countries we tried to give encouragement to Amateur Radio and fellow amateurs. Notably, in Lebanon and Japan, we were great friends," Meyer said.

He credited his communications hobby with aiding him in gettng an oil concession for an American company, for placement of 12 students in American colleges, and for relaying a vital diplomatic message.

Meyer recalled, "A high government official was snowbound and was not able to keep his appointment with Nehru. Thanks to Amateur Radio, word got through from Washington to Afghanistan to Delhi."

Meyer is now a visiting professor at American University in Washington, D.C., where he teaches in the School of International Service. He has accepted directorship of a five-year program of cooperation between Georgetown University and Ferdowsi University in Meshed, Iran.

Meyer has been licensed since 1930. Educated in Ohio, he has degrees from Capitol University in Columbus, its theological seminary and Ohio State University.

While operating his Collins equipment overseas, Meyer earned American Radio Relay League DX Awards. His favored bands are 10-15-20 meters, using single sideband mode. He is a lifetime member of the ARRL.

During his earlier years in Ohio, Meyer was public relations director at Capitol University.

A close Cleveland friend, James C. Toedtman, told me, "Meyer and I roomed together in college, and he kept me awake nights. He was on the air at all hours!"

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From the QSL card of Kenji "Ken" Totsuka

JA2UUU

Amateur Code

1. The amateur must be a good citizen.

   The amateur should obey the law, learn good manners and make efforts for the development of Amateur Radio with the IARU.

2. The amateur must be a sound man.

   Amateur Radio is a hobby. The amateur should not neglect his duties, his schoolwork and his home.

3. The amateur must be a kind man.

   The amateur should communicate with good will, lead a beginner kindly and serve the public positively.

4. The amateur must be a progressive.

   The amateur should make progress scientifically for effective communication.

5. The amateur must be international.

   The amateur should make friends with foreigners for international good will through Amateur Radio.

Nice

On his mail to other amateurs, Ismail "Eshee" Razak, 9M2FK, in Penang, Malaysia, with rubber stamp, puts on the envelopes the following statement:

"World wide Amateur Radio communications promotes increased international friendship and understanding."

Amateur of the Year

Three Southwest Division amateur radio operators will be recognized for outstanding service or an outstanding act performed between 1 October 1974 and 25 September 1975. One amateur will be selected as "Amateur of the Year" in each of the three categories itemized below. ARRL membership is not a requirement.

CATEGORY 1. Acts of service to Amateur Radio which do not involve an emergency situation. These include, but are not limited to, training new operators, training licensed operators for higher grade licenses, public relations activity, technical advances, and club or other organizational activity.

CATEGORY 2. Emergency service reflecting outstanding action in providing emergency communication for a specific incident, or incidents, involving the protection of life and/or property.

CATEGORY 3. Public service, including, but not limited to, outstanding performance involving an emergency organization, communications for parades or other major public events, phone patch activity, etc.

A beautiful plaque and framed certificate will be awarded to each honoree. The honorees will be selected by a committee consisting of a representative from each of the clubs sponsoring Hamcon '75. The decision of the committee will be final.

Official nomination forms must be received by Hamcon '75 on or before 26 Sept. 1975. Awards will be made at the banquet, 25 October 1975, and will be made "in absentia" if the honoree is not present.

Send SASE, business size, to Hamcon '75, PO Box 5131, Ventura, CA 93003. "ATTENTION AWARDS COMMITTEE", for the official entry form.

OFFICE OF TELECOMMUNICATIONS POLICY
EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON, D.C. 20504
March 11, 1975

Mr. Richard J. Ferree
Industrial Studies Department
San Diego State University
San Diego, California 92182

Dear Mr. Ferree:

Mr. Eger has asked me to reply to your letter of March 1, 1975, concerning the proposed reallocation of frequencies in the 220-225 MHz band for a Class E Citizens Radio Service.

As I am sure you are aware, the Amateur Radio Service and the Citizens Radio Service are both matters under the regulatory purview of the Federal Communications Commission. It would be inappropriate for me to comment on certain aspects of the issue you have called to my attention while FCC regulatory action is still pending. Your concern with respect to the way in which accommodation of the Citizens Radio Service is being proposed vis-a-vis the Amateur Radio Service is, nevertheless, appreciated. I am glad to respond to this aspect of your comments.

The problem as regards frequencies is one of accommodating a multitude of radio services within a spectrum that is finite in nature. The Amateur and Citizens Band Radio Service are but two from among many other services that also require access to the spectrum. Thus, the question of the best means for provision of additional spectrum resources in light of escalating CB demand was initiated by the FCC and considered for some time by this Office. The parts of the spectrum which would be both technically acceptable and available to accommodate such a service are extremely limited. After careful evaluation it was considered that the proposed allocation in the 220-225 MHz band could provide a viable means of meeting the present and potential needs of many U.S. citizens with a minimum of impact upon established radio services. Additionally, the short range propagation characteristics of the 220 MHz area of the spectrum would preclude some of the past CB violations to which you refer.

Your comments indicate that you may be concerned that there is a trend working against the Amateur Radio Service. In my view, the interests of the Amateur Radio Service are not in jeopardy. The records are replete with noteworthy accomplishments by the nation's "hams". As you have stated, amateur operators are well known to be members of a meticulously law abiding and orderly radio service. In times of emergencies and disasters, amateur operators have invariably responded to the needs of the occasion. Let me hasten to assure you that this Office is well aware of the importance of Amateur Radio as a source of trained talent in times of emergency. I know of no serious attempt here at the Washington level to reduce or downgrade the Amateur Radio Service. Minor adjustments in spectrum assignments to make it possible for a number of services to "live together" should not, in my view, be construed as working against any particular radio service, per se.

The article in the October 1974 issue of **Consumer Reports** that you have cited is familiar to us. I believe my comments above are responsive to the thrust of that article.

Again, thank you for your thoughts on an important subject. If I can be of further assistance to you on this or any other matter, please do not hesitate to advise.

Sincerely,

W. Dean, Jr.
Assistant Director
for Frequency Management

EDITORIAL

Armond Noble, W6AJY
Editor, Worldradio News

What if Amateur Radio were 250,000 Chuck Towns'?

That thought was expressed the other day over lunch by my good friend and **Worldradio** DX editor, Gary Stilwell, W6NJU.

Who is Chuck Towns? Some know him as K6LFH. He's the president of project OSCAR and, as one would expect, a hard worker for the Amateur Radio space effort. But that's not enough for Chuck.

He is also the prime mover in bringing the Sister City program and Amateur Radio together. He recently attended the Sister City workshop in Phoenix, AZ to assist in uniting the two efforts. The Sister City/Amateur Radio link could have great meaning at this time when we need all the friends we can get. But, that's not enough for Chuck.

He's active in the testing of a process which would reduce the spectrum space needed by a single-sideband station to one-half or less as much as is needed now. But, that's not enough for Chuck.

When we last saw him, about a month ago at the ARRL Pacific Division convention, he was most enthusiastic about a new idea.

He wants to set up a team of amateur radio operators who would, at a moment's notice, go to any spot on the earth where there had been a disaster (such as Nicaragua, Honduras, etc.) and help furnish communications. The radio gear and personal effects would always be packed, shots would be up to date, and they could leave immediately.

In an era when the favorite saying of so many is, "I just don't have the time," Chuck is a refreshing change. When one is around him you can become infected with his enthusiasm. In this day of growing apathy, Chuck is a breath of fresh air.

It should also be mentioned that he holds a very responsible high-level engineering position with Lockheed which demands study to stay abreast of the fast changing world of technology.

What if Amateur Radio were 250,000 Chuck Towns'? Wouldn't that be something?

Chuck is recognized for what he is. Just recently he was called to Washington, DC to sit on an advisory council to the FCC regarding Amateur Radio.

How many people like Chuck can you think of?

Yes, there is Vic Clark, W4KFC, who also had a great many serious professional responsibilities while devoting a great deal of time, effort and knowledge to Amateur Radio.

There are a few more. But, that is the problem. There are but a few more. Only a few. Too few.

You could call them the "thinkers", the "movers". They are those who make things "happen".

Why are they so few?

Recently Peggy Trapp, VE4PE, said, "I am indeed proud to be a radio amateur, a member of a magnificent world-wide fraternity. I can think of no other activity that offers so much: a chance to talk to and sometimes meet people anywhere on earth; to be able to assist in emergencies; and many other worthwhile opportunities." Nicely put by someone "involved" in Amateur Radio.

What would Amateur Radio's future be like if there were more Chuck Towns'? What if we had more who devoted themselves to this great activity. Yes, devote is a good word. One would be hard pressed to identify something else as worthy of devotion than this, our Amateur Radio.

But then how many people are there that devote themselves to anything? How many people feel they have a "purpose"? How many people have a passion, a deep enthusiasm, almost "a rationale for living", towards anything?

Those are the truly happy, those who know what it is to be consumed by something. They go out and give something the very best they can. How few know the deep satisfaction of making something happen, of seeing something grow?

How few ever get in there and really fight for something? How many will make sacrifices on behalf of something?

People like Chuck Towns and Harry Dannals, W2TUK, feel they are fighting to insure the future of Amateur Radio. And they truly are. They also are making a lot of personal sacrifices to do so.

How much support are they getting? How many people care? How many people do anything..in anything?

Management consultant Robert Townsend once said, "What people think of as leisure is really diversion; it diverts you from ever getting anything important done."

How many people can think and truly believe that they are doing "something important"?

We need ideas in Amateur Radio. We need new, fresh ideas. Where are they coming from?

We need more people to bring their expertises in other fields to Amateur Radio. We need writers, organizers, managers, public relations people, etc., to step to the fore and pitch in.

A tip of the hat to Ed Peck, K6AN, and the other attorneys who are donating their services to help clean up the jamming problem.

When we look at people like Chuck Towns, it should make us ask ourselves, "Why aren't I doing something?" One should ask oneself, "What if I were the model for Amateur Radio? Would it be better off or worse off if I or, let's say, Chuck Towns or Jack Troster or Jim Maxwell or Vic Clark, were the model?"

In an issue of "The Virginia Ham", Ken McCaskill, WB2MNN, spoke of three of his ideal operators and said, "Bruce Eggers, WA9NEW/4, where does he get the time? John Harvey, WB4KIT, where does he get the energy? Phil Sager, WB4FDT, where does he get the enthusiasm?"

Rather nice accolades to receive from your peers.

Let us check our energy level, our enthusiasm, and what real use we make of our time.

What if every night at 10:00 p.m. we had to file a report on "what I really accomplished today."

There's a lot of challenge out there. There's a lot of satisfaction to be gained. There's a lot that needs doing.

What if Amateur Radio were 250,000 Chuck Towns'?

What if Amateur Radio were 250,000 (insert your name)?

7400N TTL

SN7400N	16	SN7451N	27	SN74151N	1 25
SN7401N	.16	SN7453N	27	SN74153N	1 35
SN7402N	.21	SN7454N	41	SN74154N	1 25
SN7403N	.16	SN7459A	25	SN74155N	1 25
SN7404N	21	SN7460N	22	SN74156N	1 30
SN7405N	24	SN7470N	45	SN74157N	1 30
SN7406N	45	SN7472N	39	SN74160N	1 75
SN7407N	45	SN7473N	45	SN74161N	1 45
SN7408N	25	SN7474N	45	SN74163N	1 65
SN7409N	25	SN7475N	80	SN74164N	1 65
SN7410N	20	SN7476N	47	SN74165N	1 65
SN7411N	30	SN7480N	50	SN74166N	1 70
SN7412N	42	SN7482N	1 75	SN74167N	5 50
SN7413N	85	SN7483N	1 15	SN74170N	3 00
SN7414N	70	SN7485N	1 12	SN74172N	18 00
SN7416N	43	SN7486N	45	SN74173N	1 70
SN7417N	43	SN7488N	3.50	SN74174N	1 95
SN7418N	25	SN7489N	3 00	SN74175N	1 95
SN7420N	21	SN7490N	59	SN74176N	90
SN7421N	39	SN7491N	1 20	SN74177N	90
SN7423N	37	SN7492N	82	SN74180N	1 05
SN7425N	43	SN7493N	82	SN74181N	3 55
SN7426N	31	SN7494N	91	SN74182N	95
SN7427N	37	SN7495N	91	SN74184N	2 30
SN7429N	42	SN7496N	91	SN74185N	2 20
SN7430N	26	SN74100N	1.25	SN74187N	6 00
SN7432N	31	SN74107N	49	SN74190N	1 50
SN7437N	47	SN74121N	55	SN74191N	1 50
SN7438N	40	SN74122N	49	SN74192N	1 50
SN7439A	.25	SN74123N	1 05	SN74193N	1 40
SN7440N	.21	SN74125N	60	SN74194N	1 45
SN7441N	1.10	SN74126N	81	SN74195N	1 00
SN7442N	1 08	SN74132N	3 00	SN74196N	1 25
SN7443N	1.05	SN74141N	1 15	SN74197N	1 00
SN7444N	1 10	SN74142N	6 50	SN74198N	2 25
SN7445N	1 10	SN74143N	7 00	SN74199N	2 25
SN7446N	1.15	SN74144N	7 00	SN74200N	7 00
SN7447N	.89	SN74145N	1 15	SN74251N	2 50
SN7448N	.99	SN74148N	2 50	SN74284N	6 00
SN7450N	.26	SN74150N	1 10	SN74285N	6 00

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SN74H00N	33	SN74L00N	33	SN74S00N	60
SN74H01N	33	SN74L02N	33	SN74S03N	60
SN74H04N	33	SN74L03N	33	SN74S04N	65
SN74H05N	35	SN74L04N	33	SN74S05N	65
SN74H08N	35	SN74L10N	33	SN74S10N	60
SN74H10N	33	SN74L20N	33	SN74S11N	65
SN74H11N	33	SN74L30N	33	SN74S15N	60
SN74H20N	33	SN74L42N	1.50	SN74S20N	60
SN74H21N	33	SN74L73N	69	SN74S22N	60
SN74H22N	33	SN74L74N	69	SN74S40N	60
SN74H30N	33	SN74L75N	79	SN74S64N	60
SN74H40N	33	SN74L85N	1.15	SN74S65N	60
SN74H50N	33	SN74L86N	69	SN74S112N	1 25
SN74H51N	35	SN74L90N	1.60	SN74S153N	2 50

CMOS

CD4000	.29			74C10N	65
CD4001	.29			74C20N	65
CD4002	.29	CD4030	.65	74C30N	65
CD4006	2.50	CD4035	1.85	74C42N	2 15
CD4007	.29	CD4040	2.45	74C73N	1 50
CD4009	.59	CD4042	1.90	74C74	1.15
CD4010	.59	CD4044	1 50	74C90N	3 00
CD4011	.29	CD4046	2.51	74C95N	2 00
CD4012	.29	CD4047	2.75	74C107N	1 25
CD4013	.53	CD4049	.79	74C151	2 90
CD4016	.69	CD4050	.79	74C154	3 00
CD4017	1.35	CD4051	2.98	74C157	2 15
CD4019	.69	CD4053	2.98	74C160	3 25
CD4020	1.69	CD4060	3.25	74C161	3 25
CD4022	1.25	CD4066	1.75	74C163	3 00
CD4023	.29	CD4069	.45	74C164	3 25
CD4024	1.50	CD4071	.45	74C173	2 60
CD4025	.34	CD4081	.45	74C193	2 75
CD4027	.85	74C00N	39	74C195	2 75
CD4028	1.65	74C02N	55	80C97	1 50
CD4029	2.90	74C04N	75		

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LM100H	15.00			LM1310N	2.95
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LM171H	3.75	LM373N	3 25	LM1414N	1.75
LM212H	7.00	LM377N	4.00	LM1458C	65
LM300H	.80	LM380N	1.39	LM1496N	95
LM301H	3/1.00	LM380CN	1.05	LM1556V	1 85
LM301CN	3/1.00	LM381N	1.79	LM2111N	1 95
LM302H	.75	LM382N	1.79	LM2901N	2.95
LM304H	1.00	NE501K	8.00	LM3065N	69
LM305H	.95	NE510A	6.00	LM3900N	55
LM307CN	.35	NE531H	3.00	LM3905N	60
LM308H	1.00	NE536T	6.00	LM5556N	1 85
LM308CN	1.00	NE540L	6.00	MC5558V	1 00
LM309H	1 10	NE550N	.79	LM7525N	90
LM309K	1 25	NE553	2.50	LM7528N	2 20
LM310CN	1 15	NE555V	.75	LM7534N	2 20
LM311H	.90	NE565H	1.25	LM7535N	1 25
LM311N	.90	NE565N	1.95	8038B	4.95
LM318CN	1 50	NE566CN	1.95	LM75450	49
LM319N	1 30	NE567H	1.25	75451CN	39
LM319D	9 00	NE567V	1.95	75452CN	39
LM320K 5	1 35	LM703CN	.45	75453CN	39
LM320K 5.2	1 35	LM709H	.29	75454CN	39
LM320K 12	1 35	LM709N	.29	75491CN	79
LM320K 15	1 35	LM710N	.79	75492CN	89
LM323K 5	14.00	LM711N	.39	75494CN	89
LM324N	1 80	LM723N	.55	RCA LINEAR	
LM339N	1 70	LM723H	.55	CA3013	1 70
LM340K 5	1.95	LM733N	1.00	CA3023	2 15
LM340K 12	1.95	LM739N	1.29	CA3035	2 25
LM340K 15	1.95	LM741CH	3/1.00	CA3039	1 35
LM340K 24	1.95	LM741CN	3/1.00	CA3046	1 15
LM340To 5	1.75	LM741 14N	.39	CA3059	2.46
LM340To 6	1.75	LM747H	.79	CA3060	2 80
LM340To 12	1.75	LM747N	.79	CA3080	85
LM340To 15	1.75	LM748H	.39	CA3083	1 60
LM340To 24	1.75	LM748N	.39	CA3086	59
LM350N	1.00	LM1303N	.90	CA3089	3 25
LM351CN	.65	LM1304N	1 19	CA3091	8 25
LM370N	1 15	LM1305N	1 40	CA3123	1 85
LM370H	1 15	LM1307N	.85	CA3600	1 75

8000 SERIES

8091	.59	8223	3.00	8552	2 49
8092	.59	8230	2 59	8554	2 49
8095	1 39	8231	2 59	8810	79
8121	.89	8263	7 00	8820	2 00
8123	1 59	8267	4 00	8826	3 00
8130	2 19	8280	.75	8830	2 59
8200	2 59	8281	.85	8831	2 59
8210	3 49	8288	1 15	8836	.49
8214	1 69	8520	1 29	8864	2 00
8220	1 69	8551	1 65	8880	1 35

* THIS MONTH'S SPECIALS *

DVM Chip Set
LD110 Digital A/D Processor 16.00
LD111 Analog A/D Processor 13.00 — $28.00 Set

UART #AY 5 1013A
40K Baud Monolytic UART ..... $7.95 each

LINEAR IC'S

LM301AN	OP AMP	4/$1.00
LM307H	Super Op Amp	4/$1.00
LM311 H	Hi perf V comp	.75
LM311 H	Hi perf V comp	.75
LM555V	Timer	.65
NE565T	Phase lock loop	1.25
NE567T	Tone Decoder	1.25
NE567V	Tone Decoder	1.75
LM723H	Volt Reg	2/$1.00
LM723N	Volt Reg	2/$1.00
8038	Funtion Generator	3.95

— NEW KITS —

TTL Logic Probe Kit — $9.95 per kit
Detects TTL levels, pulses, with man 3 readout

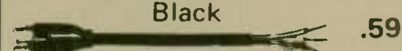
— THE KILOBYTE RAM CARD —
Complete 1K x 8 Memory
*Single 5V supply
*500ns Access Time
*High Noise Immunity Components
*Kit Includes Sockets & Board — $89.95

— DIGITAL COUNTER UNIT —
4 Each – Man7 Displays — *Digit Latches
* ÷ 10000 Counter — *On Board Oscillator
*Complete with Board — $29.95 Kit

DIGITAL VOLTMETER KIT
0-10 Volt, 3½ digits (Man 7) DVM
MOS LSI Design
Size 3" x 3" x 1½" — $39.95

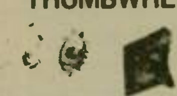
4' POWER SUPPLY CORDS ....

Black



.59¢ ea.

THUMBWHEEL SWITCHES

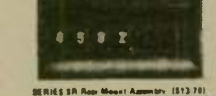


THUMBWHEEL SWITCH ONLY
SF – Front Mount SR – Rear Mount

Part No	Description	Price
SF 12	Single Pole 10 Position	$2 50
SR 12	Decimal	3 00
SF 21	10 Position BCD only	2 50
SR 21		3 00

Snap together – No Hardware

SERIES SF Front Mount Assembly ($11.70)

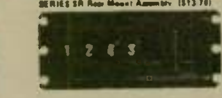


Note: Picture to the left has the following 4 ea SF 12, 1 ea SF EP, 1 ea SF BB, 1 ea SF DP and 1 ea SF HB

ACCESSORIES

Part No	Description	Price
SF EP	End Plate (Pair)	50
SF DP	Divider Plate (each)	40
SF BB	Blank Body (each)	40
SF HB	Half Body (each)	40

SERIES SR Rear Mount Assembly ($13.70)



Note: Picture to the left has the following 4 ea SR 12, 1 ea SR EP, 1 ea SR BB, 1 ea SR DP and 1 ea SR HB

ACCESSORIES

Part No	Description	Price
SR EP	End Plates (pair)	$ 50
SR DP	Divider Plate (each)	40
SR BB	Blank Body (each)	40
SR HB	Half Body (each)	40

Ordering: Order desired switch or switches and add necessary accessories for your particular application

NEW PROTO BOARD-100

Here's a low cost big 10 IC capacity breadboard kit with all the quality of QT Sockets and the best of the Proto Board series ... complete down to the last nut, bolt and screw. Includes 2 QT 35S Sockets, 1 QT 35B Bus Strip, 2 5-way binding posts, 4 rubber feet, screws, nuts, bolts, and easy assembly instructions.

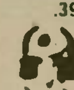
COMPLETE KIT ... $19.95

POCKET CALCULATOR KIT

5 function plus constant – addressable memory with individual recall – 8 digit display plus overflow – battery saver – uses standard or rechargeable batteries – all necessary parts in ready to assemble form – instructions included 3" x 5¾" ..... $17.50 each

OPTIONS –
115VAC Transformer ..... 4.95 each
6 each "N" Alkaline Batteries ..... 2.50 lot

.394" DIAM. TRIMMER



STANDARD RESISTANCE VALUES
MODEL 100Ω 500Ω 1K
2K 5K 10K 20K
100K 200K 1Meg

Model TR II

RESISTANCES (OHMS)	1–9	10–24
STO100Ω 1 MEGΩ	35	30

1/16 VECTOR BOARD

P Pattern
0 1" Hole Spacing

MATERIAL	STOCK NO	LONG	WIDE	PRICES 1	PRICES 20
PHENOLIC	64P44 062XXXP	4 50	6 50	1 72	1 54
	169P44 062XXXP	4 50	17 00	3 [illegible]	3 32
EPOXY GLASS	64P44 062	4 50	6 50	2 07	1 [illegible]
	64P44 062	4 50	8 50	2 [illegible]	2 31
	169P44 062	4 50	17 00	5 04	4 63
	169P44 062	8 50	17 00	9 23	8 28
EPOXY GLASS COPPER CLAD	169P44 062C1	4 50	17 00	6 80	6 12

WALL or T.V. DIGITAL CLOCK

12 or 24 Hour
25' VIEWING DISTANCE
Walnut Case 6" x 3" x 1"
Hr & Min 6" High
Seconds 3" High

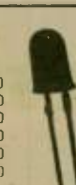
KIT All Comp & Case $39.95
Wired & Assembled 115 Vac $44.95

DISPLAY LEDS

CA	Common Anode	CC	Common Cathode
MAN 1	Com Ano	270	$1.95
MAN 3	Com Cath	125	.95
MAN 4	Com Cath	187	1.95
MAN 7	Com Ano	30	1.50
DL 33	Com Cath	125	1.95
DL 747	Com Ano	625	2.50

DISCRETE LEDS

MV 10	Red	5/$1.00
MV 50	Red	6/$1.00
MV 5024	Red	5/$1.00
MV 5024	Green	4/$1.00
MV 5024	Yellow	4/$1.00
MV 5024	Orange	4/$1.00



IC SOLDERTAIL – LOW PROFILE (TIN) SOCKETS

	1-24	25-49	50-100		1-24	25-49	50-100
8 pin	$.19	.18	.17	24 pin	$ .68	.62	.56
14 pin	.23	.22	.21	28 pin	.89	.81	.73
16 pin	.27	.26	.24	36 pin	1.10	.99	.90
18 pin	.46	.41	.37	40 pin	1.25	1.13	.93
22 pin	.65	.59	.53				
SOLDERTAIL STANDARD (TIN)							
14 pin	$.30	.28	.26	28 pin	$ .99	.90	.81
16 pin	.33	.31	.29	36 pin	1.39	1.26	1.15
18 pin	.42	.39	.37	40 pin	1.59	1.45	1.30
24 pin	.59	.54	.49				
SOLDERTAIL STANDARD (GOLD)							
8 pin	$.30	.27	.24	24 pin	$ .70	.63	.57
14 pin	.35	.32	.29	28 pin	1.10	1.00	.90
16 pin	.38	.35	.32	36 pin	1.55	1.40	1.26
18 pin	.52	.47	.43	40 pin	1.75	1.59	1.45
WIRE WRAP SOCKETS (GOLD) LEVEL #3							
10 pin	$.45	.41	.37	24 pin	$1.05	.95	.85
14 pin	.46	.42	.38	28 pin	1.40	1.25	1.10
16 pin	.55	.50	.45	36 pin	1.59	1.45	1.30
18 pin	.75	.68	.62	40 pin	1.75	1.55	1.40

50 PCS. RESISTOR ASSORTMENTS $1.75 PER ASST.

ASST. 1	5 ea	10 OHM 12 OHM 15 OHM 18 OHM 22 OHM 27 OHM 33 OHM 39 OHM 47 OHM 56 OHM	1/4 WATT 5% = 50 PCS
ASST. 2	5 ea	68 OHM 82 OHM 100 OHM 120 OHM 150 OHM 180 OHM 220 OHM 270 OHM 330 OHM 390 OHM	1/4 WATT 5% = 50 PCS
ASST. 3	5 ea	470 OHM 560 OHM 680 OHM 820 OHM 1K 1.2K 1.5K 1.8K 2.2K 2.7K	1/4 WATT 5% = 50 PCS
ASST. 4	5 ea	3.3K 3.9K 4.7K 5.6K 6.8K 8.2K 10K 12K 15K 18K	1/4 WATT 5% = 50 PCS
ASST. 5	5 ea	22K 27K 33K 39K 47K 56K 68K 82K 100K 120K	1/4 WATT 5% = 50 PCS
ASST. 6	5 ea	150K 180K 220K 270K 330K 390K 470K 560K 680K 820K	1/4 WATT 5% = 50 PCS
ASST. 7	5 ea	1M 1.2M 1.5M 1.8M 2.2M 2.7M 3.3M 3.9M 4.7M 5.6M	1/4 WATT 5% = 50 PCS

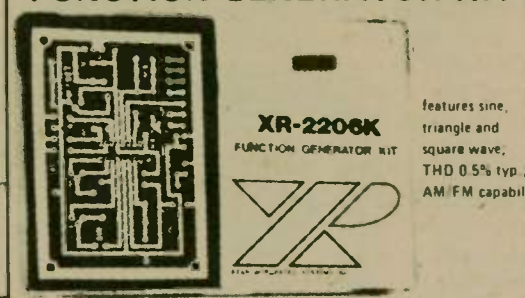
Satisfaction Guaranteed. $5.00 Min. Order. U.S. Funds.
California Residents — Add 6% Sales Tax
Write for FREE 1975S Catalog — Data Sheets .25¢ each

JAMES

P.O. BOX 822, BELMONT, CA. 94002
PHONE ORDERS — (415) 592-8097

IC'S EXAR KITS

FUNCTION GENERATOR KIT



features sine, triangle and square wave, THD 0.5% typ., AM/FM capability

XR-2206KA — $19.95
Includes monolithic function generator IC, PC board, and assembly instruction manual.

XR-2206KB — $29.95
Same as XR-2206KA above and includes external components for PC board.

TIMERS		
XR-555CP	Monolithic Timer	$ 1.10
XR-320P	Precision Timer	1.55
XR-556CP	Dual 555 Timer	1.85
XR-2556CP	Dual Timing Circuit	3.20
XR-2240CP	Programmable Counter/Timer	4.80
PHASE LOCKED LOOPS		
XR-210	FSK Demodulator	5.20
XR-215	High Frequency PLL	6.60
XR-567CP	Tone Decoder (mini DIP)	1.95
XR-567CT	Tone Decoder (TO-5)	1.70
STEREO DECODERS		
XR-1310P	PLL Stereo Decoder	3.20
XR-1310EP	PLL Stereo Decoder	3.20
XR-1800P	PLL Stereo Decoder	3.20
WAVEFORM GENERATORS		
XR-205	Waveform Generator	8.40
XR-2206CP	Monolithic Function Generator	5.50
XR-2207CP	Voltage Controlled Oscillator	3.85
OTHER EXAR IC'S		
XR-1468CN	Dual + 15V Tracking Regulator	3.85
XR-1488N	Quad Line Driver	5.80
XR-1489AN	Quad Line Receiver	4.80
XR-2208CP	Operational Multiplier	5.20
XR-2211 CP	FSK Demodulator/Tone Decoder	6.70
XR-2261	Monolithic Proportional Servo IC System w/4 ea. Driver Transistor	3.79

Special Requested Items

8008 Processor	$29.95	8267	$ 4.00	4024P*	$2.25
1101 256 x 1 RAM	2.25	2513*	11.00	N8T97	3.00
2102 1024 RAM	5.50	2518	7.00	MC1741	4.00
AY5 1013 UART	9.95	2519	4.00	MC4044	4.50
RC4194 TK	5.95	2524*	3.50	CA3130S	1.49
8101	18.00	2525	7.00	40410	1.75
8263	7.00	2533	11.85	40673	1.75

DIODES

TYPE (Zener)	VOLTS	W	PRICE	TYPE (Rectifier)	VOLTS	W	PRICE
IN746	3.3	400m	4/1.00	IN4003	200 PIV	1 AMP	10
IN751A	5.1	400m	4/1.00	IN4004	400 PIV	1 AMP	10
IN752	5.6	400m	4/1.00	IN3600	50	200m	6/1.00
IN753	6.2	400m	4/1.00	IN4148	75	10m	15/1.00
IN754	6.8	400m	4/1.00	IN4154	35	10m	12/1.00
IN965B	15	400m	4/1.00	IN4734	5.6	1w	28
IN5232	5.6	500m	.28	IN4735	6.2	1w	.28
IN5234	6.2	500m	.28	IN4736	6.8	1w	.28
IN5235	6.8	500m	.28	IN4738	8.2	1w	.28
IN5236	7.5	500m	.28	IN4742	12	1w	.28
IN456	25	40m	6/1.00	IN4744	15	1w	.28
IN458	150	7m	6/1.00	IN1183	50 PIV	35 AMP	1.60
IN485A	180	10m	5/1.00	IN1184	100 PIV	35 AMP	1.70
IN4001	50 PIV	1 AMP	.09	IN1186	200 PIV	35 AMP	1.80
IN4002	100 PIV	1 AMP	.10	IN1188	400 PIV	35 AMP	3.00

TRANSISTORS

MPS-A05	5/$1			2N3905	4/$1
2N918	25	2N2906A	4/$1	2N3906	4/$1
2N2219A	3/$1	2N2907A	5/$1	PN4249	4/$1
2N2221	4/$1	2N3053	2/$1	PN4250	4/$1
2N2222A	5/$1	2N3055	95	2N4409	5/$1
2N2369	5/$1	2N3725A	2/$1	2N5129	19
2N2369A	4/$1	2N3903	5/$1	2N5139	19
2N2484	4/$1	2N3904	4/$1	C106B1 SCR	2/$1

CAPACITOR CORNER

50 VOLT CERAMIC DISC CAPACITORS

	1-9	10-49	50-100		1-9	10-49	50-100
10pf	05	04	03	001	05	04	035
22 pf	05	04	03	0047	05	04	035
47 pf	05	04	03	01	05	04	035
100 pf	05	04	03	022	06	05	04
220 pf	05	04	03	047	06	05	04
470 pf	05	04	035	1	12	09	075

100 VOLT MYLAR FILM CAPACITORS

001mf	12	10	07	022mf	13	11	08
0022	.12	10	.07	.047mf	21	17	13
0047mf	12	10	.07	1mf	27	23	17
01mf	12	10	07	22mf	33	27	22

+ 20% DIPPED TANTALUMS (SOLID) CAPACITORS

1	35V	28	23	17	1 5	35V	30	26	21
15	35V	28	23	17	2 2	25V	31	27	22
22	35V	28	23	17	3 3	25V	31	27	22
33	35V	28	23	17	4 7	25V	32	28	23
47	35V	28	23	17	6 8	25V	36	31	25
68	35V	28	23	17	10	25V	40	35	29
1 0	35V	28	23	17	15	25V	63	50	40

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Axial Lead					Radial Lead				
47	50	15	13	10	47	25	15	13	10
1	50	16	14	11	47	50	16	14	11
3 3	50	15	13	10	1	16	15	13	10
4 7	25	16	14	12	1	25	16	14	11
10	25	15	13	10	1	50	16	14	11
10	50	16	14	12	4 7	16	15	13	10
22	25	17	15	12	4 7	25	15	13	10
22	50	24	20	18	4 7	50	16	14	11
47	25	19	17	15	10	16	14	12	09
47	50	25	21	19	10	25	15	13	10
100	25	24	20	18	10	50	16	14	12
100	50	35	30	28	47	50	24	21	19
220	25	32	28	25	100	16	19	15	14
220	50	45	41	38	100	25	24	20	18
470	25	33	29	27	100	50	35	30	28
1000	16	56	50	45	220	16	23	17	16
2200	16	70	62	55	470	25	31	28	26

actual size

Best portable radio!

DRAKE TR-22C

12 channel capability

This one doesn't sound like a dixie cup on the end of a string like the bricks u hear on the air.

clean, clean transmit audio hand-held mike

receiver sounds good

DC cord ready to hook to battery or lighter plug

self-contained charger with 10 nicads

meter shows: relative power output, signal strength, battery voltage

built-in antenna standard SO-239 plug on the back

sensitive, sensitive

selective, selective

carrying case w/strap

the neatest hand-held

dual conversion with crystal filter and ceramic filter What's intermod?

Best portable radio!

Write M-TRON for your special price.

If you don't buy it at M-TRON you are spending more than you have to!! You save money at M-TRON! Yes! Write for your special, and we mean special, cash prices on the following:

ATLAS: 210, 215, AR117

ICOM: IC22A, IC30A, IC230

DRAKE: T4XC, R4C, TR4C, MN4, MN2000, L4B, TR22C

TEN-TEC: Triton I & II, Argonaut

Complete lines in stock.

Would you believe that our prices are so low, other dealers buy from us? Would you believe our prices are so low that the factory buys the stuff back from us? YOU WOULDN'T? Well, good for you. We gotta buy shoes for the kids and put beans on the table just like you. But, we have repeat customers calling us from all over North America and letters from all over the globe, so we must be doing something right, so write.

Mosely SWL-7 7-band trap dipole for SWL, compete $41.25. Keep going, you'll find something you want.

NPC Regulated Power Supplies
4A regular $49, today $39.95
8A regular $72, tomorrow $59.95

USED . . .

Drake R4A $319, NCX-3 xcvr clean $149, Loudenboomer (no kidding that's its name, and that's what it does) KW amp with husky power supply $279 (the husky eats about two pounds a day), Health DX-60 Novice $69, Heath DX60B even better $75, Ten-Tec 315 receiver w/CW filter, this rig is so clean we could put it on the shelf and call it new, but we won't cause we're nice guys, grab it for $195 SBE-33 works great $179, Galaxy GT-550, 550W w/ac ps, spkr, remote vfo, cw filter, manual, used by little old ham who only checked into WCARS and only on Sunday $499, Heath HW-101 w/HP23B ps Vclean $329, HAM-M factory rebuilt rotor & box $75, Heath HP-13 dc supply $49.95, Linear Systems 400-12, 500-12, gen. purpose xcvr ps, will power all tube type xcvrs from 12V $75, SWR bridge 2-225 MHz $25, Pickering CW keyboard $185, On our used gear it's first come first served and he who hesitates is lost. On our other super-buys, quantity is limited to stock on hand. You know, it takes us a whole day to build one of them S-38s.

SUMMER IS MOBILE TIME

Hy-Gain Mobile Resonators "Ham-Cat"

75M $26.95, 40M $21.95, 20M $18.95, 15M $16.95, 10M $14.95

Larsen 2M Mobile Antennas
LM-150 ¾ inch hole $22.50, LM-150K antenna, mount, coax $28.35, LM-150 Mag Mount Super. (See our ad April and May WRN) $35

Increase your range w/KLM 2M amps. 2W in/12W out $44.95
10W in/40W out $79.95
10W in/70W out $129.95
10W in/140W out $189.95
be a tiger

SUMMER IS ANTENNA RAISING TIME

Hy-Gain TH2 MkII 2L tri-bander (write) TH3 Jr. 3L tri-bander 750W (write) TH3 Mk III 3L tri-bander (write) TH6 DXX 6L tri-bander (write) 204BA 4L 20M beam (write) 18HT 80-6 Hy-tower vertical (write) (Write-means write for our right price when you see our prices you will be so happy you'll run around the room in a clockwise direction) 18AVT/WB 5-band vertical $97.00, 14AVQ/WB 4-band vertical $67.00, Hustler 4BTV 4-band vertical $79.95

VHF

KLM 144-148 9L $34.49, KLM 144-148 11L $38.79, Cushcraft A147 11L $23.95, Cushcraft A449 11L $19.95 (450MHz) Famous Ringo (not the drummer, the antenna) 2M 3db gain omni $16.50, Ringo Ranger (maybe Airborne too?) 2M 6db gain omni $26.50, For those with Ringo, kit that turns it into Ranger (Green Beret?) $10.95, Teeny Ringo (for 450 MHz) 3db $16.50, Teeny Ranger (450 MHz) 6 db $26.50, DXer delight A144 11L $23.95 — then, use A147 VPK stacking kit $22.95, Stacking kit for 450 Yagis $18.95, Local ragchewers delight — ASM 4-pole $52.50, 4-Italians $51.50, 4 DXers from Los Angeles $4.98, Hy-Gain Model 28 8L Yagi $37.00, Hy-Gain GPG-2 2M gnd pln $19.95

MICROPHONAMANIA . . for Shure

201 Hi-Z mobile, reg. 23.50, sale 14.10, 202 Hi-Z mobile, reg. 25.75, sale 15.45, 401A Hi-Z mobile, reg. 28.00, sale 16.80, 522 Hi/low - station desk mike, adjustable height, PTT bar, wind screen, snazzy, regular 78.75 M-TRON sale 47.25

Charlie Whiskey

Viking Speedex key $7.50, double decker $8.20, brass pounders special $4.95, Viking code osc w/speedex key $18.50

Keyers

Curtis parts kit 8043-1 $24.95, almost complete kit 8043-2 $49.95, IK-440 Instructo-keyer $224.95, Ten-Tec KR-20 $67.50, Ten-Tec KR-40 Iambic $99.50, KE SQ Auto Keyer $49.95, KE 512 Memo-keyer $99.00

UTC-GMT-ZULU-dress up the shack 24-hour clocks, 60-Hz 12-inch dial w/sweep hand, classy, $24.20

Viking Match Boxes, loads into anything — bed springs, box of nails, mobile homes, whatever, 500W for $199 and 2KW for $320

PROTECTION: Low Pass Filters: Nye-Viking KW $19.50, Drake KW 18.75, Baluns: KE KW 1:1, 4:1, specify $9.95, Hy-Gain KW 1:1 boom or mast mount (specify, $15.95 Selco 5KW 1:1 specify dipole or beam $34.95

Egg Insulators: ten or more, 20 cents each, nine or less, 19 cents each.

EXPERIMENTERS:
Omega-T Noise Bridge - learn the real truth about your antenna 1-100 MHz, $29.95. 1-300 MHz, $39.95. After you find out the real story, Box of Kleenex for wiping away tears 50 cents.

We got 'em, SWR bridge w/field strength capability 2-30 MHz $16.95

ROTATORS:
CDR CD-44 regular 109.95, sale $89.95, CDR HAM II reg. 159.95, here $129.95

TTPads — $13.95

Overseas amateurs: We ship to every continent. Hours: Mon-Fri. 10 a.m. to 5 p.m. -Saturday- 10 a.m. to 4 p.m.

M-TRON

2811 Telegraph Ave. - Oakland, CA 94609

Doug Murray, W6HVN (415) 763-6262 Art Mayoff, VE2AQV/W6

DX DIGEST

Gary Stilwell, W6NJU

The phone message said call Dick at the San Clemente number.

It was 100 degrees and so delightful in the pool. As I dried off soaking up the sun I mused over the message. Of course, it could only mean one thing — Noble wanted a June DX column.

In June, when a young man's fancy turns to things other than radio, like swimming, camping, boating, water skiing and mini skirts, it was that time again — a column.

My return call caught the **Worldradio** janitor (Armond in disguise) who started me to thinking of DX again. He said, "Just think, Mt. Athos may be activated this summer."

Well, that brought me back to DX reality. Wouldn't it be fun to chase a new country again? But wait a minute, what are our vacation plans? Oh no, Mt. Athos will be activated when we're going to be out of town.

Gee, how can I talk the family into changing plans. What? We can't — summer school, swim lessons, the houseboat that had to be reserved a year ago. But we must. Are you sure Mt. Athos will be on the air during those dates? No — we'll just have to play it by ear and arrange our schedule week to week. Well, with two simple words Noble had brought me very quickly back to the world of DX so here we go.

Mt. Athos

Aris Germanis, SV1GA, and other SV operators are planning an effort sometime in July, possibly around July 20th. They hope to make this a sizeable effort.

Serrana Bank

Look for Serrana Bank by W7PHZ anytime after June 15th. Watch 1825, 3530, 7030, 14.030, 21.030 and 28.030 on CW and 3750, 7080, 14.195, 21.300 and 28.600 on SSB. QSLs to LCRA, Box 584, Bogota, Colombia.

South Pacific

VK4ABA, VK4WS and John Martin, VK3JW will be traveling the South Pacific in late August. Plans call for possible new countries and they hope to operate at Messish Reef and Willis Island in September.

Rodriquez

3B9DL should arrive at Rodriquez around June 15th. He expects to be there for about three weeks.

Nepal

Father Moran is active again after clearing up licensing problems. Activity is around 14.202, 14.270, and 14.285 before and after his sleeping times. Sleeping time is from 1500 to 0100Z.

Crete

SV0WKK keeps weekly schedules on Mondays, 1700Z between 14.208 and 14.210. Also active are Nicholas Gregorio, SV0WAA, and Vincent Daniels, SV0WJJ.

Sean

Sean Flannery, EI5HSI, is back home after operating in HI, I IH, IS and HS. His next trip will take him to HH.

Cocos Island

There seems to be quite a flap between the parties regarding operations from Cocos Island. Wonder about the goodwill and picture of amateur radio the governments involved are getting? We can ill-afford this type of publicity at a time when we are trying to sell the positive aspects of our hobby.

QSL cards

After a month of intensive QSLing, for my YJ8GS operation, I was amazed at the number of incorrectly filled out cards. Well-known DXers leaving out the date, or not converting a day in GMT at 0001Z. Cards come in with Japan standard time or Guam standard time. When you work hundreds of JA's in a contest period, JST really slows you down. Of quite a surprise to me were the number of third and fourth QSL's for the same contact. When you work every night on cards it isn't hard to throw up your hands and return a few from the 'problem pile'.

DX Advisory Committee

The ARRL DX Advisory Committee will be considering, in August, a change in the rules for Five-Band DXCC. Paragraph 4 of the Rules read: "Confirmations showing contacts by any legal mode will be acceptable. However, no contacts made by **cross mode or** cross band are acceptable nor will endorsements for mode be given or indicated. Contacts using repeaters or repeater satellites are not acceptable." Consideration to recommending a change in the underlined words by eliminating 'cross mode or' will come up in August so make your thoughts known by writing the Committee c/o ARRL.

Operating Award Fees

At the direction of the Board at their May meeting, ARRL has announced a schedule of fees for ARRL operating awards. The fees are effective July 15th and will include WAS, 5BWAS, Satellite and RCC. Fees are different for members and non-members.

Franz Langner, DJ9ZB, JY8ZB, 4W1ZB, FØZN, C31LY, HBØXJV.

Franz Langner-DJ9ZB

A nice letter from Franz Langner, DJ9ZB. Franz has worked 120 different countries for the **Worldradio** award, and I pass along his greeting to all the readers. He recently was active from 4W1ZB and JY8ZB but no conditions to the USA. Franz is currently planning his next expedition. DJ9ZB is QSL Manager for the following stations:

A6XN, A7XA, DJ5RT, DJ7YQ, FØABI, FØZN, FØRX, FGØRX, FSØRX, FM7WN, FMØRX, F08WR, FK8BB, FØIF, G5ACX, HBØLL, HBØXJV, HBØ-ASG, HB9ASG, HZ1AB, JY3ZH, JY6FC, JY5HC, JY8ZB, JA3ZLR, DL2AA/W1, DK6CX/W1, KZ5-WH, OE1XKW, OE4ZBL, PJ8AC, PJ8KG, PA9GG, SU1AP, TA6JB, TA1MT, TA1TT, VP2LAG, VP2-LAB, VP5RT, VP5BG, VP5KG (1971), YK1AA, ZD3RT, ZD3RR, 3AØAE, 3A2AE, 4W1AF, 4W1ZB, 9A1AA, 5Z4RT, 5H3RT, C31LO, KG6JAC, 4W1CW, FHØRX, FHØ-RX/G, FHØRX/A, XF4WR, HK-ØWR, HC6JB, VU2CP, VU2FC, C31YL, C31LY and WX1ITU. Quite an impressive list.

Thanks for information to the Southern California DX Club, West Coast DX Bulletin, QSL Managers Directory, Geoff Watts Newsheet, ARRL and Long Island DX Association. Mount Athos card furnished by WB6QHL.

ITU week

While there are just as many ITU calls in May as last year, there did not appear to be the same interest or activity. A sign of the sunspots? We'll try here to list the bulk of QSL info:

KB1	WA1RGW	KG5	W5RTQ	KR9	K9UBF		
KI1	WA1STN	KJ5	W5TMN	KS9	WA9LZA		
KS1	W1DHZ	KL5	W5PFL	KU9	W9GC		
KY1	WB9CJS	KW5	WA5WQF	KY9	W9JUV		
WO1	WA1POJ	KX5	W5SBX	WD9	K9YXW		
WX1	W1MOJ	WO5	WA5ZNY	WH9	K9WEH		
WY1	WA1QNF	WT5	WA5LES	KDØ	KØSGJ		
KB2	WB2YQH	WW5	WB5HOD	KJØ	WAØVDX		
KC2	K6SE/2	WZ5	W5KHP	KVØ	WAØKHF		
KG2	WA2DSA	KD6	W6LS	WLØ	WØHBH		
KR2	WB2FLF	KE6	Yasme	WWØ	WAØTLT		
KV2	WB2NEB	KK6	WA9UCE/6	WL4	K4KOB		
KY2	WB2FVO	KH6	KH6BZF	ZX6	PY6TW		
WD2	W2TUK	KL6	W6DQX	ZY4	PY4AKR		
WE2	WB2JRX	KN6	K6SDR	ZY8	PY8JO		
WM2	WA2AUB	KQ6	WA6CPP	ZVØ	PT2JB		
WP2	WA2CCF	KT6	WA6KZI	ZZ6	PY6SB		
WQ2	WB2GGM	KY6	W6KYA	PP6	PY6AM		
WX2	WA2DSA	WE6	W6NJU	PR2	PY2AN		
KI2	W2AJR	WI6	WB6QBJ	PR6	PY6CO		
KJ2	WA2NPP	WL6	W6NLG	PRØ	PY2DSE		
KL2	WA2DSA	WQ6	WA6PDE	PT7	PY7AYE		
KP2	W2ASR	WW6	Yasme	PY2	PY2ASA		
KB3	WA3MBQ	WX6	WA6AUD	XJ3	VE3CDX		
KC3	W3CRE	WY6	WB6DXU	ZV5	PY5YC		
KD3	WA3PZO	WZ6	K6VNX	ZV7	PY7NS		
KM3	WA3KZQ	KS7	K7ABV	ZW8	PY8EL		
KQ3	W3AZD	KY7	W7GWU	ZX2	PY2DSQ		
WV3	W3TRS	WX7	WA7OBH				
WZ3	WB2EXK	KD8	K8MFO				
KD4	W2GHK	KE8	WA8TDY				
KH4	KØCMF	KP8	K8DYZ				
KI4	K4YFQ	KT8	WA8TDY				
KJ4	W4WSF	KV8	W8NR				
KL4	K4ZA	KW8	WA8TNJ				
KM4	WA4BQK	KX8	W8GKM				
KR4	K4ZCP	KZ8	W8BQV				
KU4	K4DXO	WK8	W8RSW				
KX4	W4QAW	WS8	W8LY				
WI4	WA4HPF	WV8	W8BT				
WJ4	WHARL	WX8	W8VHY				
WL4	K4KOB	WZ8	K8LOU				
WQ4	WB4KZG	KF9	WB9BUV				
WS4	WB4SIJ	KG9	W9QWM				
WV4	W4IML	KH9	W9OHH				
WY4	K4FOK	KJ9	K9UBF				
KC5	K5RLW	KM9	WB9LHI				

Zedan Hussein, JY3ZH

July 1975
Maximum Usable Frequency from Burbank, CA

The numbers listed in each column are the Maximum Usable Frequencies (in Megahertz) for contacting five major areas of the world

JULY 1975

UT	AFRI	ASIA	EURO	SOAM	SPAC
01	8.5	18.0	12.6	16.1	21.1
02	7.2	18.6	12.3	16.2	21.0
03	7.9	19.4	13.2	14.9	20.8
04	11.7	18.8	12.8	13.0	20.6
05	12.6	19.0	13.4	11.9	20.0
06	10.7	17.6	13.1	11.1	18.5
07	9.1	16.3	11.9	9.8	16.4
08	8.6	15.7	11.0	8.5	14.4
09	7.9	14.8	10.3	9.2	13.0
10	7.9	13.3	9.9	12.1	12.4
11	8.7	12.0	11.0	11.7	12.3
12	10.0	11.5	12.2	12.5	12.4
13	11.5	11.9	14.0	14.8	12.3
14	12.9	13.2	15.8	17.0	13.0
15	13.8	14.7	17.0	17.6	13.2
16	14.1	13.9	16.9	16.9	13.1
17	13.1	13.4	16.7	17.1	12.2
18	13.4	13.6	16.9	18.7	11.5
19	14.9	15.0	17.4	20.5	12.0
20	14.0	17.0	17.7	21.7	14.1
21	12.7	18.6	17.4	22.2	16.7
22	10.8	19.3	16.3	20.3	18.8
23	10.1	19.2	14.0	17.4	20.1
24	9.6	18.4	13.2	15.9	20.8

REPEATERS

Ten years

Larry Kenney, WB9LOZ

The Chicago FM Club was officially 10 years old on 25 February 1975. Although the club was started in 1964, it became chartered as a non-profit organization in the state of Illinois on 25 February 1965.

Back in 1964 a small group of FM enthusiasts met over coffee, as they usually did on a weekly basis, and decided to put a repeater on the air as a group project. The group consisted of Don Reese, WA9DGY; Bill Knopp, WA9ERC; George Hunt, WA9EWT; Elmer Anderson, K9FSE; Hugh Lynn, K9LIL; Len Herron, WA9MPG; Jerry Rosenthal, WA9NEP; and Richard Gilman, K9RRR. Don, Bill and Len are still members today.

A small system was put on the air from Hugh's home, an on-site system using a 30D transmitter with carrier access. It was the "on when at home" type system, with input on 146.82 MHz and output on 146.94 MHz. The output was chosen to let other FM users in the area know that a repeater was being established.

Since the group wanted to increase the coverage of the system, and money would be handled for various purposes, the group requested a charter as a non-profit club. After much deliberation they decided on the simplest and most explanatory name, the Chicago FM Club, or CFMC.

The club looked for a place to locate their system, with the tall Loop building being the logical place. There was so much interference in the downtown area it was impossible to pick out the two-meter signals from all the others that overloaded and blocked the receiver. So, an off-site receiver was the only answer. Working with another group that was forming a repeater, both a receiver and transmitter site were found. CFMC had a receiver site located eight miles north of the Loop of Hollywood Towers and the other group had a transmitter site in the Loop, so the two organizations agreed to share their respective sites.

The other group was the Society of Radio Operators (SRO) that now operates the CFAR repeater. The two organizations have been working together on common problems for over 10 years.

When the new sites were acquired the repeater frequencies were changed. The input was 146.34 MHz and the output was 146.64 MHz. The two groups shared a common receive antenna, and equipment for both groups was contained in one cabinet. The club had no one that was familiar with the new field so the trial and error method was employed for many things. A phone line was used at first; not a rented phone line, but a regular one where the receivers were left off the hook at both ends. This worked for a while, but there had to be a better, easier way. It was decided to use 450 MHz for the audio link, as well as for control of the system. The system had been running carrier access but was converted to a tone access set-up when the 450 link was established.

The club was expanding to much more than a small north side group, so an additional receiver site was contemplated. Mike Kroot, K9BHM, had joined the group from the south side and became responsible for setting up another site eight miles south of the Loop on a 250-foot building. About this same time the repeater output was moved to its present frequency of 146.76 to conform with other established repeaters, installation of our own north receiving antenna was completed, and a 60-watt transmitter strip was added.

1969 was a big year for the club. One of the most important steps taken by CFMC was the moving of the transmitter site to the new 900-foot First National Bank Building. All of the system's activities were centered there, and it became the club's downtown control complex. Also in 1969 a six-meter repeater was established as well as two more receiver sites, one near Wilmot, Wisconsin, and one in Joliet.

In 1970 the club decided to hold its first radio exposition, rewired and reracked the entire complex at the bank, and began work on a voting system for the repeater. The six meter repeater was disassembled and a new system was established on 450. Using the same frequencies that are used today, 448.75 MHz input, 443.75 MHz output, the system operated on-site with 60 watts.

The club worked feverishly during the first half of 1971 putting together Radio Expo '71, upgrading the repeaters, and setting up a voting system for all the receiver sites. The Wilmot site was dropped during this period.

Radio Expo was a huge success, although it did not meet the proposed attendance levels. The problem of getting the members of the club to work during the exposition caused a high overhead since ushers and ticket-takers had to be hired.

Several system equipment changes were made in the latter part of '71 with new solid-state equipment being installed. Several proposals were also made concerning the two-meter repeater and the Waukegan and Genoa systems. All were operating on .76, causing interference problems and general hard feelings. During the next few months a series of meetings was held to solve these problems and come up with an agreeable solution.

In January of 1972 the three groups agreed to the following: CFMC to operate 16/76, Genoa to operate 13/73, and Waukegan to operate 145.95/146.55. CFMC operated with two inputs, .16 and .34, while members purchased crystals for the new input frequency. Work on Radio Expo '72 had begun to take shape, with frequent meetings.

Attendance at Radio Expo '72 was reported to be about 2,000, with a net of about $1,200. Membership response was good and all work was performed by CFMC members. The dates for Expo '73 were set.

CFMC became affiliated with the Amateur Radio Emergency Corps of the ARRL and the Weather Auxiliary Reporting Network in 1972, and established the Emergency Assistance Report cards.

In December, 1972, a GE voting system was loaned to the club for testing on the two-meter repeater. Later, in 1973, the club purchased the unit which is still being used to select the most quieting signal in our two-meter system today. CFMC was the first amateur repeater in the country to use a commercial voting system.

During 1973 the club participated in the ARRL Simulated Emergency Test, and conducted several WARN nets on the repeater during severe weather. Radio Expo '73 was held in blistering summer heat in July and was a very successful venture. The Contributing membership was added in September, allowing repeater users to donate toward operating costs without becoming full participating members of the club.

The Technical Committee spent many long hours preparing the club's application for a repeater license due to recent changes in FCC regulations. In September WR9ABY was assigned as CFMC's new repeater call, and was one of the first assigned to a complex remote receiver-radio controlled system.

November of 1973 brought the ECO (Electronic Control Operator) into existence to eliminate the many unidentified key-ups on the two-meter system, and "Squelch Tale" was given a facelift and was expanded in content.

Last year saw the club participating in the S.E.T., several WARN nets and its first Field Day. Expo '74 was held in September in an attempt to solve the problem of 90-degree temperatures, and turned out to be another very successful event. The club participated with Project LEAP in November's election.

There, in a large nut-shell, is a summary of our past 10 years. Change for the better has been a way of life as FM operation has grown from small groups to large, numerous clubs, and CFMC has kept pace with these changes. In ten years we have grown from a group of 8 to a club of 250, and from a small "on when at home" repeater to two of the country's best.

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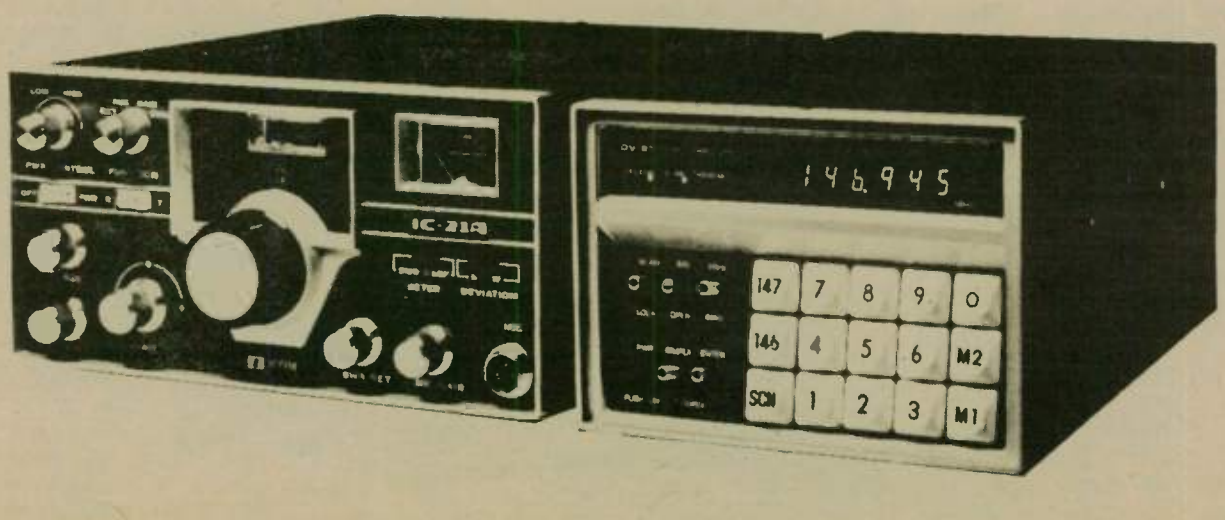

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773 8th St.
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Sichel Equipment Co.
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617 Washingtonia
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TELEVISION

Bill DeWitt, W2DD

If you can find an SSTV operator who attended the Dayton Hamvention and found it disappointing, let me know!

I'm sure that others in the SSTV fraternity will be glad to join me in arranging some kind of therapy for the unfortunate chap. I have never seen a more enthusiastic group. And why not? The talks and demonstrations were excellent. A Friday night Seminar discussion chaired by Dr. Don Miller, W9NTP, delighted all present. And, there was a chance to meet the fellow at the other end in person. (How come you look so much older than that college graduation picture, Charlie?)

In my April column I made a couple of statements that I considered reasonably valid. I said, "Slow to fast scan conversion is on its way, but it will take time. It is definitely not ready for marketing--" And there was more along this line. Well, I was right, slow to fast conversion WAS on its way, but I was wrong about the timing! Robot Research was at Dayton with their carefully kept secret: a scan conversion unit called the Model 300 which incorporates both fast to slow and slow to fast scan conversion. Heart of Robot's new unit is a double-ended storage tube which permits viewing of received images as they are formed on the screen of a conventional TV set type monitor. Individual frames can be viewed in sequence or "frozen" for extended viewing if desired. The camera used for input to the Robot Model 300 is a conventional (fast scan) camera, but scan conversion provides a 128 line 8 second picture for transmission.

An innovation within an innovation was Robot's introduction of a new higher resolution picture capability. The Model 300 can be set up to transmit or receive a 256 line picture with a frame time of approximately 34 seconds. This is a further departure from real time, but as pointed out in this column last December, with a complete picture in bright black and white the trade off in time is not too high a price to pay for the improved resolution. I would like to emphasize that while the exchange of 256 line pictures will temporarily be limited to those having this equipment (or gear modified for the purpose), the Model 300 also operates at ¼, ½, and full frame with 128 lines for picture exchanges with all existing SSTV stations.

The $1295 price on the Robot Model 300 raised a few eyebrows I'm sure, but when you consider the fact that the unit incorporates both fast to slow and slow to fast scan conversion, plus the 256 line capability, it would seem that buyers will be getting their money's worth. (My guess is that the parts alone for a digital scan conversion equivalent would run around $1000—buying new parts and assuming that you have no stock of anything to begin with!)

Sumner Electronics and Engineering (SEEC) had a booth full of goodies at Dayton too. Dr. Jim Thomas' HCV-3KB keyboard was getting a big play. I acquired one of these keyboards a few weeks ago and its performance is great. Designed into the keyboard is the capability of obtaining not only a four step gray scale, but also synch, black, and white frequencies by touch of the proper keys. Separate keys also provide for single, triple or five line displays. I've made considerable use of the single and triple line displays for attention attracting when the band seemed devoid of other SSTV action. Another feature of the HCV-3KB worth noting is a front panel switch to permit compatability of the transmitted signal with 50 cycle reception outside of the USA. (The unit is set up at the factory for the power line frequency to be used.)

Repeated tests with the Sumner keyboard indicate that when multipath conditions prevail on the 75-meter band, the use of white letters on a black background will provide consistently more legible characters than the opposite situation. I am going to continue this test, which, although not earth shaking in consequence, seems to be of interest to everyone I've asked for reports.

Rumor has it that Sumner will also be "out" with a scan converter for amateurs in the not too distant future. SEEC has a sizeable stake in the security-law enforcement field and is in a position to convert some of that hardware for amateur use if the market warrants it. Look for a scan converter using CCDs—I believe SEEC already has one in use in non-amateur applications.

Returning to the Dayton scene for a final comment, the talks and demonstrations given by Dr. George Steber, WB9LVI; Dr. Don Miller, W9NTP; Dr. Robert Suding, WØLMD; Dr. Robert Schloeman, WA7MOV; Dr. Ralph Taggart, WB8DQT; and Mike Tallent, W6MXV; were well presented and enthusiastically received. The mind-boggling presentations of color slow scan (on a conventional color set), the micro-processor, and image processing techniques had everyone wishing they'd brought their tape recorders.

And now the time has come for a W2DD sign off. I have enjoyed the content of **Worldradio News** for a long time. I have had the honor and the pleasure of being a columnist-contributor for about eight months. The response of **WRN** readers to this column has been a gratifying experience. I appreciate the interest and cooperation shown by those who have sent along notes and photographs. However, this will be my last column for **Worldradio News**. I am joining the full time staff of **CQ** Magazine as SSTV Editor starting with the July issue.

I hope that an enthusiastic supporter of **Worldradio News** will step forward as I did some months ago to carry on this column. SSTV operators everywhere are interested in people-oriented news of their colleagues. Is there someone out there who would like to pick up the ball? Again, my thanks to everyone who has helped me put this column together—and especially Editor Armond Noble, W6AJY, for encouraging me in the first place! As they say on the wireless, 73 OM.

•

(Editor's Note: Our sincere best wishes go with you, Bill. Our tnx for a job well done. We can really understand why someone would want to write for money instead of just fame and glory. You'll always be 599 in our log. Good Luck. —W6AJY)

VHF *from page 30*

on 432. His echos are not consistent, but do get them enough to keep working at it. His main lack is the 5 dB reciever. Once he gets the preamp on, should get loud signals.

Mick McManus K1IKN, has plans for a 144 EME system on by Fall from Rhode Island. That will be neat, as that state is rare on any band. Peter Shilton, VE3EMS, is out of school for the summer, and frantically working at both the VE3ONT club station as well as an EME array for 220 MHz. This band has seen activity go down to zero since we left a couple of years ago. Between Peter, myself KØTLM, possibly Frank Miller, K9HMB and a few others, the band might be used some this year again. Once some activity gets going, more seems to come along.

The next tests for the WA6LET probably will only cover 432 MHz, and be in September. Victor Frank, WB6KAP, will promulgate details as things develope. As soon as things are firm, we will also publish the details here.

The Central States VHF Society meeting will be held 15-17 August near Tulsa, OK. This yearly gathering of the ping jockeys from across the nation is one of the best conferences. The details may be obtained from Charlie Calhoun, K5BXG, on the 75 meter net Sunday eves at 2130 CDT on 3980 KHz. A line w/ an SASE will also yield info.

Here on the West Coast, nightly activity to the Bay Area from LA & San Diego on 144 is being agmented on weekend mornings with Dave Pope, K6JKQ, in Stockton back on 220 MHz. Dave is also putting a 144 signal on now as well. 432 MHz is getting back into the swing, with Mike Staal, K6MYC, & Ken Holliday, K6HCP, putting some decent signals into the LA area on that band. Things had been a bit quiet since Joe Reisert, W6FZJ, left San Jose over a year ago.

1296 activity seems to be growing some as well. Joe Cadwallader, K6ZMW, reports from his Fresno QTH there is considerable activity in both the Valley as well as in the Bay Area. LA & San Diego are rather dormant at the present. However, Jim Bogdan, WB6IMV, is frantically building 432 & 1296 gear for the June contest. Once the contest is over, Jim should have some decent means of getting on 1296 as well from his home.

2304 MHz is slowly showing signs of growing. Several guys are building systems around the 417-A cavities being furnished by Gene Powers, WB6CXF. The San Bernadino Microwave Society is gearing up for some late summer shots on several of the microwave bands.

With the advent of the summer tropo season along the path between Hawaii and Calif., we again are looking to bridge the gap on the VHF bands. This year Lee Wical, KH6BZF, is really ready for bear. He has capability on the bands 50 thru 432 MHz. If we can just catch the opening, this may be the year for the 432 path.

After the time VHF Contests, ensure logs are submitted to the ARRL. Even though you may not desire to enter; The tabulation of your log gives more credance to our fight in '79. We must show range of our bands if we hope to keep them.

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MARITIME MOBILE

Bill Yost, WA6PIU

In order to catch up on correspondence, this month will be devoted to the many letters which I've received in the last few months. Keep them coming.

DE — **David Atkins, W6VX**

Your thoughts on emergency frequencies are well done.

Being emergency minded, and having gone around with the ARRL on the subject many times, and the FCC too, and having been wet nurse ashore on the Trans-Pac & LA to Mexican yacht runs over the years, & past pres. of WCARS, I would gladly QRX on say 7102 or other slots [there should, I have always thought, be a spot on any band — like 500 kHz].

Have never been a big traffic BP man but have stuck with CW, and spend most of my operating hours on the key.

You must realize that the Amateur Service is the **only** *service that leaves emergency frequencies up for grabs — even the CBers elected to set one apart for use! Years ago every BC station near the coast monitored 500 kHz by law, and pulled the switch on hearing emergency traffic. ARRL tried and gave up — but I believe they could have at least tried to put a spot on* **some** *band between the CW and phone divisions where even contest buffs would fear to tread. It could have been done —*

Speaking of which — the FD/SS, etc. days are a real threat to an emergency, so there should be part of every band, only, used for these events. Many contests now use this idea in all fairness — but not ARRL. Why? [All arguments against this are evasive!]

Like you, I'm sure there are many who would enjoy monitoring a clean frequency while in the shack doing other things. Count me in.

As for MM and use west of KH6, in an emergency there would be no holds barred on any frequency. What has to be done is an agreement on a frequency or frequencies in the useful bands at correct times of day for each band, and these would overlap due to MUF, etc.

So, Bill, keep kicking the emergency idea around. We have to do something constructive in the meaning of 97.1[a].

Looking at the present restructuring proposals, such emergency frequency allocations could well be implemented at this time. The FCC seems open to ideas even if they are off base on a few. I'm sure that every amateur who looks at the service in any serious manner will certainly endorse an emergency and calling frequency on each band.

Keep up the effort, Dave; perhaps with more support such a plan will become reality.

I would like to think that a May-Day, triple break, emergency, help call during a contest would bring a faster response than on a non-contest day. With fast exchanges, numerous stations and sharper operators searching for QSOs, the chance of getting through should be greater. I can't think that any operator would ignore your call because of a contest! Ever try to break two longwinded Rag chewers running kilowatts across town with their RF gains turned down?! How about 50 bonus points for any real emergency handled during a contest, with 25 points for every station that backs up the operator making initial contact?

DE — **Hayden A. Ross-Clunis, K4RC**

I am a recent reader of **Worldradio News,** *and I do not know if you had previously covered lightning protection in your MM column — especially ham antennas.*

I know the requirements of the Fire Underwriters, which refer to a transmitting type lightning arrestor. Before I sailed from Los Angeles in 1970 I made an extensive search, but had to end up by installing a TV type arrestor at the base of the whip on top of the main mast, with the ground wire running parallel to an upper shroud, and then to the water. Defender Industries [New Rochelle, NY] once carried one in their catalog, but they could not supply one. Do you know where I can get a husky arrestor to install at the top of the mast?

Wish I could be of more help, Hayden. Out here in California we don't have much lightning. On one occasion when some did strike, an off-beat religious movement was started. Ben Franklin would have had a tough time out here. Anything I've read on the subject suggests the action which you've already taken. There was a good article in **Sail** magazine a few months back. I suggest disconnecting any electronic equipment, grounding your shrouds, and not flying kites. Hopefully one of our eastern "lightning belt" readers will be able to help you on the arrestor.

DE — **E. H. Conklin, K6KA**

I noted the partial article of yours on Maritime Mobile in the **Worldradio** *paper.*

For a decade I have been heavily engaged in intruder watching. While we haven't cleaned every communist out of the bands, nevertheless we have got out many which would have made the situation far worse had we not. It is like Sherlock Holmes at times, and a great technical challenge; better than just "operating".

Last year W9EG/MM made a report to the FCC and ARRL about conditions along the Asian mainland, which were fierce. It was quite a revelation. If we knew that some of the things that we report are really that bad, we might be able to use the word "stupid" in our diplomatic attempts at cleaning up the bands! I have heard key clicks here +-20 kHz wide from Asia, but over there sometimes the band is full of crud.

I have written to W9EG, and to the MM club in Houston, without a reply as yet. I wanted to encourage the MM people to do a little I.W. reporting through some suitable channel. Now I am summarizing many reports from North America, Australia, and was from South America — these to to G3PSM, C. J. Thomas, the Region I coordinator, who puts out a monthly world summary. Many times the information can be put together, like getting a callsign from Germany and readout of RTTY on ink-line tape here, to pin down a 21 MHz "press" station in South America — he is gone now.

So I was happy to see a note in **HR Report** *about Rolf Niefind, DK2ZF, working on OSCAR recording, because in his ESSO ship he is not permitted to transmit. Now if there are a lot of tankers around the world not permitting their operators to use the ham bands, we should try to get them to enjoy reporting intruders. How can I find out the addresses of "chief operators" of shiplines, or otherwise to reach the MM operators, whether they transmit or not, so I might interest them in intruder watching?*

While I haven't been involved in intruder watching myself, I understand the problem does exist. I've heard that the ARRL does have a department devoted to compiling such data.

The situation aboard the German tanker is somewhat unique. Presently German maritime ops are fighting government and maritime controls. Most countries, including the U.S., leave the operation up to the discretion of the captain — that's why there are so many MM stations. Perhaps we'll get more feedback on this point.

Herb Johnson, W6QKI, President of Atlas Radio, has informed me that a recent modification to the Atlas 215 will permit operation from 1700 to 3000 kHz. This just about covers anything in the 2 MHz marine band which would make it most attractive to the MM ops. How about a switch for adding a little carrier for detection by the old AM rigs? The possibility of type acceptance for bonafied marine use also enters my mind. As I have said before, however, I only advocate emergency use of this facility.

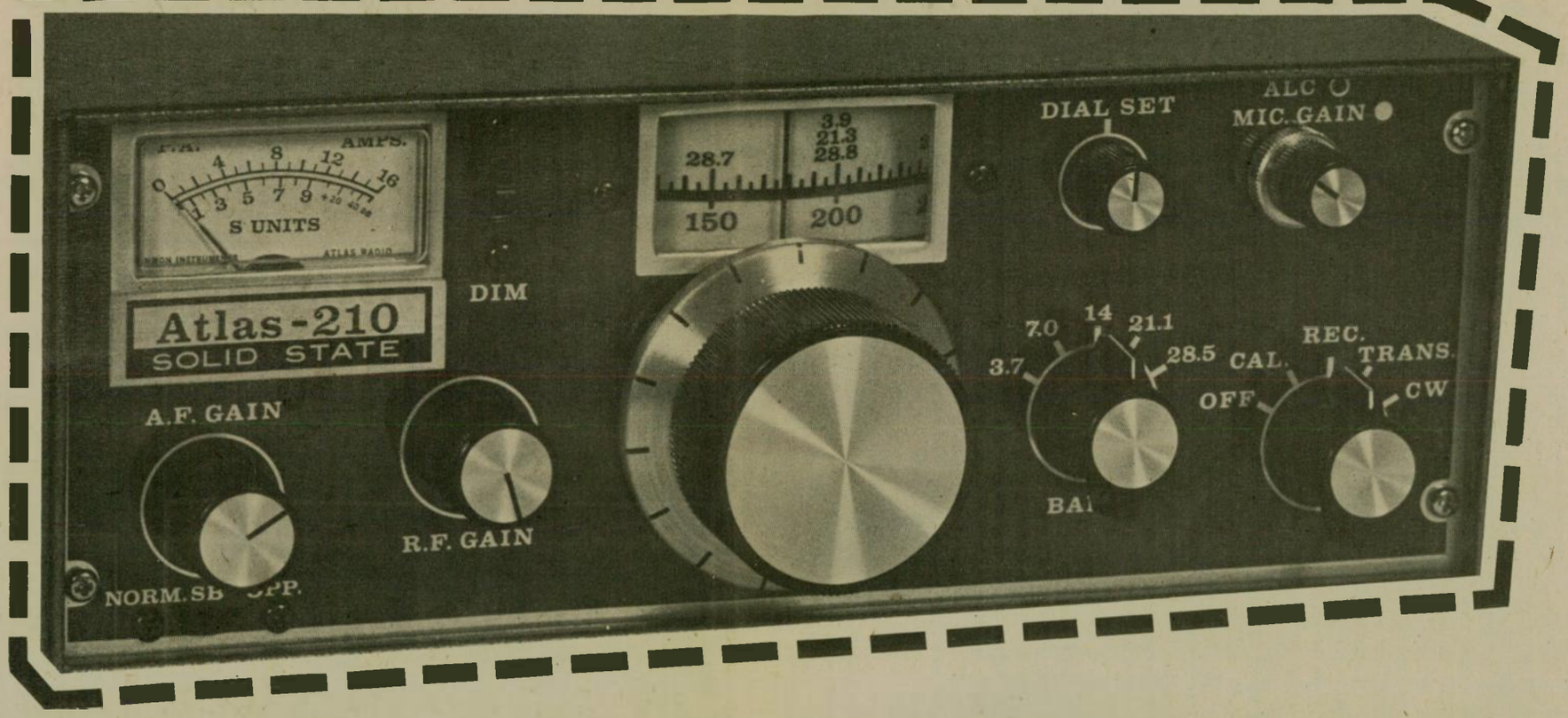
Herb, who is an active sailor in southern California, has been interested in promoting Amateur Radio as a marine communication facility. I have also felt this is a badly neglected market for new membership in our ranks. With the recent phasing out of the AM mode in the marine bands, many boaters are left frustrated with the expense of new marine communications.

Here is an excellent time to promote our service. Remember, the marine bands are second only to CB in the number of licensees. While Herb naturally tends to benefit by selling a few radios through the appeal of his Atlas 215, Amateur Radio will gain its vitally needed members. The Atlas 215 is already being shown at boat shows in England. Perhaps a similar arrangement could be worked for our West Coast boat shows.

In the meantime, I encourage all of you to give Amateur Radio your best PR down at the marina. A good technique is to operate out of your cockpit on a busy Sunday afternoon. Hopefully you'll get the attention of the post-race yacht club crowd. At this time you give your best demonstration of net activity, etc., projecting what a great facility this ham stuff is. Be ready to explain the steps toward the license. A few cold ones should also be on hand for congeniality purposes. If you can

(*please turn to page 36*)

CAUTION!



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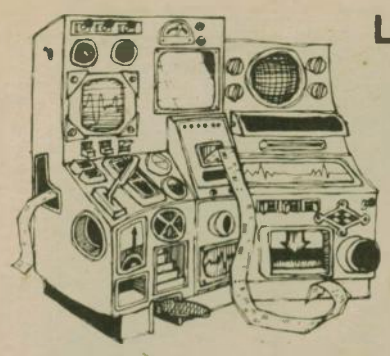

VHF-UHF

Lou Anciaux, WB6NMT

I've received several requests from guys interested in building their own antlers. Many designs have appeared over the years, and most handbooks do have some usable designs. The Tilton Yagis are still to be considered one of the best designs. Not that there aren't better, but there antennas have proven buildable by the most inept workers, and performance is almost a standard.

Several years ago, I spent most of my spare time over a six-month period trying to find the maximum gain ant for 220 MHz on a ten-foot boom. I finally arrived at two which met the criteria. The one selected had a little better bandwidth due to one more element, and slightly better F/B. This design was published in the VHF column of **QST** for March 1972, plus several of the regional 220 Newsletters.

I built an array using 16 of these ten-element Yagi-Uda beams and had considerable success on EME with it. I never was able to try using the same design on any other band. Several others who have used the info from **QST** for building the antennas report good success and no problems in the construction or tuning.

On many occasions, I have been asked if the design would work on other bands. Having been reared with the notion, that by and large, most antenna designs do not scale for beans (especially going up in frequency); I did what most others do, and say it probably would not. Going to 144 MHz probably is workable, but most were asking about the 432 MHz band.

When Rick Samoian, WB6OKK, asked be the same question several months ago, he got the same basic answer. To go to 432 is probably asking for trouble; and, don't be too surprised if it doesn't work at all. Rick indicated he wanted to enter something on 432 for the Antenna Contest at the West Coast VHF Conference.

Well, build it and enter it he did. Much to many of us great surprise, the darn thing came up with the same gain as it does obtain at 222 MHz; about 13½ dB vs. dipole. Needless to say, I'm a bit chargrined that the antenna did work so well as shown by someone else. Makes one humble to realize can still makes good mistakes. Secretly though, I am pleased as punch it does work.

Since the antenna, like the Tilton, is very easy to build, costs little in materials, and performance is repeatable and predictable; am listing the dimensions for this design scaled to 144, 222 & 432 MHz. My original match used a delta loop. Rick used a Gamma, so it appears, as expected, the match may be whatever one favors.

The DE are slightly larger in order to accomodate the delta loops. The boom material is wood; which should be WX-proofed with varnish, etc. If a metal boom material is necessary, the elements must be mounted on top of the boom and insulated from the boom by at least an element's thickness. Insulators may be made from plexiglass and bolted to the boom on either side of the element.

Element sizes are: 144 MHz, DE 1/2", others 3/8", 222 MHz DE 3/8", others 1/4"; 432 MHz, DE 3/16", others 1/8". Use of material of different size will cause a change in resonance, and lengths must be altered to account for the change in the diameter. Element spacings and lengths are listed in following table:

Spacing	144	222	432
REF-DE	11 9/16"	7 1/2"	3 55/64"
DE-D1	11 9/16	7 1/2	3 55/64
D1-D2	13 5/8	9	4 5/8
D2-D3	18 1/2	12	6 11/64
D3-D4	21 9/16	14	7 3/16
D4-D5	21 9/16	14	7 3/16
D5-D6	27 3/4	18	9 1/4
D6-D7	27 3/4	18	9 1/4
D7-D8	27 3/4	18	9 1/4
Lengths			
REF	41 13/16	27 1/8"	13 15/16
DE	38 7/8	25 1/4	12 31/32
D1	36 1/16	23 3/8	12 1/64
D2	35 7/8	23 1/4	11 15/16
D3	35 5/8	23 1/8	11 7/8
D4	35 1/2	23	11 13/16
D5	35 1/4	22 7/8	11 3/4
D6	35 1/16	22 3/4	11 11/16
D7	34 15/16	22 5/8	11 5/8
D8	34 5/8	22 1/2	11 9/16

Elements may be made from a variety of materials. Aluminum rod or tubing is most popular. Brass welding rod is also common. Copper tubing is readily available from a hardware store, plumbing contractors or refrigeration repair/installation companies. It is a little more expensive, but for a single beam is not much money. Aluminum clothesline wire is also fairly available. Steel clothes-hangers are a very poor VHF material, and should not be used.

Please let us hear from you who do build these antennae, and how they perform. Also, any who desire add'l info, an SASE will bring some more. One last word of caution; elements thru a metal boom are not recommended. However, for those who insist, a first guess at length change is to add ⅔ boom diameter to each element length. Stacking these Yagi-Uda in arrays is quite easy. Vertical and horizontal distances are same: 144 MHz 142-158", 222 MHz 92-102", 432 MHz 46-52". These distances are the maximum gain spacings. A little closer spacing will drop side lobes if need be, and only affect main lobe gain slightly.

Bits and pieces from around the globe indicate EME activity is growing greatly. Some of the notes received are sketchy, but serve as an indicator. Japan is finally getting activity going. Bob Sutherland, W6PO, is running with T. Kumamoto JA6DR on 144. The April **CQ** of Japan, had a large coverage on many EMEers and their arrays. The mystery of why no JA sigs have been heard may have been partially explained looking at the photos of all those arrays. In nearly every instance, the spacing between the individual antlers appears way too close. As a consequence, the array probably has a nice clean lobe, no side lobes, good side rejection and no gain. I'll wager once the Japanese space their arrays properly, the QRM level via the moon will increase 10 db. However, some using dishes on 432 are having decent success. Shigeo Kanehira, JA1VDV has QSOed both Allen Katz, K2UYH & C. Maas, VE7BBG.

Peter Carey, ZE5JJ, who had his first success in Feb. during the WA6LET (Stanford Research Institute ARC) operation, has since added K2UYH & VE7BBG to his growing list of stations worked on 432 EME. J. Ottens, PAØSSB using his 20' dish on both 432 & 1296 made contact with (Crawford Hill VHF Club, NJ) W2NFA & George Romadina, W9WCD on the latter band. On 22 Feb. on 1296, he worked R. Wilkinson, VK3AKC, which established a new DX EME record for that band.

More Europeans gearing up include Fritz Herbst, DL3YBA, whose signal has been touted as loudest on 144 by some. The French in Marc Tonna, F9FT, on 432 are being heard in Italy by Domenico MARINI I8CVS. A new Swedish signal is due on soon as well. Couple others getting going on 144 are J. Mutter, PAØJMV, & Reinhard Kyehn, DK5LA and Pierre Pasteur HB9QQ is being skeded in June.

Tom Schrum K7NII, whose array of 16 eight el Yagi-Udas are pictured in June **QST** has added 3 new states. Tom had 24 states in 1967, and unable to increase until now. Al Ward WB5LUA, in Texas has worked John Yurek K3PGP and heard David Olean, K1WHS, & Barry Forrest, WA2BIT. No doubt will QSO shortly, if hasn't already. Charlie Calhoun, K5BXG, finally got the phasing corrected on his 80 el array, and is doing great. Seems out of phase arrays come in quantity in 5-land. Kieth Armstrong, W7UBI, is putting Idaho on 144 EME with an 80 el array shortly. Dana Huhn W4DFK, and his 160 els from Virginia are doing great things, and Kansas with WØPMN will soon be represented.

Jerry Scheimberg, WA2CJK, (yes, he's Kelly's brother W8KPY) has purchased Tom Wolfe's 160 array. Tom will soon be sporting an array of 16 fourteen el KLMs from K8III. Tom Bishop, KØTLM, hopes to put his 24' dish on several bands besides 432 shortly. Dave Vore, K8UQA, and his array of 16 K2RIW style Yagi-Udas is having some success

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OSCAR AMSAT

Joe Kasser, G3ZCZ

While both AMSAT-OSCAR 6 and AMSAT-OSCAR 7 continue to perform splendidly, AMSAT has not been idle. Not content with the status quo, we are formulating plans for the next OSCAR. The projected next undertaking, to be known as the AMSAT Phase III project, is being designed so as to supply a viable alternative to twenty meters to the majority of the world's radio amateurs. AMSAT Phase III spacecraft are designed for drifting synchronous or high-altitude elliptical orbits. As such, the new planned series of higher-altitude, long-lifetime AMSATs offer the significant advantage over the previous low-orbiting OSCARs of providing improved coverage over longer periods of time and over vastly greater distances.

The AMSAT Phase III spacecraft will be designed by the AMSAT Deutschland group. The actual fabrication of the flight model and integration will be handled by AMSAT-Canada. WIA Project Australis will design and fabricate the ground telemetry and command equipment.

It will be evident that this is quite an ambitious undertaking in the true spirit of international cooperation. The spacecraft itself will be built for a launch date of mid-1978. It will be much more complex than AMSAT-OSCAR 7 and carry a high power linear transponder using the 145.9 and 435.1 MHz bands. The command, telemetry and attitude control systems will utilize a common onboard microcomputer. One of two telemetry beacons will utilize a high-speed digital format similar to standard "professional" spacecraft; the other will employ simpler "amateur" techniques.

Additional details on AMSAT Phase III are contained in the June 1975 issue of the "AMSAT Newsletter".

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The undersigned proposes to put together a book on the subject of Radio Amateurs in Space. To make such a book possible and to be representative of all of those throughout the world who have contributed or participated in the OSCAR program and related activities through AMSAT and PROJECT OSCAR, inputs would be appreciated from those participants. The inputs should describe the contribution technologically, the persons involved, and the results. Photographs or copies of photos would be desirable showing the apparatus and people in the programs discussed. We already have some inputs from Project OSCAR and from the TRW Radio Club regarding their respective activities. Lance Ginner, K6GSJ, has made all of his photos available. We're attempting to get an input from W6ZGC who put up the first tracking station for amateur radio use to track and listen to the Russian Sputnik, man's first orbiting spacecraft which generated signals to be received by radio.

The undersigned will collect all of the material, act as compiler and editor, and be generally responsible for the material received. It is urged that all who had any connection with space communication projects related to or participated in by radio amateurs communicate their inputs to me at the address given below.

Norman L. Chalfin, K6PGX
P.O.Box 463
Pasadena, CA 91102

•

Viva "EL" OSCAR

W. "Doug" Douglass, K6BAZ

The often needed AZ-EL (Azimuth-Elevation) antenna for the OSCAR satellites can now be had for as little as $2.00 or less.

I have noted that when a satellite passes close to the horizon, say 30 degrees latitudinally away from the transmitter location, my 8 element Yagi pre-set at 10 el (elevation) will perform very well. But when the satellite is within 15 degrees or closer (an overhead type pass) I would have to manually set the angle up to 25 degrees or 30 degrees. I now find a good signal in mid-pass but I miss the beginning and end of the pass when the satellite is at a low angle to the horizon.

The solution was not to purchase another $40 rotator but simply a $1.00 solenoid (115 vac-60 HZ) at the local surplus store. (These are often found in old washing machines). So if the XYL is not using one at the time...on second thought, try the surplus store first and the washing machine as a last resort.

To test the feasibility of using the solenoid approach to elevation leverage I built a four-element Yagi antenna on a ½-inch boom 48-inches long. Now connect the boom to the existing Azimuth mast (in my instance 1-inch diameter) using two cable clamps, one 1-inch and one ½-inch, taking care to mount the hardware so as to hinge easily and balance the boom so that the director end is slightly "nose heavy".

By mounting the levers with the remaining two clamps (same type as before) and the solenoid using a one-inch "U" bolt and a shim to allow a straight pull on the level mechanism, the completed assembly is now a mechanical 12 to 1 lever as shown in figure 1.

The "EL OSCAR" antenna and I have been getting along well. Often I am the first signal to acquisition the satellite on overhead passes! I often note loss of gain or acquisition when the satellite reaches zenith, but this condition may exist for only a minute or two and regains signal level quickly.

This system works best with 4 or 5 elements for all-around general use but would be extremely useful at 10 degrees to 25 degrees for long haul DXing with 8 to 12 element Yagis.

The "EL OSCAR" will perform well for the 432-144 MHz mode "B" operation.

Note: Solenoids are quite strong for their size but one must consider beam size, weight and balance. Also I recommend using "Loc-tite" or lock nuts in the assembly.

Good luck and viva "EL OSCAR".

•

In order to keep the satellite users in touch with one another and to provide information to newcomers, the following AMSAT nets meet regularly:

North American East Coast 75 Meter Net
Mondays 8:00 p.m. EST (0100Z Tues)
3850 kHz LSB
Net Control W3ZM, W3TMZ or K2GUG

North American West Coast 75 Meter Net
Mondays 8:00 p.m. PST (0400Z Tues)
3850 kHz LSB
Net Control W6OAL or W6EJJ
Note that East Coast and West Coast Nets are on the same frequency, so stations in between should be able to work both.

International 20 Meter Net
Sundays 1800Z*
14.280 MHz USB
Net Control W3ZM, W3TMZ or others

International 15 Meter Net
Sundays 1900Z
21.280 MHz USB
Net Control W3ZM, W3TMZ or others

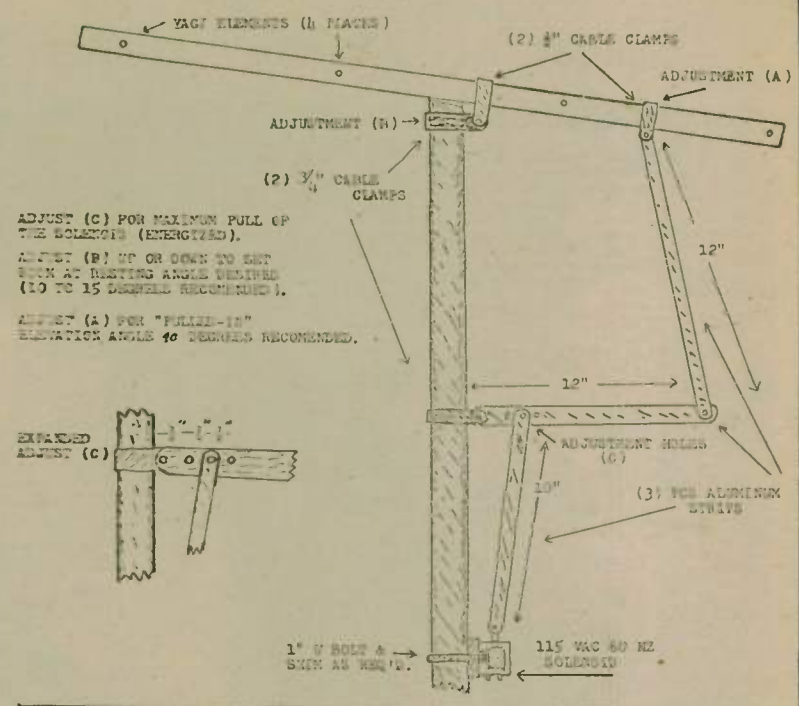
Western Europe Net
Saturdays 1000Z, Sundays 1015Z
14.280 MHz LSB
Net Control G3IOR

JA Net
Mondays 1300Z
3560 kHz LSB
Net Control JA1ANG

Southest Asia Net
Thursdays 1300Z
14.320 MHz USB
Net Control JA1ANG or others

ZL Net
Daily
1900 NZDST
3850 kHz LSB
Net Control ZL1WB

*G3IOR listens at 1730Z for European and African check-ins.



In addition, the frequencies 3850 kHz LSB and 14.280 MHz USB are designated as general watch frequencies for discussions of satellite matters following passes.

In the Washington, DC area, AMSAT traffic is handled via 2 meter FM on 146.85 MHz simplex and through the AMSAT repeater WR3ABU (146.25 to 146.85 MHz).

JULY — AMSAT-OSCAR 6

Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday

OSCAR 6 OPERATING SCHEDULE

Present schedule calls for Oscar 6 to be operational (145.9-146.0 MHz to 29.45-.55 MHz) on Sunday morning and evening, Wednesday and Friday evenings local time (Monday, Thursday, and Saturday mornings and Sunday evening GMT). Do not use Oscar 6 at other times even though it may be turned on. Latest information may be obtained on the AmSat nets, Sunday 1800 GMT on 14.280 MHz and 1900 GMT on 21.280 MHz from the Washington, D. C., USA area.

TUES 1 JULY 1975 (182)

ORBIT	ASCENDING NODE TIME	NODE LONG
12376	00:02:43	51.1
12377	01:57:43	79.8
12378	03:52:42	108.6
12379	05:47:42	137.3
12380	07:42:42	166.1
12381	09:37:41	194.8
12382	11:32:41	223.6
12383E	13:27:41	252.3
12384E	15:22:41	281.1
12385	17:17:40	309.8
12386	19:12:40	338.6
12387	21:07:40	7.3
12388	23:02:39	36.1

WED 2 JULY 1975 (183)

ORBIT	ASCENDING NODE TIME	NODE LONG
12389	00:57:39	64.8
12390	02:52:39	93.6
12391	04:47:38	122.3
12392	06:42:38	151.1
12393	08:37:38	179.8
12394	10:32:37	208.6
12395	12:27:37	237.3
12396	14:22:37	266.1
12397	16:17:36	294.8
12398	18:12:36	323.6
12399	20:07:36	352.3
12400	22:02:35	21.1
12401	23:57:35	49.8

THUR 3 JULY 1975 (184)

ORBIT	ASCENDING NODE TIME	NODE LONG
12402	01:52:35	78.6
12403	03:47:34	107.3
12404	05:42:34	136.1
12405	07:37:34	164.8
12406	09:32:33	193.6
12407	11:27:33	222.3
12408E	13:22:33	251.1
12409E	15:17:32	279.8
12410	17:12:32	308.6
12411	19:07:32	337.3
12412	21:02:31	6.1
12413	22:57:31	34.8

FRI 4 JULY 1975 (185)

ORBIT	ASCENDING NODE TIME	NODE LONG
12414	00:52:31	63.6
12415	02:47:30	92.3
12416	04:42:30	121.1
12417	06:37:30	149.8
12418	08:32:29	178.6
12419	10:27:29	207.3
12420	12:22:29	236.0
12421	14:17:28	264.8
12422	16:12:28	293.5
12423	18:07:28	322.3
12424	20:02:27	351.0
12425	21:57:27	19.8
12426	23:52:27	48.5

SAT 5 JULY 1975 (186)

ORBIT	ASCENDING NODE TIME	NODE LONG
12427	01:47:26	77.3
12428	03:42:26	106.0
12429	05:37:26	134.8
12430	07:32:25	163.5
12431	09:27:25	192.3
12432	11:22:25	221.0
12433	13:17:25	249.8
12434	15:12:24	278.5
12435	17:07:24	307.3
12436	19:02:24	336.0
12437	20:57:23	4.8
12438	22:52:23	33.5

SUN 6 JULY 1975 (187)

ORBIT	ASCENDING NODE TIME	NODE LONG
12439	00:47:23	62.3
12440	02:42:22	91.0
12441	04:37:22	119.8
12442	06:32:22	148.5
12443	08:27:21	177.3
12444	10:22:21	206.0
12445	12:17:21	234.8
12446	14:12:20	263.5
12447	16:07:20	292.3
12448	18:02:20	321.0
12449	19:57:19	349.8
12450	21:52:19	18.5
12451	23:47:19	47.3

MON 7 JULY 1975 (188)

ORBIT	ASCENDING NODE TIME	NODE LONG
12452	01:42:18	76.0
12453	03:37:18	104.8
12454	05:32:18	133.5
12455	07:27:17	162.3
12456	09:22:17	191.0
12457	11:17:17	219.8
12458	13:12:16	248.5
12459E	15:07:16	277.3
12460	17:02:16	306.0
12461	18:57:15	334.8
12462	20:52:15	3.5
12463	22:47:15	32.3

TUES 8 JULY 1975 (189)

ORBIT	ASCENDING NODE TIME	NODE LONG
12464	00:42:14	61.0
12465	02:37:14	89.8
12466	04:32:14	118.5
12467	06:27:13	147.3
12468	08:22:13	176.0
12469	10:17:13	204.8
12470	12:12:12	233.5
12471	14:07:12	262.2
12472	16:02:12	291.0
12473	17:57:11	319.7
12474	19:52:11	348.5
12475	21:47:11	17.2
12476	23:42:10	46.0

WED 9 JULY 1975 (190)

ORBIT	ASCENDING NODE TIME	NODE LONG
12477	01:37:10	74.7
12478	03:32:10	103.5
12479	05:27:09	132.2
12480	07:22:09	161.0
12481	09:17:09	189.7
12482	11:12:09	218.5
12483	13:07:08	247.2
12484E	15:02:08	276.0
12485E	16:57:08	304.7
12486	18:52:07	333.5
12487	20:47:07	2.2
12488	22:42:07	31.0

THUR 10 JULY 1975 (191)

ORBIT	ASCENDING NODE TIME	NODE LONG
12489	00:37:06	59.7
12490	02:32:06	88.5
12491	04:27:06	117.2
12492	06:22:05	146.0
12493	08:17:05	174.7
12494	10:12:05	203.5
12495	12:07:04	232.2
12496	14:02:04	261.0
12497	15:57:04	289.7
12498	17:52:03	318.5
12499	19:47:03	347.2
12500	21:42:03	16.0
12501	23:37:02	44.7

FRI 11 JULY 1975 (192)

ORBIT	ASCENDING NODE TIME	NODE LONG
12502	01:32:02	73.5
12503	03:27:02	102.2
12504	05:22:01	131.0
12505	07:17:01	159.7
12506	09:12:01	188.5
12507	11:07:00	217.2
12508	13:02:00	246.0
12509E	14:57:00	274.7
12510E	16:51:59	303.5
12511	18:46:59	332.2
12512	20:41:59	1.0
12513	22:36:58	29.7

SAT 12 JULY 1975 (193)

ORBIT	ASCENDING NODE TIME	NODE LONG
12514	00:31:58	58.5
12515	02:26:58	87.2
12516	04:21:57	116.0
12517	06:16:57	144.7
12518	08:11:57	173.5
12519	10:06:56	202.2
12520	12:01:56	230.9
12521	13:56:56	259.7
12522	15:51:55	288.4
12523	17:46:55	317.2
12524	19:41:55	345.9
12525	21:36:54	14.7
12526	23:31:54	43.4

SUN 13 JULY 1975 (194)

ORBIT	ASCENDING NODE TIME	NODE LONG
12527	01:26:54	72.2
12528	03:21:54	100.9
12529	05:16:53	129.7
12530	07:11:53	158.4
12531	09:06:53	187.2
12532	11:01:52	215.9
12533	12:56:52	244.7
12534	14:51:52	273.4
12535	16:46:51	302.2
12536	18:41:51	330.9
12537	20:36:51	359.7
12538	22:31:50	28.4

MON 14 JULY 1975 (195)

ORBIT	ASCENDING NODE TIME	NODE LONG
12539	00:26:50	57.2
12540	02:21:50	85.9
12541	04:16:49	114.7
12542	06:11:49	143.4
12543	08:06:49	172.2
12544	10:01:48	200.9
12545	11:56:48	229.7
12546	13:51:48	258.4
12547	15:46:47	287.2
12548	17:41:47	315.9
12549	19:36:47	344.7
12550	21:31:46	13.4
12551	23:26:46	42.2

TUES 15 JULY 1975 (196)

ORBIT	ASCENDING NODE TIME	NODE LONG
12552	01:21:46	70.9
12553	03:16:45	99.7
12554	05:11:45	128.4
12555	07:06:45	157.2
12556	09:01:44	185.9
12557	10:56:44	214.7
12558	12:51:44	243.4
12559E	14:46:43	272.2
12560E	16:41:43	300.9
12561	18:36:43	329.7
12562	20:31:42	358.4
12563	22:26:42	27.2

WED 16 JULY 1975 (197)

ORBIT	ASCENDING NODE TIME	NODE LONG
12564	00:21:42	55.9
12565	02:16:41	84.7
12566	04:11:41	113.4
12567	06:06:41	142.2
12568	08:01:40	170.9
12569	09:56:40	199.7
12570	11:51:40	228.4
12571	13:46:39	257.1
12572	15:41:39	285.9
12573	17:36:39	314.6
12574	19:31:38	343.4
12575	21:26:38	12.1
12576	23:21:38	40.9

THUR 17 JULY 1975 (198)

ORBIT	ASCENDING NODE TIME	NODE LONG
12577	01:16:38	69.6
12578	03:11:37	98.4
12579	05:06:37	127.1
12580	07:01:37	155.9
12581	08:56:36	184.6
12582	10:51:36	213.4
12583	12:46:36	242.1
12584E	14:41:35	270.9
12585E	16:36:35	299.6
12586	18:31:35	328.4
12587	20:26:34	357.1
12588	22:21:34	25.9

FRI 18 JULY 1975 (199)

ORBIT	ASCENDING NODE TIME	NODE LONG
12589	00:16:34	54.6
12590	02:11:33	83.4
12591	04:06:33	112.1
12592	06:01:33	140.9
12593	07:56:32	169.6
12594	09:51:32	198.4
12595	11:46:32	227.1
12596	13:41:31	255.9
12597	15:36:31	284.6
12598	17:31:31	313.4
12599	19:26:30	342.1
12600	21:21:30	10.9
12601	23:16:30	39.6

SAT 19 JULY 1975 (200)

ORBIT	ASCENDING NODE TIME	NODE LONG
12602	01:11:29	68.4
12603	03:06:29	97.1
12604	05:01:29	125.9
12605	06:56:28	154.6
12606	08:51:28	183.4
12607	10:46:28	212.1
12608	12:41:27	240.9
12609	14:36:27	269.6
12610	16:31:27	298.4
12611	18:26:26	327.1
12612	20:21:26	355.9
12613	22:16:26	24.6

SUN 20 JULY 1975 (201)

ORBIT	ASCENDING NODE TIME	NODE LONG
12614	00:11:25	53.4
12615	02:06:25	82.1
12616	04:01:25	110.9
12617	05:56:24	139.6
12618	07:51:24	168.4
12619	09:46:24	197.1
12620	11:41:23	225.8
12621	13:36:23	254.6
12622	15:31:23	283.3
12623	17:26:22	312.1
12624	19:21:22	340.8
12625	21:16:22	9.6
12626	23:11:22	38.3

MON 21 JULY 1975 (202)

ORBIT	ASCENDING NODE TIME	NODE LONG
12627	01:06:21	67.1
12628	03:01:21	95.8
12629	04:56:21	124.6
12630	06:51:20	153.3
12631	08:46:20	182.1
12632	10:41:20	210.8
12633	12:36:19	239.6
12634E	14:31:19	268.3
12635E	16:26:19	297.1
12636	18:21:18	325.8
12637	20:16:18	354.6
12638	22:11:18	23.3

TUES 22 JULY 1975 (203)

ORBIT	ASCENDING NODE TIME	NODE LONG
12639	00:06:17	52.1
12640	02:01:17	80.8
12641	03:56:17	109.6
12642	05:51:16	138.3
12643	07:46:16	167.1
12644	09:41:16	195.8
12645	11:36:15	224.6
12646	13:31:15	253.3
12647	15:26:15	282.1
12648	17:21:14	310.8
12649	19:16:14	339.6
12650	21:11:14	8.3
12651	23:06:13	37.1

WED 23 JULY 1975 (204)

ORBIT	ASCENDING NODE TIME	NODE LONG
12652	01:01:13	65.8
12653	02:56:13	94.6
12654	04:51:12	123.3
12655	06:46:12	152.1
12656	08:41:12	180.8
12657	10:36:11	209.6
12658	12:31:11	238.3
12659E	14:26:11	267.1
12660E	16:21:10	295.8
12661	18:16:10	324.6
12662	20:11:10	353.3
12663	22:06:09	22.1

THUR 24 JULY 1975 (205)

ORBIT	ASCENDING NODE TIME	NODE LONG
12664	00:01:09	50.8
12665	01:56:09	79.6
12666	03:51:08	108.3
12667	05:46:08	137.1
12668	07:41:08	165.8
12669	09:36:07	194.6
12670	11:31:07	223.3
12671	13:26:07	252.0
12672	15:21:07	280.8
12673	17:16:06	309.5
12674	19:11:06	338.3
12675	21:06:06	7.0
12676	23:01:05	35.8

FRI 25 JULY 1975 (206)

ORBIT	ASCENDING NODE TIME	NODE LONG
12677	00:56:05	64.5
12678	02:51:05	93.3
12679	04:46:04	122.0
12680	06:41:04	150.8
12681	08:36:04	179.5
12682	10:31:03	208.3
12683	12:26:03	237.0
12684E	14:21:03	265.8
12685E	16:16:02	294.5
12686	18:11:02	323.3
12687	20:06:02	352.0
12688	22:01:01	20.8
12689	23:56:01	49.5

SAT 26 JULY 1975 (207)

ORBIT	ASCENDING NODE TIME	NODE LONG
12690	01:51:01	78.3
12691	03:46:00	107.0
12692	05:41:00	135.8
12693	07:36:00	164.5
12694	09:30:59	193.3
12695	11:25:59	222.0
12696	13:20:59	250.8
12697	15:15:58	279.5
12698	17:10:58	308.3
12699	19:05:58	337.0
12700	21:00:57	5.8
12701	22:55:57	34.5

SUN 27 JULY 1975 (208)

ORBIT	ASCENDING NODE TIME	NODE LONG
12702	00:50:57	63.3
12703	02:45:56	92.0
12704	04:40:56	120.8
12705	06:35:56	149.5
12706	08:30:55	178.3
12707	10:25:55	207.0
12708	12:20:55	235.8
12709	14:15:54	264.5
12710	16:10:54	293.3
12711	18:05:54	322.0
12712	20:00:53	350.8
12713	21:55:53	19.5
12714	23:50:53	48.3

MON 28 JULY 1975 (209)

ORBIT	ASCENDING NODE TIME	NODE LONG
12715	01:45:52	77.0
12716	03:40:52	105.8
12717	05:35:52	134.5
12718	07:30:51	163.3
12719	09:25:51	192.0
12720	11:20:51	220.7
12721	13:15:51	249.5
12722	15:10:50	278.2
12723	17:05:50	307.0
12724	19:00:50	335.7
12725	20:55:49	4.5
12726	22:50:49	33.2

TUES 29 JULY 1975 (210)

ORBIT	ASCENDING NODE TIME	NODE LONG
12727	00:45:49	62.0
12728	02:40:48	90.7
12729	04:35:48	119.5
12730	06:30:48	148.2
12731	08:25:47	177.0
12732	10:20:47	205.7
12733	12:15:47	234.5
12734E	14:10:46	263.2
12735E	16:05:46	292.0
12736	18:00:46	320.7
12737	19:55:45	349.5
12738	21:50:45	18.2
12739	23:45:45	47.0

WED 30 JULY 1975 (211)

ORBIT	ASCENDING NODE TIME	NODE LONG
12740	01:40:44	75.7
12741	03:35:44	104.5
12742	05:30:44	133.2
12743	07:25:43	162.0
12744	09:20:43	190.7
12745	11:15:43	219.5
12746	13:10:42	248.2
12747	15:05:42	277.0
12748	17:00:42	305.7
12749	18:55:41	334.5
12750	20:50:41	3.2
12751	22:45:41	32.0

THUR 31 JULY 1975 (212)

ORBIT	ASCENDING NODE TIME	NODE LONG
12752	00:40:40	60.7
12753	02:35:40	89.5
12754	04:30:40	118.2
12755	06:25:39	147.0
12756	08:20:39	175.7
12757	10:15:39	204.5
12758	12:10:38	233.2
12759E	14:05:38	262.0
12760E	16:00:38	290.7
12761	17:55:37	319.5
12762	19:50:37	348.2
12763	21:45:37	17.0
12764	23:40:36	45.7

OSCAR 6 TELEMETRY AT 29.45 MHz

JULY — AMSAT-OSCAR 7

Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday

OSCAR 7 OPERATING SCHEDULE

Present schedule calls for Mode A (145.85-.95 MHz to 29.40-.50 MHz) on odd-numbered days of the year, Mode B (432.125-.175 MHz to 145.975-.925 MHz) on even-numbered days. Mode is indicated in the orbit number. An "X" in the orbit number indicates that the satellite is reserved for experiments and educational use. Users are requested not to transmit on X-orbits even though the satellite is turned on. Latest information may be obtained on the AmSat nets, Sunday 1800 GMT on 14.280 MHz and 1900 GMT on 21.280 MHz from the Washington, D. C., USA area.

TUES 1 JULY 1975 (182)

ORBIT	ASCENDING NODE TIME	NODE LONG
2848B	00:24:21	55.9
2849B	02:19:18	84.7
2850B	04:14:15	113.4
2851B	06:09:11	142.1
2852B	08:04:08	170.9
2853B	09:59:05	199.6
2854B	11:54:02	228.4
2855B	13:48:58	257.1
2856B	15:43:55	285.8
2857B	17:38:52	314.6
2858B	19:33:48	343.3
2859B	21:28:45	12.0
2860B	23:23:42	40.8

WED 2 JULY 1975 (183)

ORBIT	ASCENDING NODE TIME	NODE LONG
2861AX	01:18:38	69.5
2862AX	03:13:35	98.2
2863AX	05:08:32	127.0
2864AX	07:03:29	155.7
2865AX	08:58:25	184.4
2866AX	10:53:22	213.2
2867AX	12:48:19	241.9
2868AX	14:43:15	270.7
2869AX	16:38:12	299.4
2870AX	18:33:09	328.1
2871AX	20:28:05	356.9
2872AX	22:23:02	25.6

THUR 3 JULY 1975 (184)

ORBIT	ASCENDING NODE TIME	NODE LONG
2873B	00:17:59	54.3
2874B	02:12:56	83.1
2875B	04:07:52	111.8
2876B	06:02:49	140.5
2877B	07:57:46	169.3
2878B	09:52:42	198.0
2879B	11:47:39	226.8
2880B	13:42:36	255.5
2881B	15:37:32	284.2
2882B	17:32:29	313.0
2883B	19:27:26	341.7
2884B	21:22:23	10.4
2885B	23:17:19	39.2

FRI 4 JULY 1975 (185)

ORBIT	ASCENDING NODE TIME	NODE LONG
2886A	01:12:16	67.9
2887A	03:07:13	96.6
2888A	05:02:09	125.4
2889A	06:57:06	154.1
2890A	08:52:03	182.9
2891A	10:46:59	211.6
2892A	12:41:56	240.3
2893A	14:36:53	269.1
2894A	16:31:50	297.8
2895A	18:26:46	326.5
2896A	20:21:43	355.3
2897A	22:16:40	24.0

SAT 5 JULY 1975 (186)

ORBIT	ASCENDING NODE TIME	NODE LONG
2898B	00:11:36	52.7
2899B	02:06:33	81.5
2900B	04:01:30	110.2
2901B	05:56:26	139.0
2902B	07:51:23	167.7
2903B	09:46:20	196.4
2904B	11:41:17	225.2
2905B	13:36:13	253.9
2906B	15:31:10	282.6
2907B	17:26:07	311.4
2908B	19:21:03	340.1
2909B	21:16:00	8.8
2910B	23:10:57	37.6

SUN 6 JULY 1975 (187)

ORBIT	ASCENDING NODE TIME	NODE LONG
2911A	01:05:53	66.3
2912A	03:00:50	95.1
2913A	04:55:47	123.8
2914A	06:50:44	152.5
2915A	08:45:40	181.3
2916A	10:40:37	210.0
2917A	12:35:34	238.7
2918A	14:30:30	267.5
2919A	16:25:27	296.2
2920A	18:20:24	324.9
2921A	20:15:20	353.7
2922A	22:10:17	22.4

MON 7 JULY 1975 (188)

ORBIT	ASCENDING NODE TIME	NODE LONG
2923B	00:05:14	51.2
2924B	02:00:11	79.9
2925B	03:55:07	108.6
2926B	05:50:04	137.4
2927B	07:45:01	166.1
2928B	09:39:57	194.8
2929B	11:34:54	223.6
2930B	13:29:51	252.3
2931B	15:24:47	281.0
2932B	17:19:44	309.8
2933B	19:14:41	338.5
2934B	21:09:38	7.2
2935B	23:04:34	36.0

TUES 8 JULY 1975 (189)

ORBIT	ASCENDING NODE TIME	NODE LONG
2936A	00:59:31	64.7
2937A	02:54:28	93.5
2938A	04:49:24	122.2
2939A	06:44:21	150.9
2940A	08:39:18	179.7
2941A	10:34:14	208.4
2942A	12:29:11	237.1
2943A	14:24:08	265.9
2944A	16:19:05	294.6
2945A	18:14:01	323.3
2946A	20:08:58	352.1
2947A	22:03:55	20.8
2948A	23:58:51	49.6

WED 9 JULY 1975 (190)

ORBIT	ASCENDING NODE TIME	NODE LONG
2949BX	01:53:48	78.3
2950BX	03:48:45	107.0
2951BX	05:43:41	135.8
2952BX	07:38:38	164.5
2953BX	09:33:35	193.2
2954BX	11:28:32	222.0
2955BX	13:23:28	250.7
2956BX	15:18:25	279.4
2957BX	17:13:22	308.2
2958BX	19:08:18	336.9
2959BX	21:03:15	5.7
2960BX	22:58:12	34.4

THUR 10 JULY 1975 (191)

ORBIT	ASCENDING NODE TIME	NODE LONG
2961A	00:53:08	63.1
2962A	02:48:05	91.9
2963A	04:43:02	120.6
2964A	06:37:59	149.3
2965A	08:32:55	178.1
2966A	10:27:52	206.8
2967A	12:22:49	235.5
2968A	14:17:45	264.3
2969A	16:12:42	293.0
2970A	18:07:39	321.8
2971A	20:02:35	350.5
2972A	21:57:32	19.2
2973A	23:52:29	48.0

FRI 11 JULY 1975 (192)

ORBIT	ASCENDING NODE TIME	NODE LONG
2974B	01:47:26	76.7
2975B	03:42:22	105.4
2976B	05:37:19	134.2
2977B	07:32:16	162.9
2978B	09:27:12	191.6
2979B	11:22:09	220.4
2980B	13:17:06	249.1
2981B	15:12:02	277.9
2982B	17:06:59	306.6
2983B	19:01:56	335.3
2984B	20:56:53	4.1
2985B	22:51:49	32.8

SAT 12 JULY 1975 (193)

ORBIT	ASCENDING NODE TIME	NODE LONG
2986A	00:46:46	61.5
2987A	02:41:43	90.3
2988A	04:36:39	119.0
2989A	06:31:36	147.7
2990A	08:26:33	176.5
2991A	10:21:29	205.2
2992A	12:16:26	234.0
2993A	14:11:23	262.7
2994A	16:06:20	291.4
2995A	18:01:16	320.2
2996A	19:56:13	348.9
2997A	21:51:10	17.6
2998A	23:46:06	46.4

SUN 13 JULY 1975 (194)

ORBIT	ASCENDING NODE TIME	NODE LONG
2999B	01:41:03	75.1
3000B	03:36:00	103.8
3001B	05:30:56	132.6
3002B	07:25:53	161.3
3003B	09:20:50	190.1
3004B	11:15:47	218.8
3005B	13:10:43	247.5
3006B	15:05:40	276.3
3007B	17:00:37	305.0
3008B	18:55:33	333.7
3009B	20:50:30	2.5
3010B	22:45:27	31.2

MON 14 JULY 1975 (195)

ORBIT	ASCENDING NODE TIME	NODE LONG
3011A	00:40:23	59.9
3012A	02:35:20	88.7
3013A	04:30:17	117.4
3014A	06:25:14	146.1
3015A	08:20:10	174.9
3016A	10:15:07	203.6
3017A	12:10:04	232.4
3018A	14:05:00	261.1
3019A	15:59:57	289.8
3020A	17:54:54	318.6
3021A	19:49:50	347.3
3022A	21:44:47	16.0
3023A	23:39:44	44.8

TUES 15 JULY 1975 (196)

ORBIT	ASCENDING NODE TIME	NODE LONG
3024B	01:34:41	73.5
3025B	03:29:37	102.2
3026B	05:24:34	131.0
3027B	07:19:31	159.7
3028B	09:14:27	188.5
3029B	11:09:24	217.2
3030B	13:04:21	245.9
3031B	14:59:17	274.7
3032B	16:54:14	303.4
3033B	18:49:11	332.1
3034B	20:44:08	.9
3035B	22:39:04	29.6

WED 16 JULY 1975 (197)

ORBIT	ASCENDING NODE TIME	NODE LONG
3036AX	00:34:01	58.3
3037AX	02:28:58	87.1
3038AX	04:23:54	115.8
3039AX	06:18:51	144.6
3040AX	08:13:48	173.3
3041AX	10:08:44	202.0
3042AX	12:03:41	230.8
3043AX	13:58:38	259.5
3044AX	15:53:35	288.2
3045AX	17:48:31	317.0
3046AX	19:43:28	345.7
3047AX	21:38:25	14.4
3048AX	23:33:21	43.2

THUR 17 JULY 1975 (198)

ORBIT	ASCENDING NODE TIME	NODE LONG
3049B	01:28:18	71.9
3050B	03:23:15	100.7
3051B	05:18:11	129.4
3052B	07:13:08	158.1
3053B	09:08:05	186.9
3054B	11:03:02	215.6
3055B	12:57:58	244.3
3056B	14:52:55	273.1
3057B	16:47:52	301.8
3058B	18:42:48	330.5
3059B	20:37:45	359.3
3060B	22:32:42	28.0

FRI 18 JULY 1975 (199)

ORBIT	ASCENDING NODE TIME	NODE LONG
3061A	00:27:38	56.8
3062A	02:22:35	85.5
3063A	04:17:32	114.2
3064A	06:12:29	143.0
3065A	08:07:25	171.7
3066A	10:02:22	200.4
3067A	11:57:19	229.2
3068A	13:52:15	257.9
3069A	15:47:12	286.6
3070A	17:42:09	315.4
3071A	19:37:05	344.1
3072A	21:32:02	12.9
3073A	23:26:59	41.6

SAT 19 JULY 1975 (200)

ORBIT	ASCENDING NODE TIME	NODE LONG
3074B	01:21:56	70.3
3075B	03:16:52	99.1
3076B	05:11:49	127.8
3077B	07:06:46	156.5
3078B	09:01:42	185.3
3079B	10:56:39	214.0
3080B	12:51:36	242.7
3081B	14:46:32	271.5
3082B	16:41:29	300.2
3083B	18:36:26	328.9
3084B	20:31:23	357.7
3085B	22:26:19	26.4

SUN 20 JULY 1975 (201)

ORBIT	ASCENDING NODE TIME	NODE LONG
3086A	00:21:16	55.2
3087A	02:16:13	83.9
3088A	04:11:09	112.6
3089A	06:06:06	141.4
3090A	08:01:03	170.1
3091A	09:55:59	198.8
3092A	11:50:56	227.6
3093A	13:45:53	256.3
3094A	15:40:50	285.0
3095A	17:35:46	313.8
3096A	19:30:43	342.5
3097A	21:25:40	11.3
3098A	23:20:36	40.0

MON 21 JULY 1975 (202)

ORBIT	ASCENDING NODE TIME	NODE LONG
3099B	01:15:33	68.7
3100B	03:10:30	97.5
3101B	05:05:26	126.2
3102B	07:00:23	154.9
3103B	08:55:20	183.7
3104B	10:50:17	212.4
3105B	12:45:13	241.1
3106B	14:40:10	269.9
3107B	16:35:07	298.6
3108B	18:30:03	327.4
3109B	20:25:00	356.1
3110B	22:19:57	24.8

TUES 22 JULY 1975 (203)

ORBIT	ASCENDING NODE TIME	NODE LONG
3111A	00:14:53	53.6
3112A	02:09:50	82.3
3113A	04:04:47	111.0
3114A	05:59:44	139.8
3115A	07:54:40	168.5
3116A	09:49:37	197.2
3117A	11:44:34	226.0
3118A	13:39:30	254.7
3119A	15:34:27	283.5
3120A	17:29:24	312.2
3121A	19:24:20	340.9
3122A	21:19:17	9.7
3123A	23:14:14	38.4

WED 23 JULY 1975 (204)

ORBIT	ASCENDING NODE TIME	NODE LONG
3124BX	01:09:11	67.1
3125BX	03:04:07	95.9
3126BX	04:59:04	124.6
3127BX	06:54:01	153.3
3128BX	08:48:57	182.1
3129BX	10:43:54	210.8
3130BX	12:38:51	239.6
3131BX	14:33:47	268.3
3132BX	16:28:44	297.0
3133BX	18:23:41	325.8
3134BX	20:18:38	354.5
3135BX	22:13:34	23.2

THUR 24 JULY 1975 (205)

ORBIT	ASCENDING NODE TIME	NODE LONG
3136A	00:08:31	52.0
3137A	02:03:28	80.7
3138A	03:58:24	109.4
3139A	05:53:21	138.2
3140A	07:48:18	166.9
3141A	09:43:14	195.7
3142A	11:38:11	224.4
3143A	13:33:08	253.1
3144A	15:28:05	281.9
3145A	17:23:01	310.6
3146A	19:17:58	339.3
3147A	21:12:55	8.1
3148A	23:07:51	36.8

FRI 25 JULY 1975 (206)

ORBIT	ASCENDING NODE TIME	NODE LONG
3149B	01:02:48	65.5
3150B	02:57:45	94.3
3151B	04:52:41	123.0
3152B	06:47:38	151.8
3153B	08:42:35	180.5
3154B	10:37:32	209.2
3155B	12:32:28	238.0
3156B	14:27:25	266.7
3157B	16:22:22	295.4
3158B	18:17:18	324.2
3159B	20:12:15	352.9
3160B	22:07:12	21.6

SAT 26 JULY 1975 (207)

ORBIT	ASCENDING NODE TIME	NODE LONG
3161A	00:02:08	50.4
3162A	01:57:05	79.1
3163A	03:52:02	107.8
3164A	05:46:59	136.6
3165A	07:41:55	165.3
3166A	09:36:52	194.1
3167A	11:31:49	222.8
3168A	13:26:45	251.5
3169A	15:21:42	280.3
3170A	17:16:39	309.0
3171A	19:11:35	337.7
3172A	21:06:32	6.5
3173A	23:01:29	35.2

SUN 27 JULY 1975 (208)

ORBIT	ASCENDING NODE TIME	NODE LONG
3174B	00:56:26	63.9
3175B	02:51:22	92.7
3176B	04:46:19	121.4
3177B	06:41:16	150.2
3178B	08:36:12	178.9
3179B	10:31:09	207.6
3180B	12:26:06	236.4
3181B	14:21:02	265.1
3182B	16:15:59	293.8
3183B	18:10:56	322.6
3184B	20:05:53	351.3
3185B	22:00:49	20.0
3186B	23:55:46	48.8

MON 28 JULY 1975 (209)

ORBIT	ASCENDING NODE TIME	NODE LONG
3187A	01:50:43	77.5
3188A	03:45:39	106.3
3189A	05:40:36	135.0
3190A	07:35:33	163.7
3191A	09:30:29	192.5
3192A	11:25:26	221.2
3193A	13:20:23	249.9
3194A	15:15:20	278.7
3195A	17:10:16	307.4
3196A	19:05:13	336.1
3197A	21:00:10	4.9
3198A	22:55:06	33.6

TUES 29 JULY 1975 (210)

ORBIT	ASCENDING NODE TIME	NODE LONG
3199B	00:50:03	62.4
3200B	02:45:00	91.1
3201B	04:39:56	119.8
3202B	06:34:53	148.6
3203B	08:29:50	177.3
3204B	10:24:47	206.0
3205B	12:19:43	234.8
3206B	14:14:40	263.5
3207B	16:09:37	292.2
3208B	18:04:33	321.0
3209B	19:59:30	349.7
3210B	21:54:27	18.5
3211B	23:49:23	47.2

WED 30 JULY 1975 (211)

ORBIT	ASCENDING NODE TIME	NODE LONG
3212AX	01:44:20	75.9
3213AX	03:39:17	104.7
3214AX	05:34:14	133.4
3215AX	07:29:10	162.1
3216AX	09:24:07	190.9
3217AX	11:19:04	219.6
3218AX	13:14:00	248.3
3219AX	15:08:57	277.1
3220AX	17:03:54	305.8
3221AX	18:58:50	334.6
3222AX	20:53:47	3.3
3223AX	22:48:44	32.0

THUR 31 JULY 1975 (212)

ORBIT	ASCENDING NODE TIME	NODE LONG
3224B	00:43:41	60.8
3225B	02:38:37	89.5
3226B	04:33:34	118.2
3227B	06:28:31	147.0
3228B	08:23:27	175.7
3229B	10:18:24	204.4
3230B	12:13:21	233.2
3231B	14:08:17	261.9
3232B	16:03:14	290.6
3233B	17:58:11	319.4
3234B	19:53:08	348.1
3235B	21:48:04	16.9
3236B	23:43:01	45.6

OSCAR 7 TELEMETRY AT 435.10 MHz and either 29.50 MHz (Mode A) or 145.975 MHz (Mode B)

The ostrich and the dinosaur

Amateur Radio as a hobby has many problems to contend with, mainly due to the very nature of electronic communication and its inherent regulation of available frequency space.

Today, as the world advances on an ever-rising curve of technology, we amateurs are in danger of becoming as extinct as the dinosaur. My belief is that this is not necessary, but large revisions in our thinking, and our actions, will be necessary.

The simple choice, of course, is to follow the example of the ostrich, and avoid any danger by refusing to face it. But would burying our heads in the sand, so to speak, be of any help? Perhaps the better way would be to adapt to the situation, and modify our thinking and actions to suit the changing rules.

Of course I am speaking of the current re-structuring proposal of the FCC. While many amateurs think some type of change is necessary, we do not agree as to what change, or how much change. It is apparent to the writer that some change will take place. Even in the event that the majority of amateurs do not wish any change, I firmly believe the die has been cast and we will have some type of change in our licensing structure. The question we must explore here is what will we do when these changes have been completed?

One major point of course is the prospect of quite a few new members in the Communicator class. The addition of this number, which could be even larger than the few thousand anticipated, will have a profound effect on all amateurs, even though you may never work the frequencies they will be on. In any democratic group, of course, the majority rules, and even the addition of 50,000 members will change the climate of our organization. We must adapt to these changes or, like the dinosaur, we will become extinct. We amateurs must put our thoughts together, evolve new ideas, and, if we desire, minimize the effect. For many years Amateur Radio has been changing. We have changed from primarily a technical group to a social group. The event of manufactured gear in the last 25 years has been primarily responsible, I believe, but we have gone along with this and almost ceased to make our own equipment.

Of course we still make a few things, and possibly ten percent of all amateurs still home-brew their stations, but this type of activity is on the wane. Very few articles are seen in our publications on building equipment, except small add-on items. The larger items are becoming so complicated, and require parts that are not readily available, that the average amateur gives up before starting. Can something be done about this? Like most American efforts, bigger and louder apparently is the best.

What effect will the new Communicator license have on traffic handlers? On the higher nets, not much as they will not be able to operate on those frequencies. But what about 2-meters? Are there many successful 2-meter formal traffic nets? If so how do they stack up? In areas of high density population they could be very successful, but in most non-metropolitan areas not enough amateurs are available. Is it possible for some method to be found to link repeaters successfully so that, let us say, a section net could be held on 2-meters? What would we have to do to interest these new members of the amateur fraternity in formal traffic handling? These are some of the questions that have to be answered. A combined effort by all amateurs is needed. Let us hear your ideas. As amateurs we have always come up with ideas, so let us try this problem.

There is no doubt that in the next few years profound changes may take place in Amateur Radio. Shall we be ostriches and not face the problems? If we do so we will go the way of the dinosaur. I hope this is not the course we take. Ideas anyone?

(Robert Schmidt, W5GHP,
in Louisiana Amateur
Traffic Bulletin)

Section calling frequencies

R.F.Franklin, K6TP, 1540 Portola Dr., San Francisco, CA 94127 has generated a new twist to the old National Calling and Emergency frequencies. Remember those?

Every traffic handler realizes there are areas in their section where it is almost impossible to find an outlet for traffic at times. Other times a message has a time factor involved and it can't wait till the next net session. The proposed SCFs would help eliminate these problems.

K6TP proposes establishment of Section Calling Frequencies (SCFs) to be monitored by any and all amateurs in each section who might be willing and available to take a message for delivery in their respective communities. A directional CQ for the location needed could be made on the SCF. After initial contact the stations could QSY to SSB if desired. He suggests 80-meter CW for the SCFs because of the short range involved and because 80-meters has so many available frequencies. VHF or 160-meters are possible alternatives.

K6TP suggests that simple integrated circuit receivers (complete with squelch) could be built for use only on the SCF.

There is some merit to a system like this. However, there are also some drawbacks. It would require much publicity. How many amateurs would build or dedicate a receiver all the time? Will amateurs in towns without traffic outlets now become interested and participate? How about autostart RTTY on VHF simplex or through a section wide repeater as an alternative?

What do you think? Let Franklin and myself know your ideas.

Bits

1. The Medical Amateur Radio Council, Ltd., is a group designed to meet scientific, medical-electronic, and radio communications needs. They have a weekday net at 0100Z on 7236. Dr. J. Stanley Carp, K1EEG; Fred Williams, WA4EFX; William Collins, K8NQC; Donald Ore, WB9 CMT; Sanford Bear, WA9JXT; Dr. Robert Clifford, WA8MPV; Mervin Grossman, W5FIB; Walter Thain, WB4KKB; and Richard Sanderson, WB5DWP serve as net control stations. If you are medically connected why not drop in on their next net session. For a copy of an excellent newsletter send an SASE to Joe Boris, PO Box 229, Manchester, CT 06040.

2. The Pacific Area Net summer frequency is 7072.

3. The Golden Bear Net (Calif.) meets on 3975 at 0200Z.

4. The ARRL Communications Department says traffic reported to the net manager may only include traffic cleared between QND and QNF. This means you should hold the net open until all traffic is cleared. If you must close the net before all stations are finished passing traffic, estimate how much traffic has been cleared before QNF. Remember, you should always be present while stations are off frequency passing traffic in case they have trouble.

5. The Amateur Radio Telegraph Society (ARTS) has 365 members in its first year of operation. Members should have an SASE on file with W5UH. The calling frequency has moved to 7100 kHz. You can become a member for $2.00 per year to Hubert Williams, W5UH, Gen. Del., Silver City, NM 88061.

●

of musical ability. Once you develop a rhythm you can swing along in great style.

Psychology has discovered a "learning plateau". It happens to young and old during the process of learning. It includes everything from finger-painting to CW operating. The first plateau seems to occur between eight and 10 words per minute, and the second somewhere around eighteen. This is the point where your copying ability seems to have topped out. Try as you may, it will seem that you've had it. You can't go any faster. Many operators give up when they hit one of these mental road blocks.

As in the study of any other subject, they have and can be overcome through the application of two human qualities, patience and perseverance.

You can succeed as many have before you. When you have you will enjoy the fruits of your labor and discover that CW has a lot more to offer than you thought, or were led to believe in the beginning.

You will have become an artist in the use of dots and dashes. In addition you will find yourself a member of an old and flourishing group of operators who recognize that CW still has a place in the sophisticated world of communications.

What about the modern world of electronics where machines can converse with each other over thousands of miles of the earth's surface and out into space? Who needs CW when we have SSB along with RTTY that runs a hundred words a minute or better?

The answer is, "We still need it."

Experience has proven that when all else fails CW can get through and get the job done. In emergencies such as those so well documented, communications is the means for survival. You may have the finest equipment that money can buy but that doesn't mean that one day, possibly when you need it the most, it won't quit on you. Then what?

Somehow, with an amateur's ingenuity and resourcefulness, with bits of wire and scavenged parts, you can get a carrier on the air and communicate, even if it means tapping two pieces of wire together to make dots and dashes. History proves it can and has been done.

Don't sell CW short. If you take the time and expend the effort to learn it you might enjoy it.

Who knows? One day, the life it saves might be your own!

INTERFERENCE

Dr. Theodore Cohen, W4UMF

RFI bill introduced into the 94th Congress

Here it is! Introduced into the House of Representatives by the Honorable Charles A. Vanik (Ohio) on 15 May 1975, H. R. 7052 is the type of enabling legislation long needed to cope with radio-frequency interference (RFI) problems. This legislation, if it becomes law, will give the Federal Communications Commission (FCC) the right to regulate the manufacture of electronic home-entertainment devices such that the susceptibility of these devices to signals from nearby radio transmitters is reduced.

As you will note, the Bill has been referred to the Committee on Interstate and Foreign Commerce, and specifically to the Sub-committee on Communications. Here, the Bill must receive a hearing before it can be sent to the House of Representatives for action. If the Bill is to receive a hearing, however, the Congress must be made aware of our support for such legislation . . . . support which we can demonstrate by writing letters or sending telegrams to the Chairman of the Subcommittee on Communications:

The Honorable Torbert H. MacDonald, Chairman
Subcommittee on Communications
Room B331
Rayburn House Office Building
U.S. House of Representatives
Washington, D.C. 20515

The letters do not have to be long, though background material on your or your neighbor's RFI problems could be of importance. Even a note to the effect that you support H.R. 7052 and respectfully request an early hearing on this Bill would be a valuable contribution to the effort.

While you're at it, why not send a short letter to your Congressman, indicating your desire that he support H.R. 7052. Please send us a copy of any response you receive.

The time is right for legislation such as the proposed by Mr. Vanik. Consumers are becoming increasingly aware of what we amateurs have known for a long time; that is, that the majority of RFI problems are not due to interference **per se**, but are due to the **interception** of signals by devices which are not designed to operate in today's urban and suburban rf environment. And the only way of eliminating over 90% of all problems is through legislation such as H.R. 7052 which could eventually require the manufacturers to correct those design deficiencies which lead to RFI!

We need letters . . . letters from you and your neighbors, your fellow amateurs, your club. In short, each and every person or group who has had, or may eventually have, an RFI problem should be solved for all time.

It's up to us. Now is the time to lend your support to this vital effort! Write today, and make your voice heard!

Congress

(*continued from page 8*)

cost of at least $5 means that television interference cannot be cleared up at home for under $21. Usually this cost runs much more, as anyone who has ever had to call a television repairman can well testify.

The interference-free television is a reality. Grundig, a major German manufacturer of televisions, has already constructed just such a set. The German set, however, was not inspired by any internal motivation. The German National Post Office (DBP), the electronic licensing authority for that country, had earlier announced that it was going to seek legislation that would give it the authority to require manufacturers to reduce the susceptibility of their products to RFI. The parallel is obvious. The same sort of stimulus is necessary in the United States if we are going to resolve the rising problem of RFI due to the rapid increase in properly operating radio transmitters and other sources.

The Federal Communications Commission feels that its hands are tied in dealing with RFI. Currently they are able to regulate the equipment that emits radio frequency energy, such as the television set or the radio. As a result, there is nothing that can be done to properly protect the consumer from the problem. My legislation would give the FCC the power to regulate the other side of the coin. The FCC would then be able to control interference to both the broadcast and the reception of radio signals.

This legislation is long overdue. There are several factors that underscore its urgency. It is needed in view of the increasing dependency on television and radio as prime communications media. It is needed in view of the increasing reports of violence due to RFI. It is needed to insure the consumer that he will get high quality interference-free equipment for his hard-earned money.

The bill follows:

H.R. 7052

A bill to amend section 302 of the Communications Act of 1934 to authorize the Federal Communications Commission to prescribe regulations with respect to certain electronic equipment that is susceptible to radio frequency energy interference.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) section 302 of the Communications Act of 1934 (82 Stat. 290; 47 U.S.C. 302a.) is amended as follows:

(1) Subsection (a) of such section is amended—

(A) by inserting "(1)" immediately after "governing" in the first sentence;

(B) by striking out the period at the end of the first sentence and inserting in lieu thereof ", and (2) the use of protective components in audio and visual electronic equipment which are capable of reducing interference to such equipment from radio frequency energy."; and

(C) by striking out "shipment, or use of such devices." in the second sentence and inserting in lieu thereof "or shipment of such devices and electronic equipment or the use of such devices."

(2) Subsection (b) of such section is amended by striking out "ship, or use devices" and inserting lieu thereof "or ship devices and electronic equipment or use devices".

(3) Subsection (c) of such section is amended—

(A) by inserting "or electronic equipment" immediately after "devices" wherever such terms appears in the first sentence;

(B) by inserting "and electronic equipment" immediately after "Devices" in the second sentence; and

(C) by striking out "the common objective of reducing interference to radio reception," in the second sentence and inserting in lieu thereof "the objectives of reducing interference to radio reception and to electronic equipment."

(b) The heading for section 302 of such Act is amended to read as follows:

"INTERFERENCE WITH RADIO COMMUNICATIONS AND ELECTRONIC EQUIPMENT"

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Maple Ridge Amateur Radio Club
-presents-

Maple Ridge Hamfest '75

The social event of 1975
for every aware amateur!

July 11-12-13
at
Maple Ridge Fairgrounds
on Highway 7
Maple Ridge, B.C.

25 beautiful miles east
of Vancouver on the north bank of
the Fraser River

Technical Seminars:
On amateur oriented subjects, such as Oscar, VHF-FM, Mobile HF, Slow Scan TV, RTTY, HF Antennas, Direction Finding, Etc.

Displays:
Manufacturer displays — see the newest equipment!
Technical displays — see how a bazooka is made!
DOC display — see what your rig REALLY does in the DOC van.

Contests:
Hidden transmitter hunt (2 M)
Horse shoe toss for family
Special Ladies' & Children's activities
Home brew contest
Mobile installation judging
Resistor hunt

Events:
Saturday evening Dinner and Entertainment ($6.00 each)
Flea Market — Swap 'n' Shop

Features:
Food Service — Camping Area ($2.00, sorry no hookups) — Movies — Slide Shows — Radio Control Model Aircraft (Static and flying) — Special Ladies' Program — Games for Kids — Opens Friday 5 p.m.

Registration Information:
Advance registration with Saturday Evening Dinner — $6.00, without meal — $3.00 — both include all other activities.

Advance registration to June 30, 1975. Thereafter and at gate — $7.00, without dinner $3.00.

Children under 12 free, with dinner — $3.00.

Registration Chairman: Bob Haughton, VE7BZH, 20623 114th Ave., Maple Ridge, B.C. V2X 1J7. Phone: (604) 465-4247.

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Blood needed

Howard Collister, WA6CWF, suffered a ruptured aneurism of the abdominal aorta recently (last of March). Fortunately, it gave warning by leaking a little first so he was already in the hospital and the surgeon handy when it really let go. He received 16 pints of blood which should be replaced (some has been, but not enough). Anyone able to do so, please go to the nearest Red Cross Blood Bank and give a pint for Howard. Be sure to specify whom it's for: Howard Collister, 9238 La Shell Dr., Tujunga, CA 91042.

CLUBS

In January of 1975 this newspaper announced a new program, in conjunction with **The Callbook**, of making available to local radio clubs the names and addresses of the newly licensed amateurs in their areas.

The idea was that the clubs would use the gummed labels they would receive to invite the new amateurs to their club meetings.

We asked for 12 self-addressed stamped envelopes (SASE) from the clubs and said at the end of the year they would be billed three cents for each label they were sent.

We were underwhelmed by the response. Friends of ours in various clubs told us why their clubs didn't go for the idea. The opposition ranged from "that might end up costing us a lot of money" to "we tried something like that about ten years ago and we didn't get many new members."

When you know that in the entire United States in the year 1974 we produced only 14,734 new amateurs (a pathetic figure), no single club is going to get a huge dent made in its treasury.

It was interesting to see which clubs went for our offer. Among them were the "sharp" clubs, such as The Englewood Amateur Radio Association (NJ); Cleveland, OH; The Yellow Thunder Amateur Radio Club, (WI); Saint Paul Radio Club (MN); Santa Barbara Amateur Radio Club (CA); Radio Amateur Mobile Society (CA); Radio Club of Tacoma (WA); and a few others. Mostly they are the clubs with a national reputation for being "top" clubs. The up-and-coming club in Palm Desert (CA) was in there and a special mention should be made of the Hall of Science Radio Club (NY). This club is doing so many things and has so much going for it that it may end up as the "model" club.

Since it may be the very clubs that need some "live-wire new-blood" that didn't respond to our offer, we are going to modify it and aim it in another direction.

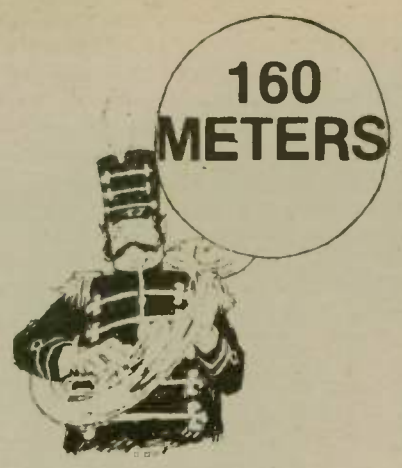
There will be NO charge for the gummed labels. We ask that the interested INDIVIDUALS send us 12 SASE (you'll invest about $1.50). Tell us the first three numbers of the ZIP code that your club covers. Each month you will receive the gummed labels of the new amateurs. Copy the names and addresses off on a card file (for later follow-up), put the label on a postcard, and tell the new amateur about when and where your club meets.

You know, if your club would send out 100 such invitations and get but two new members, the dues they bring in would pay for the mailing.

So let's break out the amateur spirit. Take it upon yourself to spend a few bucks a year to bring more into the advantages that a club offers. We would talk about the fraternal spirit but when more than 11,000 people see our offer and only 13 clubs respond, we sometimes wonder.

How many new amateurs can you expect in your area? A rough rule of thumb is, take the num-

[*Continued on column 4*]



Stew Perry,W1BB

I've just returned from my South Pacific trip. It was a combination sea and air tour and there wasn't much time for "hamming." Grehem Eden, ZL3UC, in Christchurch, entertained my XYL and I quite royally one evening. We also visited with Lee Wical, KH6BZF; Katashi Nose, KH6IJ; Jack Wheeler, KH6CHC; and Keith Martin, K6YL; who is radio operator on the *S.S. Mariposa.* That reminded me of the days I was a commercial "sparks", 1919-1926. I so loved it being in the radio room on shipboard. The friendships developed from radio are one of the most important things.

My next 160 bulletin will be issued around the first of October to coincide with the new '75/'76 season on 160 to start then.

Right now, for the summer, the point of interest is the 160 Trans-equatorial Activity Period each evening from 0000 to 0030Z when East Coast and Europe stations north and south of the equator try to contact each other. Summer is the best time for north-south contacts. The W/VE and South America stations should work in 1800-1810 and the Europe stations 1825-1835. Rolf Rasp, PY1RO, and Paddy Smyth, EI9J, are the sponsors of these tests which are enthusiastically supported by the 160 gang. There doesn't seem to have been much desire for the same on the West Coast and Oceania so none has yet been set up.

Here's a quick run-down on just a bit of the good DX to be found on 160: ZE7JX, ST2AY, 4X4NJ, 4X4UR, 9L1JT, JY9FOC, HH2WF, VP8NP, OA8V, EP2BQ, and much more.

How much is really necessary to work out on 160? Well, Phil Ashton received his WAC, having done the whole thing with nine watts. Phil is now trying to do it all over again with five watts.

More and more DXpeditions are taking 160 gear with them. Charles O'Brien, W9NFC, now W2EQS, did an excellent job at 6Y5 making 327 QSOs and giving many a new country.

Possibly all those new products from the Dentron Co., antennas and tuners for 160, will lead to more occupancy on the band. The narrow response CW filters on the market may prove to be of real benefit to 160 CW buffs.

We've heard from people who are not on 160 meters but who read this column. They say that what they find here clears up the common misconception that you "need a lot" to make a go of it on 160. So here's a bit more along that line. In the ARRL 160 contest last December, Brice Anderson, W9PNE, running power from 250 milliwatts (that's right, mw) all the way up to a big five watts, made 249 contacts in 64 sections, 43 states and six countries. Yes, you could say WOW about that.

The more 160 news you send in, the more 160 news we'll print here. Fair enough?

CLUBS

ber of amateurs living in your area and divide that by 20. That will be approximately the number of new licenses you can expect in one year.

So bundle up 12 SASE, send them to **Worldradio**, 2509 Donner Way, Sacramento, CA 95818, tell us the first three numbers of the ZIPS you want covered, and you are in business.

Something new. **Worldradio** will start a new and, we believe, most prestigious award, "The Club of the Year." This will be a trophy award with suitable recognition in this newspaper.

We'd like your input to set up the criteria for the award. For such an award a rather complex judging and entry form would be necessary. For a start: ratio of average meeting attendance to paid membership, quantity, quality of the club bulletin, licensing classes, participation in Field Day (Speaking of Field Day, look for K6FO/6; that will be the **Worldradio** gang.) SET, publicity about the club in local news media, recruiting of prospective members, club station and emergency power source, working on local public service projects, exposure to the non-amateur public (fairs, field day, etc.).

OK, get in your ideas on what a club should be judged on and what weight each category should be given. Possibly we might do a "Club of the Year" in each call area if the interest was there.

Possibly we'll set up a special board to go over the entries, people like Dave Flinn, W2CFP; Sybil Allbright, W6GIC; Dave Popkin, WA2CCF; Jerry Skinner, K6LU; Richard Schaak, K7GGD; Phil Sager, WB4FDT; Ed Comeau, W1JWA; Myron Braun, K8IQB; Joe Buswell, WA5TRS; Thomas Wulling, K9APS; Warren Bermann, W0TDR; and of course the gung-ho Berge Bulbulian, WB6OSH. There's our board (if they all accept). They'll have to abstain when their own clubs come up in the voting.

So, that's the beginning of "The Club of the Year." Let's hear from you.

Drama *from page 1*

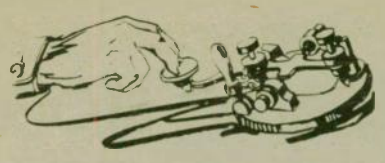
to "turn it on and yell for help" if they ever got in serious trouble, that made the rescue possible.

19 hours after the first "Mayday" the *Honeybee* was talked into Grand Turk harbor by VP5GT and hundreds of sleepless amateurs breathed sighs of relief. Listeners commented on the extraordinary discipline during the long operation, both of the active stations and those just standing by. "Well done!" to all.
HR Report

MM *from page 28*

direct them toward classes, great. If not, suggest books and study guides. Offer to talk at Power Squadron and Coast Guard Auxillary meetings and classes. With a little push to get the snowball rolling, we might find a ham rig on every vessel. Well, by that time we will have twice the band space!

Enough said. As the editor screams for my scripture with the sound of the presses rolling, I wish you all pleasant sailing



NOVICE

Reading this column may change your entire Amateur Radio operating career.

Many Novices get discouraged because when they go on-the-air, everytime they make a contact, "someone else always comes on top of them." Well, that isn't quite true. It only seems that another station comes on top of the station you are working. You can set up your station to avoid what seems to be this constant problem.

Explanation: Just about every rig you buy is set up to receive phone signals and, as such, they have a bandpass of about 2700 Hertz. Now, a CW signal only takes up about 40 Hertz, so you can see it is a case of having a wide open barn door. The signals are not really on top of each other; they only seem that way.

Some of the rigs have a CW filter, but that is usually an accessory and a rather expensive one at that. Some of the rigs don't even have a provision for plugging in the CW filter.

So what do you do?

You add a filter between the output of the rig and your earphones. Yes, we said earphones. Use 'em. You'll hear the really weak signals that way. The filter narrows the response of the bandpass of your receiver.

There are several on the market. You'll see the ads here in **Worldradio** and the other publications. We would recommend sending for the free MFJ catalog at PO Box 494, Mississippi State, MS 39762.

What will the filter do for you? It can make the difference between hearing three signals all coming in at once at the same strength and just receiving one of them in the clear. It will also give a good amount of gain to the signal and take stations that are down in the mud and bring them up to perfectly copyable level. What is happening in that case is when you narrow the bandwidth, you also decrease the noise.

For those of a technical bent here is the scoop. If you cut the bandwidth in half you will gain 3 db. Cut it in half again and you pick up another 3 db gain. You now have a total of 6 db gain. That's the same as one "S" unit or the same improvement as if the other station increased his power by four times. It's like hanging a two-element Yagi on your feedline when you pick up 6 db again.

Now, look at this. Start with 2700 Hertz, cut it to 1350, cut it to 675, cut that to 327, cut that to 163, and then cut that to 80 Hertz.

You have reduced your bandwidth to one-thirty-third of what it once was. That's something. Yes, an outboard filter for about $20 can do that for you, and the kit price is only $14. I can tell you that you will be amazed at what these filters will do for you. If you don't believe me...well, Martin Jue, K5FLU, will give you your money back in 30 days if you aren't happy with the results. You can't beat that, can you?

You shouldn't take the fact that your receiver doesn't have such a thing built in as an indictment of the manufacturer. It's like you don't need racing tires on a car unless you are going to race.

We've used the filter and gave it the ultimate trial, which is listening to the 40-meter Novice band on a Sunday afternoon. Marvelous. You'll wonder how you got along without it. There probably isn't a receiver that it wouldn't make a considerable difference on. Try it; you'll like it.

Speaking of CW, have you noticed that a lot of your contacts seem to end with the other station getting a phone call, or his wife (or mother) has called him to do something?

Here's how you can put a stop to that. Send some code into your tape recorder. Then copy your own code. Hmmm. Are the words running together? Are the dits and dahs almost the same length? Are the letters all running together?

OK, now that your sending is like it should be, we'll help you get more DX QSL cards. First, check the "dead bands", 10 and 15. They are really not always dead.

The problem is that everyone is listening and no one is doing any calling. Persistence will pay off. As for 10-meters, the other day one amateur worked 48 states in one weekend. How 'bout that!

Now that you have worked him, get the card. To do that you must, must, repeat must, keep your log in GMT or, as it is called now, UTC (Universal Time Coordinated), or as we will probably always call it, "Zulu". One of the 24-hour clocks will make it much easier. The important part is to know when the day changes so as to put down the right date.

In the Pacific Time Zone at 4:00 p.m. (local time) during daylight savings time, you put down the next day's date. In the Mountain zone, 5 p.m., Central is 6 p.m. and Eastern 7 p.m. During normal time those times would be one hour later. Zulu time itself never changes.

As to the date, don't keep your log, or send out cards, with 1/31/75. Write it out as 31 January 1975. Just about the whole rest of the world puts the day before the month. If you put down 5/6/75 it will confuse the operator on the other end.

Remember, the Amateur Radio Service is an international access tool and you don't want to look like some provincial bumpkin to the rest of the world.

Since many of you have just finished a class which led to your license, we'd like to hear from you. What did you think were the good points of your class? What did you like? What didn't you like? How do you think it could have been done better?

We have another column in this newspaper for the class instructors and you are probably in the best position to give some meaningful input to that column.

Don't forget to send in what you are doing on-the-air to this column. Again we'd like to mention that **Worldradio**, to encourage your participation in Amateur Radio, has a special price on subscriptions for Novices. Regularly $5 a year, for a Novice's first subscription you get it for $4. We do that to give you a little boost at the beginning of your amateur career. When you get your Advanced, then you'll take a three-year sub, and when you are rich and famous you'll take out a lifetime subscription. In the meantime, keep those cards and letters coming folks.

W6AJY

CW

Ken Johnson, W6NKE

Over the past years I've frequently heard the following comments: "I can't learn the code," and "Who needs it anyway since it's an outmoded method of communication?" My answer in both cases is an "X" rated version of "bull feathers."

I firmly believe anyone, if he or she wants to, can become a proficient CW operator, provided, of course, that he doesn't submit to a psychological roadblock on the subject. If you don't think you can learn the code you won't be able to. If you build up an excuse mechanism as "who needs it anyway" you will certainly fail, even if you try.

Think positive! It will surely help!

There are many good books available on learning the code so I'm not going to attempt to "re-invent the wheel." However, there are several tidbits that are well worth repeating.

In the beginning learn to write, not print, your copy on paper. If you don't you'll have a heck of a time changing over as your speed increases.

Learn to recognize letters by their sound, not by the way they look. Your mental/physical reaction time required to convert sound into a mental image to a movement of your pencil point will kill you right at the start. As you progress you will find that, by sound, you will begin to recognize words along with letters. The end result is similar to learning a foreign language.

The fellows that copy twenty-five words per minute and up do it by word, just like listening to a spoken conversation. It becomes as automatic and effortless as reading this line of print. It isn't easy, but once you get the hang of it you will amaze yourself.

Try to develop a rhythm to your sending. Many of the top CW men seem to have some type

TEACHER

Lately the FCC has been drowning in applications from other radio services and have fallen behind in their normal flow of work output.

The return of the Novice theory test has been taking much longer than usual. It might be wise to accelerate the code teaching in the class so as to get the application in to the FCC as soon as possible. Use the time after the application has gone in to spend on the theory.

Some classes do the first half of each night on CW and then the last half on theory. It might be better to break it up having three short CW sessions a night in between theory sessions. Try twenty minutes of each.

We hear that many clubs or individuals start a class and are disappointed saying "nobody came". The question is, what did you do to let people know that such a class existed?

At a recent Division convention we were talking to an SCM. He said that many people are referred to him and ask where the licensing classes are held. He related, sadly, that those holding the classes never told him about them. He also complained that the clubs didn't keep him informed as to their meeting times and places.

It does bring up the question, are we communicators who don't communicate? Your SCM should receive your club bulletin. Send one to your director also. The ARRL would like to see it too, and while we're at it don't forget **Worldradio.**

Now, if you are running a class, let us know about it. We'll print it right here so other amateurs in your area will see it and can pass on the information to interested parties.

If you are looking for material for your classes write to the ARRL. They have tons of it for you. There is also a wealth of films on every subject imaginable. I'll never forget the Signal Corps training films we saw at Camp Gordon while going through MOS 1648 school. The vacuum tube was explained by monkeys throwing coconuts from the cathode to the plate and another monkey ran the venetian blinds that represented the grid. Well, it did get the point across.

If a retired person really wanted something useful to do he could make a second career out of constructing teaching aids. Don Johnson, W6QIE, has some terrific aids at his classes. On the front of the board are large schematics; in back of the board the parts are mounted. By making connections on the front, the various parts are hooked up and the results are noted by the class.

We'd like this column to be an "idea exchange" on what procedures you are using to teach. So send in your ideas.

In this column before we have addressed the topic of greater liaison between the FCC and the licensing class instructors. We have used as an example the way the FAA and flight instructors and examiners work together.

Yesterday we ran into this item:"Ruth Zimmerman, a pilot since 1965 and a flight instructor since 1969 at AirKaman's Flight School in Windsor Locks, CT, has been named Flight Instructor of the year for New England by the Federal Aviation Administration. She was chosen from among 1,636 flight instructors throughout New England in recognition of outstanding contributions to air safety through flight instructions practices."

That shows pretty close cooperation between a Federal agency and a private individual.

What we would like to see is the instructors be allowed to see the FCC tests so as to guide them in making up the curriculum. Also, we would like to see the instructors (since they are on the firing line) be consulted as to what they think should be on the test and what they think shouldn't be on the tests.

There are safeguards that could be applied to prevent abuses and they were discussed last month in this column.

Here is another; in trade for the instructor being able to know what is on the theory test, we think that the applicant's CW test should be sent in to the FCC with the application. The instructor could underline the good minute so as to save FCC staff time. This would stop some of whatever fudging there may be occurring. It seems there would be a greater sense of seriousness if the student knew that the CW test was going in.

We would also like to see not the 25 five-letter words, but have all numbers and period, comma, question mark and slant bar be included on both sending and receiving tests.

Incidentally, in our classes, to prevent the "freezing up" many people experience at "test time", it is NOT announced that this is the CW receiving test.

The 25 five-letter words are sent to the students as part of their normal practice. The papers are handed in and those who passed are so informed. Neat trick.

The package of tests arrived yesterday so later tonight (3 June) I'll be administering 19 Novice tests. Done in a classroom situation I have them all sit with a chair empty in front, back and to the side. Nothing else can be on the table except test, answer sheet and pencil. Math work is done on the envelope the test comes in. This is all not done in a heavy-handed manner but does impress upon them the seriousness and maintains the integrity of the volunteer examiner system. And just like "downtown" they are told ahead they can't leave the room once they start, so take care of everything ahead of time.

This is my third quarter of teaching a class through the adult education program here in Sacramento and for me it has been one of the most enjoyable experiences.

W6AJY

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ANTENNAS

Every so often you'll hear someone say, "I had a high SWR. I cut eight feet off the feedline and it went down."

Tain't so, McGee. There is nothing you can do at the transmitter end to correct a mismatch at the antenna. And length of the feedline has absolutely nothing to do with it. What is really happening is that the person was measuring the SWR at a different spot and getting a different reading, and there is a good chance that one or the other or both were in error.

There are only two ways to really measure the SWR accurately. One is right at the antenna itself. That may be impractical, so the other alternative is at multiples of a half-wave length. And that is important. Please know that if you are measuring SWR at the transmitter through a random length of coax, the reading you are getting is really telling you that the SWR is no lower than that and, in reality, can be anything higher.

For the amateur who wants his antenna to be as perfect as possible there is a wonderful tool Strange, in that it is really a marvelous tool and at the same time is the least used and possibly most misunderstood device.

We're speaking of the antenna noise bridge. And, sadly, we've known amateurs who have used it to go for maximum noise, or turned the transmitter on while using it. (When all else fails then go read the directions.)

First, you can use the noise bridge to find exact multiples of a half-wavelength feedline. Now, while the velocity factor is given in the books, you may find that two pieces of coax off of the same spool will display different lengths when accurately measured with a noise bridge.

With the noise bridge, your receiver and a pin, you can cut lengths right down to the nubbin. You can also make quarter-wave

(*please turn to page 39*)

Book Review

Vintage Radio has done it again. This time they have added Morgon McMahon's book, **A Flick of the Switch**, to their vintage radio series.

The reader is taken back in time to the formative years of radio and television broadcasting.

The reader will thoroughly enjoy his reunion with Will Rogers, The Lone Ranger, Jack Benny-Fred Allen; soap opera pioneers such as "Just Plain Bill" and "One Man's Family"; perhaps the spoken words of well-known Edward R. Murrow saying, "This is London." Included is a written account of Herbert Morrison's live on-the-air description of the terrible Hindenburg disaster as he stood, microphone in hand, below the burning Zeppelin. It was May 6, 1937 at Lakehurst, New Jersey.

The author, Morgan McMahon, has quite effectively cornered, in eight picture-filled chapters, many aspects of the development of public broadcasting and communications.

Several chapters contain page after page of pictures and descriptive data on vintage radio sets, early television sets, amateur radio equipment, World War II radio electronics, and even a chapter dedicated to the radioman, which gives a profile of the men and women who yielded to the call of the adventure and took training in military and commercial radio operations.

Of particular interest to me was Chapter IV, "Amateur Radio." Here the reader will enjoy a pictorial encyclopedia of amateur radio receivers, transmitters and accessories manufactured and sold between 1930 and 1950. This equipment is listed in alphabetical order by manufacturer, and by year.

Those veterans amateurs among us who owned a Collins, Hallicrafters, or perhaps a National receiver during the thirties and forties, as well as those less seasoned amateurs who put these same sets in their radio shacks during the fifties and sixties, will certainly enjoy this exciting tour back into amateur radio nostalgia.

A Flick of the Switch portrays the 1930-1950 era in 312 pages with over 1,000 pictures and old radio and television advertisements. This book is truly unique in that it deals with both the memorabilia and the people who contributed to broadcasting history.

A Flick of the Switch sets such a mood that one cannot help but recount glimpses of his own childhood and family settings, where the then new Philco table model radio sat on the kitchen table near the window, or maybe it was the Atwater Kent console (which to a small boy seemed to be eight feet tall) stood on the living room floor next to dad's over-stuffed chair.

I highly recommend this book to anyone whose experiences or interests extend back into radio's yesteryear. For the collector, a most valuable and useful source of information which is set forth in a very well organized format.

The book is priced at $9.95 hard cover and $6.95 paperback. Both editions are handsomely bound and attractively printed.

As a nostalgia nut and radio buff, a personal thanks to author Morgan McMahon for his excellent and authoritative contribution to radio history.

Craig Rutledge, WB6KTR

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New Repeater Directory

A new T-MARC Repeater Directory is just off the press. It lists all repeaters in Delaware, Maryland, North Carolina, South Carolina and Virginia.

To obtain your copy, send SASE to T-MARC, PO Box 549, Springfield, VA 22150.

ANT. *from page 38*)

length lines for use as harmonic filters.

After you make the half-wave lines for your feedline you can accurately find the exact impedance of your antenna system and the resonant frequency. After you work with the noise bridge you'll wonder how you ever got along without it.

It can be used on any type of antenna, Yagi, quad, mobile, etc. You can also use it to set up your antenna tuner and mark the spots for various frequencies on a long wire or whatever. Read the directions carefully and then go for the null (minimum noise).

Not only does getting the antenna to resonance give maximum output, but the signal-to-noise ratio on receive will improve.

Using the noise bridge is the best way to really get the system radiating at its best. They range in price from 25-35 dollars, the more expensive one having extra features but the lower price will do the job. Since it is something that isn't used every day a group of amateurs living nearby might chip in and buy one to be used by all or a club might buy one. Note: it is absolutely necessary that the feedline be cut to the multiples of the half-wave to get the accurate readings of the resonant frequency and impedance.

Remember, this unit will tell you the truth about your antenna. After everything is pruned to the best you can get it, then the SWR bridge will give you accurate and meaningful readings. And you'll never be one of those who says, "I cut eight feet off the feedline and the SWR went down." After you have the big signal on the band, remember that you read it here.

OSCAR

Official slide collection .....

AMSAT-OSCAR 7 35mm color slides are now available. These are ideal for amateur radio club shows and telling civilians about the amateur radio space program.

Send $5.40, check or money order to:

Norm Chalfin, K6PGX
P.O. Box 463
Pasadena, CA 91102 USA

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If you are one of those people who are saying it can't be done then stay out of the way of the people who are doing it.

WV School for the Blind

The West Virginia School for the Blind is looking for Novice crystals and Novice transmitters for their newly formed radio club.

Any contributions will be greatly appreciated. Twelve Novices are now in the group with several ready for General. Any transmitter not working properly will be accepted and put in working order.

Send your contributions to John G. Freeland, W8GSN, c/o West Virginia School for the Blind, Romney, WV 26757.

THE MART — CLASSIFIED
Private individuals, 5 cents a word
Business firms, 10 cents a word
Send to:
The Mart, Worldradio, 2509 Donner Way, Sacramento, CA 95818

Frame, Display and protect your QSL's with 20 pocket plastic holders, 2 for $1.00, 7 for $3.00 prepaid & guaranteed. TEPABCO, Box 198W, Sallatin, TN 37066.

Complete 36 page QSL catalog! 300 cuts, stock and ink samples. Ten sample QSLs. 25 cents to Corneilson's, 321 Warren St., N. Babylon, NY 11704.

Medical: Any licensed amateur radio operator in the medical or paramedical field should join MARCO (Medical Radio Council). Contact: Stan Carp, M.D., K1EEG, 44 Main St., Saugus, MA 01906, (617) 233-1234.

Editing a Club Paper? Need Some help? Amateur Radio News Service would like to hear from you. For info., write: Rosemary Willis, Sec'y, 9276 Borden Ave., Sun Valley, CA 91352.

Revolutionary!!! Learn or improve CW ability the easiest way. Developed by Russ Farnsworth, W9SUV. 13 wpm in half the time. 3 LP records, $9.95, CA + tax. DANA RADIO, 2704 16th St., Sacramento, CA 95818.

Be prepared for emergencies with the SST T-1 Random Wire Antenna Tuner. Also great for field day, camping trips, and home operation. Tunes a random wire for all band operation. $24.95 postpaid. 1 year guarantee. See large ad this issue. SST Electronics, Box 1, Lawndale, CA 90260 (Calif. res. add 6% sales tax).

Wanted: An opportunity to quote your ham needs. 36 years a ham gear dealer. Collins, Drake, Ten-Tec, Swan, Kenwood, Temp, Clegg, Regency, Icom, Hy-Gain, and all others. Also $25,000 inventory used gear. Request list. Chuck, W8UCG, Electronic Distributors, Inc., 1960 Peck St., Muskegon, MI 49441. (616) 726-3198, Telex-22-8411.

Beginners RTTY Handbook — Brand new with everything you need to know to get on RTTY. Theory, application and simple equipment you can build. $2.50. Published by the RTTY JOURNAL, PO Box 837, Royal Oak, MI 48068.

Rubber stamps, $2.50 includes postage. NJ residents add tax. Clints Radio Service, 32 Cumberland Ave., Verona, NJ 07044.

Free QSL samples — stamp appreciated. SAMCARDS, 48 Monte Carlo Dr., Pittsburgh, PA 15239.

Travel-Pack QSL Kit — Send Call and 25 cents; receive your call sample kit in return. SAMCO, Box 203, Wynantskill, NY 12198.

Used Mylar Tapes — 1800 feet, ten for $8.50. Used 8-track 94 minute (RCA Red Seal), ten for $20.00. Postpaid. Fremerman, 4041 Central, Kansas City, MO 64111.

Prestige call plates engraved on 2x8 blue, black, red or simulated walnut plastic $2 each. Winser, 2049 Yosemite, Milpitas, CA 95035.

Wanted — A good automatic voltage regulator and good late model transceiver, Cash — Albert, 304 East Courtland, San Antonio, TX 78212.

Teletypewriter parts, manuals, supplies, equipment, Toroids, SASE for list. Typetronics, Box 8873, Ft. Lauderdale, FL 33310, W4NYF. Buy parts, late machines.

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Buy — Sell Recondition Teletype Machines, Acoustic Couplers, Modems, CRT's and accessories. Call or write: Vardon & Associates, Inc., 930 N. Beltline, Suite 140, Irving, TX 75061, (214) 252-7502, TWX 910-860-5761.

Fax Paper, 19-1/8" wide. Good for weathermap and desk fax recorders. $2.95 box, 4 for $9.00, 12/$25. Fax and RTTY list free. Jim Cooper, W2BVE, 651-W Forest Avenue, Paramus, NJ 07652.

Reconditioned Test Equipment. 50 cents for catalog. Walters, 2697 Nickel, San Pablo, CA 94806.

Wanted for boy's club. Technical Books, Magazines, and courses. E. Ezekiel, 43/2 Shaviv, Herzlia 46-221, Israel.

Comet Kohotek Souvenir Photographs — An Actual 8"x10" photo taken thru a powerful telescope. Send $1 to SKYFLIX, P.O. Box 463W, St. Joseph, Michigan, 49085.

Free Kirlian image on 35mm slide plus details on Kirlian Equipment. Systecon, Department 70, Box 417, West Hyattsville, Maryland 20782. (301) 596-5654.

$$$Cash for IC's. Transistors, diodes, all electron tubes. Call collect or write Bob Sanett, 616 Holmby Ave., Los Angeles, CA 90024 (213) 279-1275.

Picture QSL cards made from your photo of yourself, shack etc. 250 — $10.00, 1,000 — $19.50. Full color from slide $38.50. Samples free. Picture cards. Box 5471, Amarillo, TX 79107.

Wanted: Old Battery sets in any condition, tubes, and parts. National SW-3, SW-4, SW-5, GREBE CR-18, National Browning-Drake kit parts or sets. C. Byrnes, P.O. 25, Pismo Beach, Calif. 93449.

Practical Applications of Digital IC's, 100's of Tips, Circuits, Projects on TTL. 443pp. $19.95. Money Back Guarantee. GEA., P.O. Box 285, Northfield, Ohio 44967.

Sale: Drake TR4, AC4, MS4, mint $450. Richard Jansma, WA8QJK, 421 Stewart, Big Rapids, MI 49307.

Russian Postage Stamp honoring Ernst Krenkle (DXers will recognize him as RAEM) plus booklet on collecting topical stamps only 25 cents when requesting approvals of stamps depicting radio, TV telephony, telegraphy, satellite communications, electronics, electrical engineering. Alkanstamps, Box 3494, Scottsdale, AZ 85257.

Manuals for Govt. surplus gear, only $6.50 each · URM-25D, SP-600JX, TT-63A/FGC, TS-497B/URR, R-274/FRR, TS-382D/U, ARL-5, URM-32, TS-32, TS 173/UR, TS-174/U, TS-175/U, BC-77oB, TS-34A/AP, CV591A/URR, TS-413A/U, SG3/U, TS-452B/U, LM-21, PRC-10, BC-639A, LP-5, OS-8B/U, OS-8A/U, OS-8C/U, BC-348JNQ, OS-46/U, TV-2/U, CV-278/GR. Thousands more available for radar, teletype, tests sets, scopes, receivers, transmitters. Send 50 cents (coin) for 20-page catalog. W3IHD, 7218 Roanne Drive, Washington, DC 20021.

160 and 80 meter top loading sections for vertical antennas. For details write Bill Turney, WA0RFF, 1414 East 9th Street, Hutchinson, Kansas 67501.

Auto-Call keeps up with the latest ham info from Washington, D.C. Subscriptions $3.50 a year, sample copies 25 cents. Address: Auto-Call, 2012 Rockingham, McLean, VA 22101.

Bay Area ham radio repairs. Mark, K6BE, Berkeley. 415-548-1889.

Wanted: Old battery receivers, National SW-3, SW-4, SW-5, FB-7, Pilot Super Wasp, old broadcast receivers, magazines, call books handbooks, catalogs and early wireless material, Erv Rasmussen, W6YPM, 164 Lowell St., Redwood City, CA 94062.

Pre-1956 Baseball Cards Wanted. Particularly want pre-WWII cards issued by tobacco and candy companies. Horne, Box 1276, Paradise, CA 95969.

Free Bargain Brochure — ICs, Diodes, Transistors, etc. Send stamped, self-addressed envelope: WEIRNU, PO Box 1307, Colton, CA 92324.

Two Meter Special: HT's SR-C 146A — 2 watt with: base charger, stubby antenna, leather case, NiCad batteries and with 94/94 & 34/94. Fully guaranteed. List $369.00; our price $309.00. Send cashiers check or M.O. for immediate delivery. All shipping and insurance prepaid. Send: BERCOM ELECTRONICS, PO Box 237, Bergenfield, NJ 07621.

Now Available to Hams of the U.S.A.! Bicentennial T-Shirts commemorating the 200th birthday of our country. 2-color emblem of the celebration along with "Ham Radio" printed on front of white T-shirts. Specify shirt size and whether for adult or child. Send $4.50 to MZS BOOKS, 8041 N. Hamlin, Skokie, Illinois 60076.

SAH215 push button to step dialing IC. All you need is two relays and clock, no p.s. or batteries — $10.00. TCA430 quad oscillation, 4 seperate tones from 1 chip — $2.25. 2n3933 house numbered RF transistor, 750 mlc. — 5/1.00. N1771 SCR-8 1.00. HP16-355C and 355D, new pair — $150.00. HP3308C new — $175.00. Tek 511 —$100.00, 514 need p.xformer-$40.00. 541 with B or D plug — $375.00. Dumont 404 — $35.00. UPM 15A — $35.00. 2.1-2.4 gc circulators — $30.00. VA8309 Hybrid mixer — $8.00. Large Xband E and H bends — $2.00. Sage Labs mixer 2513T new — $25.00. TWS15 TWT, new 1.7-2.7 gig, 25 watts out — $95.00. Lambda LMEO-14 — $40.00. ¼" right angle gears — 50 cents pair. .0175 mfd. variable, new — $5.00. Some older CQ & QST motors, 1.4 RPM 115V with Cap, 14 watts, new — $3.00. Kinyon TF1RX02YY — $130.00. .001 Ceramic standoff caps — 10/100. Any inquiry large SASE please. All plus postage. Douglas W. Craton, 5625 Balfrey Drive, West Palm Beach, FL 33406.

Loads of model 15 KSR teletype machines — only $25. 19's complete with tables, reperferators, character counters, transmitter distributor, etc. — only $65. C.B Goodman Co. 5454 So. Shore Dr., Chicago, IL 60615. Phone anytime: (312) 752-1000, ext. 516.

Solving The Mystery of Death. Stamp appreciated. METHODS, Box 1263, Mountain View, CA 94942.

INTEL 8080, 8 bit cpu — $155. Intel 8008, 8 bit cpu — $39. MM5203Q-1, 2K bit re-prom — $14. NEC6003, 2K ram — $8. 1103A-2 — $4. 2102-2, 1K ram — $4.50. MCM7001, 1K ram — $6.95. 3106, 256 bit ram — $1.75. 2524, 512 bit SR — $5. 8038, VCO — $5. AY5-1008, TTY terminal RX — $5.50. AY5-1010, TTY terminal TX — $5.50. AY5-1013A, UART — $13.95. AY5-2376, 9 bit kybd encod — $9.50. XR205, funct. gen — $10.50. XR210, FSK mod demod — $6. XR2240, prog. timer — $4.75. XR2307, curr. cont. osc. — $4.25. 12-digit, .3" hi, neon disp. — $5.75. SP425-09, 9-digit disp. — $2.50. Liq. xtal, 3½ D, .4" disp. — $9.25. B5853S1, .5" hi neon — $1.50. DL747, .65" hi led — $3. NE526 — $1. VA210C, 10 GHz klystron — $30. 5 MHz xtal — $2. Lascr, 200v 4A — $1. Main & mem PCB (TVT-II) — $39.50. 2103, 1K ram — $5.95. SM82 TTL 16 bit memory — $.75. TMS 0103, 9-digit calculator w "K" — $3.50. MJE 1100, Darlington — $1.70. Molex pins — 100 $1; 500 $4.50; 1000 $8. 13 twisted pair 25GA ribbon cable — 4 ft. 2.50. 26 conductor, 30 ga. ribbon cable — $.30/ft. Ultrasonic transducer — $2.75. SPDT, CTR-off, momentary mini toggle switch — $1.95. CTS-Knight 32.768 kHz watch xtal — $2.50. Catalog — 10 cents. **ELECTRONIC DISCOUNT SALES,** Dept. WW, 138 N. 81st., Mesa, AZ 85207.

Deluxe QSLs. Variety pack 20 cents. Includes two Bicentennial samples. Shipley, W8GZX, Box 145, Dabel Stn., Dayton, Ohio 45420.

Mobile Ignition Shielding provides more range with no noise. Available most engines in assembled or kit forms, plus many other suppression accessories. Free literature. Estes Engineering, 930 Marine Drive, Port Angeles, Wash. 98362.

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Prop Pitch motors wanted — medium sized, in good condition. Need repair and maintenance manuals if available with motors or separate. Need several for friends overseas. J. P. Ashcraft, WB5BFZ, 3008 Southwestern Blvd., Dallas, TX 75225.

Wanted to buy: pre-1930 Wireless gear and Morse keys. Any type? Condition. Write A. Shawsmith, VK4SS, 35 Whynot Street, West End, Brisbane, Queensland 4101, Australia.

Magazines Wanted — Collector will buy or swap for ham radio and electronics magazines. ARRL Handbooks and publications, Callbooks, Riders manuals, others. Donald, 6059 Essex, Riverside, CA 92504.

Stop Gasoline Thieves! Alarm sounds when someone tampers with gas tank. Complete. Guaranteed. $5.95. Ed Howell, Folly Beach, S.C. 29439.

For sale or trade: Rakscope S-12-B, $35.00. Hewlett-Packard oscilloscope, model 120A, $50.00. Also one frequency generator, $25.00. E. R. Metsker, WB6MJP, 3301 Buchanan Road, Antioch, CA 94509. (415) 754-2919.

Wanted — service manuals with schematics, or copies, for Morrow MBR-5 and Hallicrafters SX-71 receivers. W6OGL, 2404 Christmas Tree Lane, Bakersfield, CA 93306.

For Sale: New Heath SB 200 Linear Amplifier with manual, $245. WA6AYA, Box 567, Hemet, CA 92343. (714) 925-7384.

Wanted — Used inexpensive oscilloscope, Lafayette 5-20 volt DC bench power supply. Also want offers from firms selling ham gear and test equipment. J. Kobus, 1567 Axton, Ferndale, WA 98248.

Mobile Ops. Tired of Ignition Noise? Please send SASE for info on shielded ignition systems. Summit Enterprises, 20 Eider Street, Yarmouthport, Mass. 02675.

For Sale: Brand New Pencil-Thin Dynamic Microphones. Hi-Impedance, 10,000 ohms, with 14' cable, stand, lavalier holder and plug. Freq. Response 100-10,000 Hz. $3.95 postpaid. 20' Microphone extension cables with plug, $1.45 postpaid. Money back guarantee. M & S Enterprises, W6BJB, 721 N 20th St., San Jose, CA 95112.

Electronic Ignition Systems. Up to 20% improved performance and gasoline mileage. Includes anti-theft key unit. Economy plus security, both for $34.95 plus $1.50 shipping. Satisfaction guaranteed. Ed. Howell, Folly Beach, S.C. 29439.

Wanted: Old issues of WHITES RADIO LOG 1927-1957. Write or mail to Dennis W. Vasilatos, 7327 West Lane, Loomis, CA 95650.

Swan Triband transceiver with Swan 14-X DC power supply and Shure mike — $150.00. Also HZ-354 self-supporting motorized tower, fold-over stand, extra strong, repainted — $950.00. Nick WB6DXU (213) 899-6938.

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Wanted: Regency Stand-by One VHF transceiver, 119-127 MHz. R. Boyd, 16923 Hillcrest St., N. Edwards, CA 93523.

Sell: Two Westinghouse cartoned 110-220 volt, 25-125 cycle AC line meters — $5.00 postpaid. Samkofsky, 1408 Montclair Road, Orlando, Florida 32806.

Now read it again. You might have missed something the first time.