WORLDRADIO NEWS

Year 6, Issue 2 August 1976 50¢

Jack Schwartz, WA6TRZ, operating Worldradio Field Day station, K6FO.

League proposes sweeping changes

The ARRL Board of Directors, at its second 1976 meeting held in Denver, CO on 14, 15 and 16 July, formulated ARRL policy on proposed rulemaking in Docket 20777.

In the board's view, both bandwidth and type of emission as appropriate should be used in designating permissable operations. Exclusive segments for pure CW and RTTY, now to include ASC II, should be retained, though the continued need for 850 cycle shift should be reexamined after five years, and RTTY should not be permitted in HF phone bands.

Standard amplitude modulation, not to exceed 6 kHz bandwidth, would be preserved, below 28.5 MHz as well as above, though this too would be restudied in five years.

On 10 meters, bandwidths would be 6 kHz from 28.5 to 29 MHz and 16 kHz from 29.0 to 29.7, with 40F3, wideband FM, also permitted for five years.

Present SSTV allocations would be unchanged and fax newly permitted in the same sub-bands. Standard FM, 16F3, would be the norm in the phone bands above 52.0 MHz, but wideband FM, 40F3, could continue for five years.

Amateur TV would continue to be permitted in two channels at 439.24 and 427.25 MHz, each to have a nominal width of 4 MHz, shared between direct and repeater operation, with restudy after five years. *(please turn to page 11)*

Field Day '76

On the weekend of 26-27 June, approximately 12,000 radio amateurs participated in Field Day.

This was the 40th annual test of their emergency preparedness. Sponsored by the American Radio Relay League, this event provides the opportunity to improve our abilities in aiding the Red Cross, Civil Defense, police and other life-saving organizations in times of disaster.

For 27 hours radio amateurs perfected the operating skills which are necessary when normal communication channels are disrupted or unavailable. Over 1,000 radio clubs were involved in the exercise, assuring that no community would be cut-off from the outside world should a disaster occur.

In this weekend test, amateurs away from commercial power and telephones pitched their tents, raised portable antennas and operated their radio equipment from batteries or gasoline-driven generators.

That Field Day is truly a real practice session is shown in example by the recent Guam typhoon. All power and communications were lost there and again, as in so many instances, it was the amateurs with generator and battery-powered gear who furnished successfully the only communications. (*please turn to page 12*)

'WD' prefixes will be issued

The Federal Communications Commission will shortly begin issuing 2 x 3 callsigns beginning with the prefix "WD" to new stations in some callsign areas.

The Commission has previously been issuing all new stations 2 x 3 callsigns beginning with the prefix "WA" or "WB" unless the applicant qualified for a preferred 1 x 3 or 1 x 2 callsign under Section 97.53 of the Commission's Rules. The prefix "WC" is reserved for amateurs licensed in the Radio Amateur Civil Emergency Service (RACES).

This new prefix is necessary because of the rising numbers of amateur licenses, particularly a 25% increase in the Novice Class over the past two years. The supply of "WA" and "WB" callsigns in some callsign areas is almost exhausted. In some call areas, the Commission has issued all available "WA" and "WB" callsigns, and is now reissuing expired callsigns. The reassignment of these call signs has placed an additional burden on the Commission which appears unjustified in view of the record numbers of Amateur Radio licenses presently being processed.

In accordance with the Public Notice on Bicentennial Callsigns issued on 27 March 1975, amateur licensees receiving the prefix "WD" may use the bicentennial prefix "AE". □

Island amateurs catch Southern Californians

Katashi Nose, KH6IJ

Hawaii radio amateurs have been communicating with Southern California on 144 MHz, a feat which would have been considered impossible by textbook rules before the war.

At 7:00 a.m. on Monday morning, 28 June 1976, Donald Muth, KH6HJF, and George Stillman, KH6AN, were in casual conversation through Hawaii's statewide repeater system on 146.22 MHz when a "Hello there, Hawaii" startled them.

George quickly recognized what was happening from his experience on 28 July 1973 when exactly the same set of atmospheric conditions enabled Hawaii to talk to California for four days. Contact was quickly established and for the next 12 hours Hawaii's two-meter repeater operators took on the manners of 20-meter DX chasers as new California calls appeared on the scene.

Again, the California end of the contact was Jerry Gastil, K6DYD, of San Diego who was hunting for just such an opening as he pointed his high-powered multi-element antenna array into the Pacific.

This kind of opening is a result of a freak set of conditions known as tropospheric ducting which was first exploited by amateurs before the war. Due to temperature inversions, signals travel along a duct in much the same manner as light does through parallel mirrors.

Again the same conditions prevailed as in the 1973 opening. The Hawaii end of the duct is at 7,000 feet and the California end at about 500 feet, and only in a region between San Diego and Santa Barbara. Haleakala (10,000 feet) and Diamond Head (400 feet) were not being accessed.

Taking advantage of this condition, Albert Pacheco, KH6IAA, took his equipment to the 7,500 foot level of the (*please turn to page 11*)

Propagation forecasts scheduled to be discontinued

Word has been received at the **Worldradio** offices that the Institute for Telecommunications Sciences (ITS) in Boulder, CO will likely discontinue some of its services pertaining to telecommunications announcements.

Some of the services scheduled to be dropped include the 14-minute after the hour WWV propagation forecasts, as well as publication of the weekly radio telecommunications forecast and voice-telephone announcements.

The proposed date for this action to become effective is 1 October 1976.

This is the only information available that amateurs have for doing propagation. The only thing that can stop this action is a massive outpouring of letters (thousands are needed) by amateurs. Express your concern. Write to:

Dr. Douglass Crombie, Director
ITS/OT
US Department of Commerce
Boulder, CO 80302 □

Mosquito QRM — John Trent, KL7DG/KL7, on the banks of the Yukon River about 75 miles below Eagle, Alaska during the recent Field Day exercises. John uses a Ten Tec PM3A powered by a lantern battery with 5 watts input. (Note: Eagle, Alaska is a tiny hamlet of 100 population where Lt. Billy Mitchell, later General Mitchell, supervised the building of a telegraph line to Valdez, Alaska at the turn of the century. By this telegraph line, at 56¢ per word, men sent to the "outside world" news of Amundsen's sailing through the Northwest Passage.)

AR station receives urgency message

The annual American Radio Relay League Field Day exercise of amateur radio operators in assimilated emergency situations was punctuated by an International Urgency of "XXX" received in Anchorage Sunday, 27 June, at 8:30 p.m. by Novice amateur station WL7ILL. WL7ILL's skill and training alerted him to a faint signal transmitted by John Trent, KL7DG/KL7, operating a 5-watt transmitter powered by a lantern battery from a mountain tent 70 miles down the Yukon River from Eagle, Alaska.

The message sent by John Trent while on a canoe vacation with his wife and friend alerted the operator of WL7ILL to a medical problem in which the river pilot had contracted fever and was in need of possible assistance if his condition grew worse. A schedule was set up between the stations over the 350 mile transmission path for the following day. The river pilot recovered and there was no rescue operation or medical assistance required.

Trent, a veteran commercial and amateur radio operator, and a very capable newcomer, WL7ILL, proved the value of their hobby in Amateur Radio through this exchange of communications by very low power equipment under emergency conditions. □

Pitcairn Island Generator Fund

Doc Horseshoes (AKA W6HS)

Dear Generator Fund Generators:

At this writing, 18 July, yours truly, as trustee for the VR6TC generator fund, and Tom Christian, VR6TC, take this opportunity through **Worldradio** to thank the more than 150 amateur radio operators and radio clubs around the country for their generous support of a source of power for Pitcairn's only Amateur Radio station. Add to this an OH2 from Helsinki, an SOWP from Yucaipa, CA an amateur-to-be from Glendale, CA, an HI8 from Dominica, a CB'er from Lawrence, KS and daughters of a silent key. **Worldradio** sure gets around.

Our goal for the generator (see April *(please turn to page 21)*

Fire communications

A unique opportunity to demonstrate readiness of Amateur Radio in time of disaster occurred mid-June when Carl Siminow, WA6JOW, observed an explosion and fire outside his hospital room in Southern California.

In back traction, Carl was able to quickly alert other operators in the vicinity of the Culver City-Palms block-long fire which caused a number of deaths.

Ready to assist the crowds and injured were Doug McDowell, K4SWJ/6; John La Fon, WB6VDE; Ron Trunk, WA6IFU, Gary Briones, WA6KIP; Ed Munsell, K6CL; Shelly Chelsy, WB6KED; Greg Laskin, WB6KCD; and others.

Carl, WA6JOW, and Doug, K4SWJ/6, have been sharing Emergency Coordinator duties for the West Los Angeles and Bay area AREC.

Most of the participants on this two-meter activity were members of the Pallisades Amateur Radio Club. □

International friendship

Recently Phil, 5Z4PG, and her OM, Ron, 5Z4RG, spent an interesting two days on the radio helping to rescue the pilot and five passengers of a small aircraft which crash landed in the desert in the north of Kenya.

About 24 hours after the plane crash landed, Phil and Ron picked up an emergency call from the survivors on SEANET. They discovered that although an initial message had been passed to the powers-that-be, very little was happening as the plane's exact location was not known to the police or the Rescue Centre.

The duo spent from 1200Z on 7 June when they picked up the message, until 1730Z on 8 June when the survivors arrived in Nairobi aboard a Kenya Air Force caribou plane, on the radio relaying between the survivors, the police and the Air Force — not to mention passing messages to the French Embassy. It was a French plane and the passengers were French. Ron had a very nice letter from the French Ambassador in Nairobi, thanking him for all his efforts.

Ron and Phil attended a "Rescue Party" which the pilot of the plane, Rainer Horbert, FL8OM, gave for all those who assisted in getting them back to civilization safely. □

Worldradio

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The Worldradio News is a two-way communication. Send in Amateur Radio information and news. Share you 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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Laurel Owens
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Worldradio News is an international conversation. You are invited to be a part of the action. The newspaper is written by its readers. Our goal is to be a valuable resource by distributing ideas and experiences.

We want to be beneficial to the Amateur Radio community. We publicize and support those who bring the flame of vitality to their efforts in this avocation. We feel Amateur Radio is of extraordinary significance.

We are positively-oriented and we ask your cooperation in assisting us to help develop the skill, potential and quality of Amateur Radio.

We see our mission as stimulating our audience and in that we ask your support.

The growth and future of Amateur Radio is one of our prime concerns.

Our readers/participants are an alliance of active radio amateurs who are concerned with reality. They use radio as a communication tool.

While we print all the news of this great activity, we particularly desire an input of stories dealing with the dramatic, the personal and the humanitarian uses of radio.

Through **Worldradio** you can make contact with other individuals who share your interests.

Public service

The Sterling-Rock Falls (IL) Amateur Radio Society recently handled communications for the local United Cerebral Palsy annual Walkathon. The 20-mile march by grad school and some high school students was covered by the following volunteers in mobile units, who operated in two shifts and also helped to supervise the march:

Paul Johnson, K9BEF; Olli Ikonen, WB9DNA; Bill Peters, WB9MCZ; Dick Little, K9EEH; Ed Fisher, K9APD; and John Ordean, WA9BSO. Other members assisting these units were Warren McMurry, WB9DNR; Tom Carney, WN9RXJ; Ken Weissenburger, WN9-RVY; and Dan Gryder, WN9PSQ.

☆ ☆ ☆

The Center Place Amateur Radio Association (local chapter of the Association of Saints Church Radio Amateurs — ASCRA) of Independence, MO provided communication support for the May Day Hike-for-Health sponsored by the Reorganized Latter Day Saints Nurses Association.

The VHF FM network, which utilized ASCRA's Kansas City area repeater on 146.73 MHz, consisted of seven portable stations located at each checkpoint and four mobile units which patrolled the route.

Assisting at dangerous intersections were members of the Independence REACT group who maintained liaison with the CPARA net through one of the amateur mobile units.

David Bland, KØLCB, CPARA's Communication Manager who directed the operation, expressed his pleasure at having a Citizens' group participate. "The REACT operators provided additional depth to the communications support. For some, this was their first exposure to Amateur Radio. We found them very interested, even to the extent that several provided their names for future CPARA licensing classes."

The purpose of the 20-mile Walkathon was to raise money for church health care projects in the United States and developing countries. The major projects for this Hike-for-Health are the Mothercare Center in Haiti, a clinic in Korea and the American Indians.

☆ ☆ ☆

Bob Adams and the Amateur Radio Emergency Corp. of Columbus, OH received the following letter from the Director of Community Relations:

"You and the Amateur Radio Emergency Corps did an outstanding job for us and our runners on the occasion of COLA's Marathon Run for Life and Breath, May 21-22. Safety and communications were my greatest concern until

(*please turn to page 11*)

Callbook service

In line with Docket 20092, effective 1 July 1976, for the issuance of "one-by-two" calls, the publishers of the *CALLBOOK* offer a new service for those who will be applying for the new calls.

For a fee of $6.00 per district, licensees may obtain a copy of all "one-by-two" calls assigned in their area, which may be of assistance to them when applying for their "one-by-two" call.

Send direct to the publisher for this service: Radio Amateur Callbook, Inc., 925 Sherwood Drive, Lake Bluff, IL 60044. □

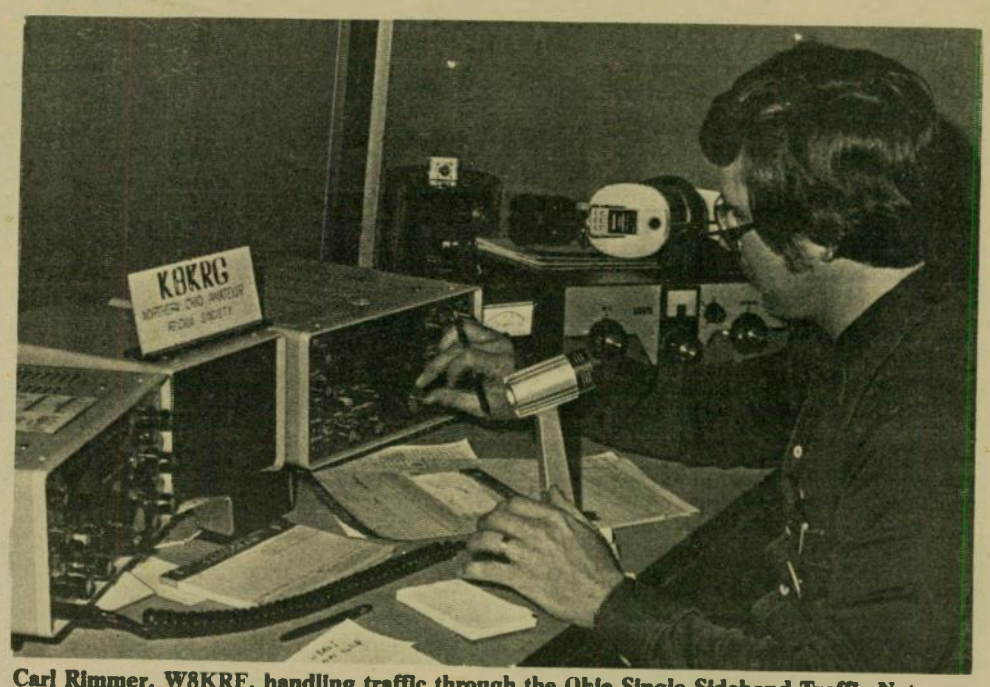
FCC Monitoring Station phone numbers

This list of FCC Monitoring Stations was received directly from the FCC. It is suggested that you post it in your shack and phone them when you hear flagrant violations on the bands.

Douglas, AZ
(602) 364-2133
Coronado, CA
(714) 435-0048
Livermore, CA
(415) 447-3614
Santa Ana, CA
(415) 447-3614
Ft. Lauderdale, FL
(305) 583-2511
Powder Springs, GA
(404) 943-5420
Prospect Harbor, ME
(207) 963-5857
Laurel, MD
(301) 725-3474
Allegan, MI
(616) 673-2063

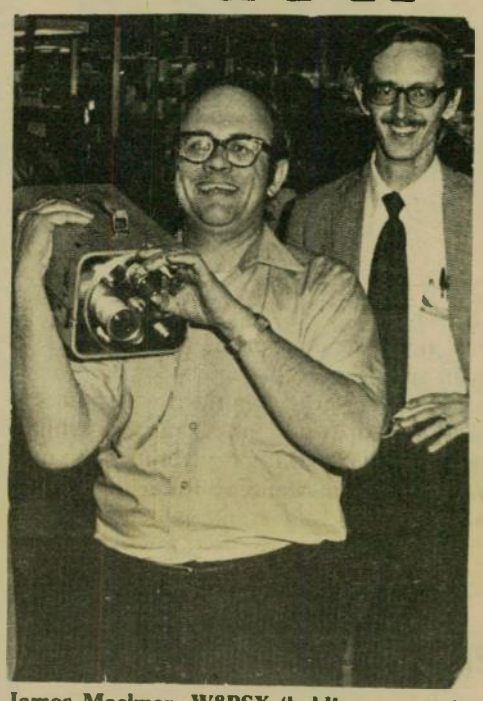
Grand Island, NE
(308) 382-4296
Canadaigua, NY
(315) 394-4240
Chillicothe, OH
(614) 775-6523
Denison, TX
(214) 965-0048
Kingsville, TX
(512) 592-2531
Bellingham, WA
(206) 734-4196
Spokane, WA
(509) 244-2141
Washington, DC
Watch Officer
(202) 632-6975

—MARAC Newsletter



Carl Rimmer, W8KRF, handling traffic through the Ohio Single Sideband Traffic Net.

Good PR



James Mackner, W8PSX (holding camera), with Ronald Goltz, WB8TIW, assisting.

Shoppers at the Midway Mall, located between Elyria and Lorain, Ohio, found themselves on TV during Safety Services Week recently. ATV that is.

The Northern Ohio Amateur Radio Society participated in an extensive demonstration of Amateur Radio, including ATV, RTTY and 2-meter FM Radiogram service was also available with many persons sending messages to friends and relatives throughout the state and nation. The low band station was that of Carl Rimmer, W8KRF, and with the assistance of the Ohio Sideband Traffic Net, MIDCARS and ECARS, all traffic was expediently handled.

While handling the traffic, the local Red Cross requested information about a reported train derailment somewhere in Ohio. A query was put out on MIDCARS and within minutes it was learned that such an accident had occured but no injuries were apparent, although evacuation of portions of East Liverpool, Ohio was necessary because of leaking toxic gases. It was not until the following day that the local newspaper covered this happening.

The highlight of the demonstration was a complete amateur fast scan television station owned and operated by James Mackner, W8PSX. The public was able to visit many amateurs' shacks via this medium.

The Amateur Radio display attracted people at an estimated three to one ratio compared to other displays. Since our exposure, the club has gained many new members and received several inquiries from people interested in becoming amateurs. The Northern Ohio Amateur Radio Society anticipates sponsoring classes for those interested in the fall. □

Bicentennial greetings

Radio amateurs broadcast special Bicentennial greetings on 4 July from atop Mt. Constitution, Washington.

Greetings were from Mayor Tom Allen, Olympia, capitol city of Washington State, to the mayors of the other 49 capitol cities and District of Colombia.

A special transmitting station was in operation at the mountain top broadcasting the special Bicentennial activity.

John Brown, W7CKZ, worked with Mayor Allen on message content and Bill Boyd, WA7TWB, coordinated and directed the special station set-up and message handling. □

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Amateurs rescue youth imprisoned in Mexico

Dennis Scannel, WB6IXC, at his radio station
(San Diego Union staff photo.)

Dennis Scannell, WB6IXC

"Calling all radio amateurs, calling all radio amateurs, calling all radio amateurs. This is WB6 Item X-ray Charlie, WB6IXC. There is a young American ex-Marine, presently being held by Mexican authorities, who is in danger of dying unless his bail in the amount of $1700 is raised between now and 0800 tomorrow. Pledges are being solicited from all radio amateurs for any amount they can spare. Contact Paul, WA6-GDC, or Johnny, W6KBT, on 147.74/15 to give your pledge. This is WB6ICX, clear."

What would you expect your reaction to be if you heard this announcement on the evening of Wednesday, 14 July?

If you happened to be one of the hundreds of amateurs monitoring the San Diego repeaters (WR6ACF, 146.64, or WR6AJL, 147.15) or the Henry Radio machine in Los Angeles (WR6ABJ, 146.67), I can tell you what your response would have been: "Where is my checkbook; who do I send it to?"

I know what your response would have been because I know who you are. You are an amateur radio operator and you belong to the finest, most compassionate, most helpful, most unselfish, most brotherly group of individuals bound together by a common interest in your very special hobby and deep-rooted desire to serve your fellow men. When the call went out, you responded instantaneously, unflinchingly and the job got done!

That was the way it was and this is the way it happened.

The plight of this young man had been known from listening to conversations on the Laguna repeater for several weeks. During this period, most of the activity was being carried on between Jim Smith, W6VCE, of Ocatillo, CA, his contacts in Mexico, and Johnny Johnston, W6KBT, of San Diego. Efforts at this stage were being concentrated on receiving assistance from the U.S. State Department Consulate officials in Tijuana, Mexico to get the boy released from the Mexicali General Hospital, or at least to get him the additional medical attention that the Mexicali hospital could not supply because of its limited facilities.

NBC correspondent Greg Dumas and Paul Hower, WA6GDC, Happy Flyers pilot.

As the days slipped away, and as the boy's life was slipping away, it became apparent that this was not going to happen.

Enter Amateur Radio. Through their own personal efforts, after making dozens of phone calls and many, many personal contacts with the Mexican government and judicial authorities, Jim and Johnny were able to have the bail reduced from $9000 to $1700 — rock-bottom, no more! The Mexican judicial authorities had already stretched their rules to the limit to get it down to this amount. (They were magnificent.) After all, the laws of their country had been admittedly violated; they were compassionate, but they couldn't just say, "OK, promise to be a good boy and you can go home." *(please turn to page 17)*

Mike Sunal, K6MYC; Mel Farrer, K6KBE; Fred, JA1ADN; and Tom Bohnsack, W6PEQ, in front of the KLM Electronics office.

Some of those present at the reception given for Fred, JA1ADN, at the QTH of Howard, WA6WUI: Back row: Tom, W6PEQ; Fred, K6RTU; Bob, WA6FKK; Chuck, WA6MGZ; Pat, WA6UAP; Charlie, WB6SUA; Lee, K6FV; and Bip, W6BIP. Front row: Howard, WA6WUI; Jerry, K6SMH; Fred, JA1ADN; Dick, K6EIH; and Julius, 4Z4NY.

Visit from JA-land

Fred Ihara, JA1ADN, and Howard Krawetz, WA6WUI, at the motel just before Fred left to return to Japan.

Mr. Fred Ihara, JA1ADN, editor of the Japanese publication *CQ Ham Radio*, recently paid a very cordial visit to Howard Krawetz, WA6WUI, of Sunnyvale, CA.

Howard then took it upon himself to give Mr. Ihara a first-rate tour of the surrounding area, introducing him to many radio amateurs and showing specifically what the bay area has to offer.

They visited the Aeronautics-Ford plant, Ames Research Center, KLM Electronics, plus other plants and sights in San Francisco, than swept off to Howard's home for a reception. Several local amateurs gathered to meet Mr. Ihara for an evening of spirited chitchat. Among those in attendance were: Wilbur "Bip" Bachman, W6BIP; Dick, K6EIH, and Mary Cay Sherman; Bob, WA6FKK, and Beverly Wiedeman; Lee Krutz, K6FV; Chuck Smallhouse, WA6MGZ; John Wather, K6PKT; Tom, W6PEQ, and Lucille Bohnsack; Fred Barry, K6RTU; Jerry, K6SMH, and BR Bliss; Charlie Glaeser, WB6SUA; Pat Petersen, WA6UAP; Howard, WA6WUI, Sharon and son Bruce Krawetz; Jack, WA6WTX, and Susanne Unger; and Julius Lieberman, 4Z4NY. □

ARRL Dakota Division Convention

The 1976 ARRL Dakota Division Convention, sponsored by the St. Paul Radio Club, will be held at the new St. Paul Civic Center on 1, 2, 3 October.

The convention will feature a talk-in station, FCC exams, Wouff Hong, WAM Award, MARS, ladies' program, technical seminars, ARRL Forum, large exhibit area with many new products, a sunday tour and a super, full-course banquet.

An ICOM IC-230 will be awarded to an advance registrant. A Tempo "One" will be awarded at the banquet on 2 October to a delegate attending the convention.

For a copy of the flyer and registration form, write to St. Paul Radio Club, PO Box 30313, St. Paul, MN 55175. Registration must be postmarked on or before 12 September 1976 to obtain reduced registration rates.

Total eclipse of the sun

Louis Berman, K6BW

The 23 October 1976 total eclipse of the sun will provide a unique opportunity for DXers to observe the effects on radio propagation in the 10-, 15- and 20-meter bands along the path of totality that lies between the east coast of Africa and the Australian continent.

From outside the earth, the moon's shadow will appear as a dark elliptical spot of slightly varying width averaging 180 kilometers in diameter. It will touch the earth south of Lake Victoria at sunrise at 0339 GMT; it will pass over Zanzibar Island shortly thereafter and next over the Farquhar Group at 0350 GMT. Continuing eastward, it will cross the entire Indian Ocean and finally strike land at the southeastern tip of Australia at 0637 GMT. About three minutes later the shadow will pass over Melbourne and after crossing all of Victoria in seven minutes, it finally will leave the earth at sunset, south of Lord Howe Island.

The duration of totality will be two minutes at the beginning and end of the eclipse and up to nearly five minutes at midday over the central Indian Ocean. During the period of totality and near totality, there should be a temporary return to nighttime propagation conditions, possibly accompanied by abnormal behavior of the signal strength which should be carefully noted. In order to calibrate the observations, a communication schedule between contactees should be arranged to monitor the conditions several days before and after the eclipse.

The most useful scientific experiment would be one along the direct line of the eclipse track in which continuous communication would be attempted between Zanzibar or Cerf Island (Farquhar) and Melbourne to study the effect of the moving moon's shadow upon the ionosphere as it progresses from sunrise to sunset along the earth's surface.

It is requested that communicators send their results to Dr. Donald H. Menzel, W1JEX, a leading authority on the sun and solar eclipses. His address is:

Center for Astrophysics,
Harvard College Observatory and
Smithsonian Astrophysical Observatory
60 Garden Street,
Cambridge, MA 02139. □

DX breakfast

The DX breakfast at the Southwestern Division Convention was chaired by Larry Pace, W7JST.

Pace spoke about the Arizona DX Club which is about a year and a half old. He mentioned their want-and-need list and the telephone chain they have to alert members.

Ron Flowers, K7NXH, suggested the phone band should become more organized. He brought up that the CW band is arranged with the slower stations at the top of the band and the faster operators near the bottom. Discussed was the idea of getting away from ragchewing on the low end of the phone band, for while the band may be closed for DX in W8-land it may be open in W6-land or vice versa. A discussion started about whether there should be, by gentlemen's agreement, a "DX window" as there is on 160 meters. The question was raised whether this would preclude short conversations between U.S. stations.

It was generally agreed that it would be nice if the stations running phone patches would move out of 14.205 and up to at least 14.250.

The idea of DX ethics was raised, also. One stated aggravation was that of working the same guy twice when many don't have him at all. Steve Protas, WA7NFH, put it this way, "You hear him and some ham is telling him, 'Worked you yesterday and wanted to see if the propagation was the same.' He fades out then and you wait another ten years."

Consideration of others was a topic with this question being raised, "Why work him again?" One wag piped up, "It keeps him rare," and there was laughter from the group. It was decided that it would be better to let other people work a rare station rather than oneself working him over again. However, the fraternity and the amateur spirit of contact was mentioned as something of value to be held in respect. Often when a DX station is working by districts and someone from another district breaks in, the DX station just goes QRT.

Enforcement was talked about. It should apply to stations who just keep calling and calling. If we have bad operators the DX station should work them and then say on the air, "NO QSL TO ---!" This applies, for example, when the DX station is working 1s and a 7 just keeps calling. Voiced was the sentiment that we must respect the DX station and respect ourselves. The fact is that when the pile-up gets so deep that the DX station can't pull out any calls, the rate slows down and everybody suffers.

Operating was talked about with the suggestions that DX station should go rapidly around the call areas with maybe two or three contacts in each area. That way many more people would get a chance rather than the stations working 20 to 30 in one area with the propagation dropping out to the other areas.

Also suggested were special standbys such as "low-power stations" or "stations only who need this for a new country." It was brought out that one reason you can work JAs so quickly is that they are courteous operators.

Pace, who has operated from a multitude of DX locations, then addressed himself to that subject and said, "JAs

(*please turn to page 32*)

Bill Guimont at the operating position of his Amateur Radio station, W7KW.

Bill Guimont, W7KW, and his antenna towers.

Lawsuit snarls amateur's dream

Clarence W. Bailey

Four years ago Bill Guimont came to Arizona to begin a new career in hydroponic farming and to try to realize a long time dream of erecting a large antenna tower system for his amateur radio station, W7KW.

Today, Guimont is being sued over the towers by the same real estate agent who sold him the agricultural land for these uses. After the hydroponic farm was built and the towers were about to be erected, the real estate man built a home near Guimont's farm and moved in.

The entire matter, including Guimont's countersuit alleging fraud and misrepresentation and asking $8 million in damages was scheduled to come to trial 11 May before Superior Court Judge Howard F. Thompson.

The real estate agent is J.D. Campbell.

Joining Campbell as plaintiffs are two neighboring property owners, John Snavely and Efren Leyva, who owns a 2½-acre parcel of land next to Guimont and not far from Campbell's 2,800-square-foot house.

Their suit claims the towers violate the Maricopa County zoning ordinance, have caused their property to be devalued, create a hazard and generate radio and TV interference.

Guimont agreed to be interviewed by *The Arizona Republic* and made available legal documents and depositions taken in the case. Campbell declined to be interviewed on advice of his attorney.

Guimont, who was graduated from the University of Minnesota with a degree in electrical engineering in 1936, received his first Amateur Radio license from the federal government in 1931.

He said he became intrigued with hydroponics when he was head of preflight instrumentation and checkout for the Apollo space program, a job in which he was in charge of some 5,000 engineers and technicians.

"I followed closely the hydroponics research which National Aeronautics and Space Administration scientists were doing to provide food for astronauts on deep space flights, because if hydroponics systems were installed on space vehicles I would be responsible for their preflight checkout," he said.

"The more I learned about hydroponics the more I became convinced that this form of controlled food culture holds tremendous potential for underdeveloped and ill-nourished areas of the world."

It was in February 1972, when Guimont finally got a chance to turn his attention to hydroponics and made his first visit to the Valley to look for a site for a hydroponic farm. It was during this visit that he met Campbell.

"I told Campbell that I wanted to buy a 10-acre parcel where I could install a hydroponic farm and which would be well away from population so there would be no one who would object to my putting up some large radio towers for my amateur radio station," Guimont recalled.

Campbell showed Guimont a 10-acre site which was virtually desolate desert except for two houses within sight.

One is owned by Norman Hemphill Sr. and the other by Snavely, the owner of the property, which Guimont bought because it had agricultural zoning and was remote.

Campbell, in a deposition, acknowledged that Guimont had made it clear to him that he intended to use the land for agricultural purposes and for the radio towers.

Before the property closed escrow that March, Guimont said, he made sure that his neighbors-to-be were made aware of his intentions to farm and put up towers. Snavely, in his deposition indicated that he first learned about the proposed towers through Campbell.

Hemphill recalled that when Guimont came to discuss his antenna, Hemphill replied that "in no way did the Hemphill family object. Hemphill also said that they have never had any radio or TV interference from Guimont's station.

Guimont said that, about this time, he stopped and talked to Snavely and brought up the subject of his radio towers, to which Snavely reportedly replied, "I don't give a damn what you do with your property."

That spring Guimont and his wife, Stef, bought a temporary mobile home and moved in. Within months they had their first hydroponic building and had gone into business as Hydroponic Farms of Arizona, 23522 N. 77th Ave., Peoria. Today, the company owns and is operating two 26-foot-by-128-foot and one 84-foot-by-138-foot hydroponic buildings.

In the spring of 1973, Campbell, the real estate agent, bought a five-acre piece of agriculturally zoned desert land about one block northeast of Guimont's farm and began construction of a house. Eighteen months later in September 1974, Campbell and his family moved into the new dwelling.

By January 1974 Guimont had received truck shipments carrying dismantled sections of surplus Air Force radio towers, which were stacked in a number of locations throughout his property in plain view of passersby.

By this time Guimont had put W7KW on the air with a modest tower and antenna system and had received clearance and approval for a larger tower system from both the Federal Communications Commission and the Federal Aviation Authority.

"I was determined to make absolutely certain that there would be no objections to the towers, either from the few neighbors I have or from any governmental agency, before going to the not inconsiderable expense of erecting them," the 59-year-old onetime airline pilot said.

"So I checked with the Maricopa County planning and zoning department and learned that, since my towers also would hold the antenna for my two-way radio system used to communicate with the hydroponic vegetable delivery trucks, the towers would be classed as essential to agricultural operations and therefore would be exempt from the zoning ordinance," Guimont said. He said he has a letter from the county to this effect.

Guimont said he took that determination by the county as an established condition on which he could rely and in June 1974, began to erect the first tower sections.

By December 1974, Guimont had erected five radio towers 90 feet. One stands in the center of the 10-acre parcel and the other four are situated in the four quadrants so that looking down on them from the air they appear to form a perfectly-aligned "X" configuration.

In January Campbell and Snavely stopped by to express alarm at the height of the towers.

"Campbell asked me what they have to do to get me to stop putting up the towers," Guimont said.

"I told him that it was he who had known what I was going to build when he found the land which I bought, and I replied that there was nothing he could do to stop me now."

On 7 January 1975 Campbell filed a complaint with the Maricopa County building safety department which, in view of the earlier determination by the planning and zoning department, denied Campbell's complaint.

At the end of January, Campbell, Snavely and Leyva filed their lawsuit against Guimont. They could have filed an appeal of the safety department decision within 60 days of 7 January to the Maricopa County Board of Adjustment. They finally did this four months later, on 8 May.

Twenty days later the board, ignoring its own appeal deadline, held the hearing in which it reversed the determination made by the safety and zoning departments.

A few days later, on 2 June, Guimont filed suit against Maricopa County to set aside the board of adjustment ruling, and against Campbell, Snavely and Leyva for damages. Guimont's suit alleges that Campbell and Snavely engaged in fraud and misrepresentation by their assertaions that the property was usable both for hydroponic farming and for erection of an antenna system, that they received the purchase price and a commission from the sale, and then sought to deprive Guimont of the specific uses for which he bought the land.

The trio sought and got a court order stopping Guimont from finishing his five towers, which by then were 150 feet high. Eventually, Guimont plans to extend the towers to 199 feet.

"This whole thing has been a crushing disappointment to me because I have done everything I could think of to avoid any kind of trouble over my antenna system," said Guimont.

"Now I only wonder, how far does a reasonable man have to go to do what he has every legal right to do, without being attacked through an unjust lawsuit?"

—The Arizona Republic

...

Details of the antenna problem and lawsuit of Bill Guimont, W7KW, are becoming more widely known. Members of various club and organization circles are now considering how to enlist the aid of all amateurs — and CB operators as well — in support of Guimont. There is growing concern that an adverse court ruling might eventually bring about limitations of all amateur antennas in the state. Due to postponements, the lawsuit has not as yet come to trial.

W7KW has so far footed a legal bill of $20,000. Legal fees could well hit the $30,000 level before it is over. Hal Teegarden, W7KIH, has started a drive to collect $5,000 to help Bill pay for his legal defense. All funds collected are being deposited in a special account with the First National Bank of Arizona. Strict accounting will be made for the contributors, including amounts received and dispursed. Hopefully, if the court decides in Bill's favor (in which case Campbell and Snavely must pay Bill's legal expenses), the contributions will be returned.

Your help, whatever the amount, will be appreciated. Mail your check to Hal Teegarden, W7KIH, 9842 N. 35th Street, Phoenix, AZ 85028. His phone number is (602) 996-4404 if you wish to discuss the matter. Make your check payable to "W7KW Antenna Legal Defense."

John Hogg, W7CPP, will assist Hal but additional help calling fellow amateurs is needed. Thank you. □

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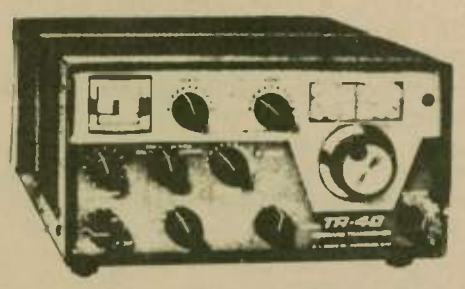

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League

(*continued from page 1*)

Present rules for purity and stability of emissions as found now in section 97.73 would be retained. Precise bandwidth criteria requiring costly additional instrumentation should not, repeat **not**, be imposed.

The League expects to transmit these thoughts to FCC by the filing deadline for Docket 20777 of 4 August. The League also will ask for phone privileges 145.0 to 145.5 and 222 to 225 MHz for Novices and to lower the age for volunteer examiners to 18.

Discussions with FCC staff are to continue relative to multiplexing of audio and control for remote stations, for relief from tape logging at automatic repeaters, for relief of height and radiated power limits on 6 meters, and for division of responsibility on repeaters between technical and user problems. Two new legal information packets are to be created, and limited additional assistance in antenna zoning or transmitter nuisance cases under carefully prescribed conditions will be offered.

In other actions, the Board approved plans for expansion of the Headquarters facilities in Newington, CT, directed the establishment of an outgoing QSL Bureau, moved the W1AW 160-meter frequency from 1805 to 1820 kHz effective 1 September, created a Technical Advisor appointment, DXCC endorsements for 160 meters and RTTY, and removed fees for operating awards to members.

The Board also voted to encourage more operation of Field Day stations in public areas, to streamline procedures for life member applications, conduct a monthly propagation column in *QST* and provide a list of all materials available from Headquarters.

Studies are to be conducted of national repeater frequency coordination, a Hall of Fame for Amateur Radio, moving W1AW to a more central location, extending amateur General Class phone privileges to 3825-4000 kHz, group insurance liability for clubs, effects of antenna heights on RFI, and means for ex-amateurs to be relicensed without reexamination.

Complete minutes will be printed in September *QST*. ☐

Island amateurs

(*continued from page 1*)

Mauna Loa repeater and worked about 30 Californians on SSB and 146.52 MHz simplex. Entry into this duct at other than 7,000 feet proved fruitless both in Hilo and in Honolulu, although subsequent checking shows that some entry was made at lower levels. The San Diego repeater, 22/82, was shut down so that entry could be made to Mauna Loa repeater.

On Thursday at 5:00 p.m. the 50 MHz band opened into Northern California and Katashi Nose, KH6IJ, worked 20 Californians during a two-hour opening.
— *Honolulu Star-Bulletin*

Public service

(*continued from page*

you organized your crew of volunteers who cared for us so skillfully.

"There being many different ways to *show* thanks, but only one word which says 'thanks,' I am limited, verbally, to that succinct expression, again, 'THANK YOU.'

"On the other hand, it is my hope that you will feel at liberty to call upon me, and the Central Ohio Lung Association, should you ever need our help so that we can *show* our appreciation.

☆ ☆ ☆

Members of the Rock River Amateur Radio Club (Dixon, IL) and two members of the Sterling-Rock Falls (IL) Amateur Radio Society participated in the Sauk Valley Canoe Association race held recently by providing communications from both land and boats along Rock River.

The amateurs covered a 14-mile stretch of river starting at Dixon, where the Dixon amateurs began and took over for a seven-mile stretch. Then the Sterling-Rock Falls boys took over for the remaining seven miles to the finish at the east end of Sterling at the boat marina.

Sterling-Rock Falls participants were: Paul Johnson, K9BEF, and Jim Zeigler, WA9NXE. The Dixon members participating were: Chuck Randall, W9LDU; Phil Ogan, WA9VCN; Darrel Webb, K9JBX; Claude Ensinger, WB9EBS; Neil Howell, WA9OPS; Walter Martin, WB4VWH; Sam Berard, K9KNV; and Mike Heughes, WB9GWU. ☐

HEAD FOR WORLD RADIO

The real K6FO, Norm Brooks.

Field Day

(*continued from page 1*)

For the past five years the Worldradio Staff Amateur Radio Club has participated as a group in Field Day. To us it is a highlight of the year.

Over these years we have operated from various "field" type location including even a moored sailboat. And we are proud to say, always using simple wire antennas, our scores have been well up there in our classifications.

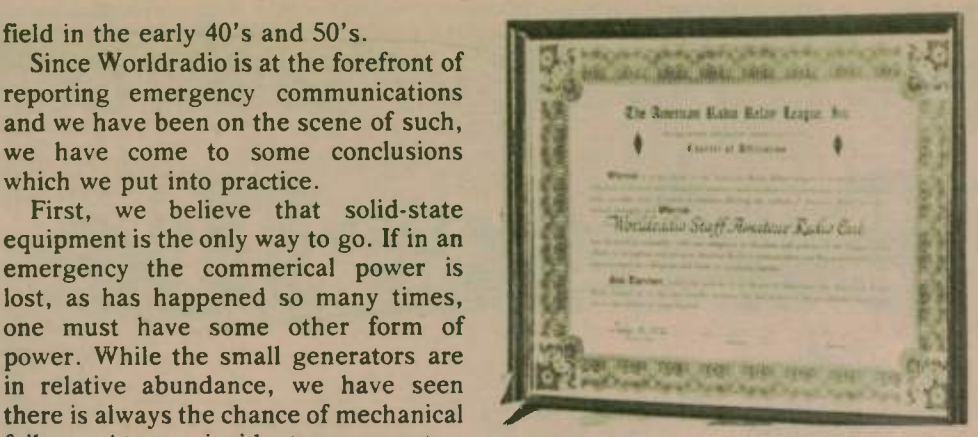
This year we did something different. Rather than go out, we (taking a page from the book by Pete Hoover, W6APW, who took his FD group to the Pasadena Red Cross building) stayed in.

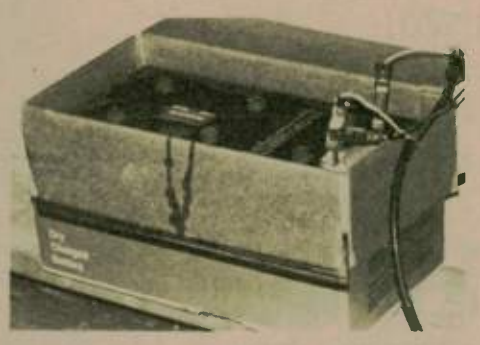
Our operation was from the station at the offices of Worldradio. We used an Atlas transceiver on SSB and CW with a battery for the power source. Lest anyone say that Field Day is to demonstrate the ability to set up a station in the field, I'd like to point out that two of our staff are ex-Signal Corps who received plenty of experience setting up stations in the field in the early 40's and 50's.

Since Worldradio is at the forefront of reporting emergency communications and we have been on the scene of such, we have come to some conclusions which we put into practice.

First, we believe that solid-state equipment is the only way to go. If in an emergency the commerical power is lost, as has happened so many times, one must have some other form of power. While the small generators are in relative abundance, we have seen there is always the chance of mechanical failure. At one incident we saw two generators fail; and that was the end of that.

There are always automobile batteries available. If the battery life is in question one can cut the transmitter power in half, thus doubling the available battery life. One will take but an insignificant 3 db (or half an S unit) drop, which seems a fair trade-off.





Power supply for Worldradio Field Day station.

As we are in an era which, more than ever before demands a public relations effort on the part of amateurs, we have a suggestion. More Field Day stations should set up at Civil Defense headquarters, sheriff's departments, Red Cross buildings and places where the PUBLIC and OFFICIALS can see what is happening and what amateurs can provide.

To show these people that we can reach all over the state and the nation with but an eight-pound radio and a battery should be quite a selling point. Remember, if an area should lose its electricity there are a lot more batteries laying around than there are generators. (*please turn to page 50*)

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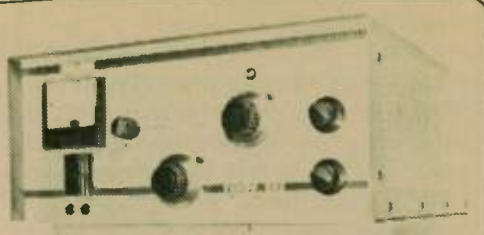

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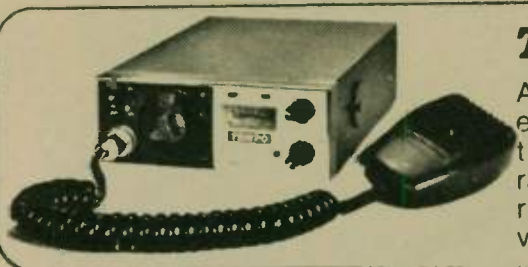

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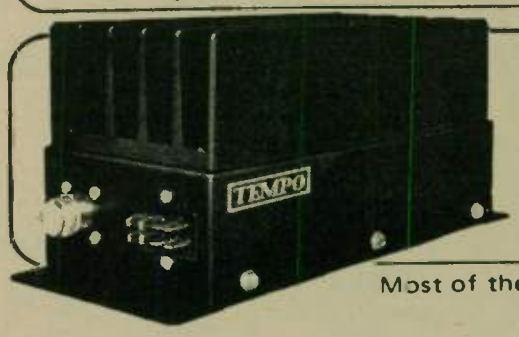

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2W	80W	80A02	$169
10W	80W	80A10	$149
30W	80W	80A30	$159

UHF (400 to 512 MHz)			
Drive Power	Output	Model No.	Price
2W	70W	70D02	$270
10W	70W	70D10	$250
30W	70W	70D30	$210
2W	40W	40D02	$180
10W	40W	40D10	$145
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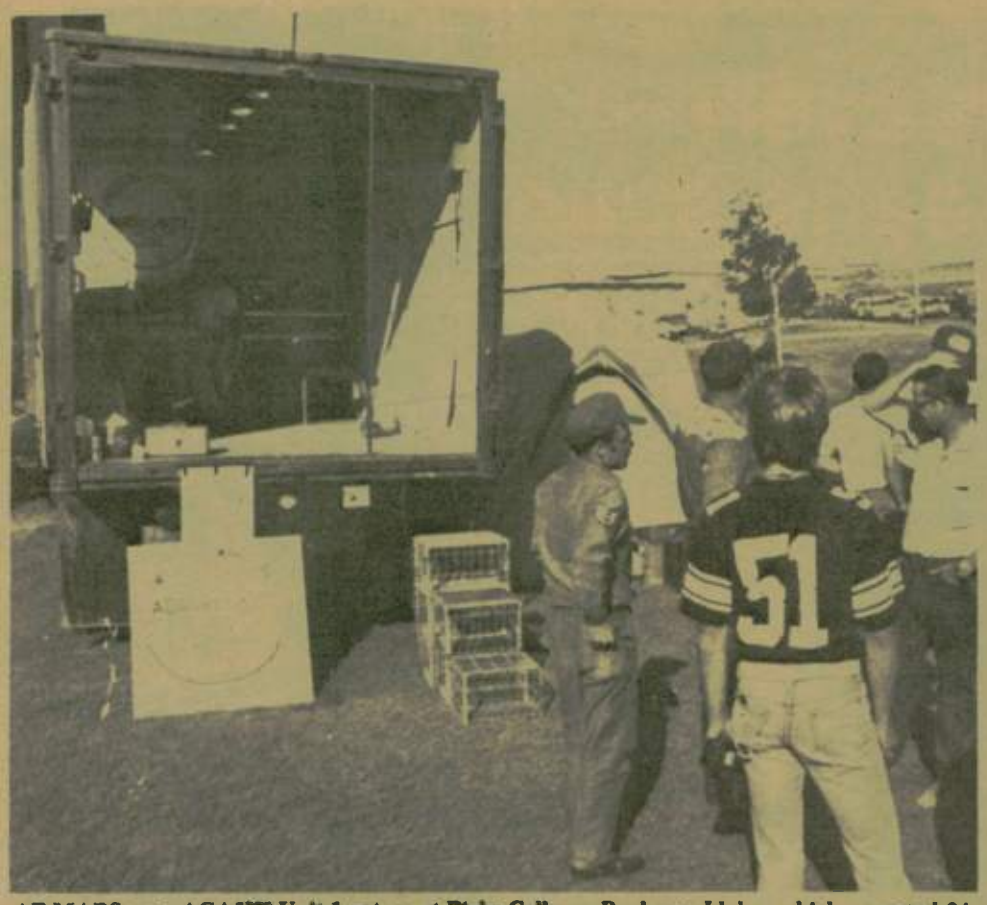

AF MARS van, AGA5HI Unit 1 set up at Ricks College, Rexburg, Idaho, which operated 24 hours a day, three stations, handling communications. Amateurs from Idaho and Utah came and assisted in operating.

S/Sgt Bruce Johnson, AFB7DVD, and S/Sgt Jurgen (Butch) Eckoff, AFC7BJW, operating HF and VHF station, AF MARS van.

Idaho disaster

Leon Stanley, W7DKB/AFW7DKB

When the Teton Dam near Rexburg, Idaho broke open Saturday morning, 5 June 1976, the town's telephone exchange was left in 10 feet of water and Amateur Radio services were deployed to handle emergency communications.

A MARS van was dispatched to the campus of Rick's College in Rexburg from the 1881st Communications Squadron's base MARS station at Hill AFB in Utah. It was immediately operational.

Operating the van were S/Sgt Bruce Johnson, AFB7DVD; Sgt Russel Wheatly, AGA5HI; S/Sgt Jurgen Eckoff, AFC-7BJW; and Bob Holt, WA7KHE. The AF MARS van, AGA5HI Unit 1, ran 24 hours a day with three stations handling communciations. Most traffic left Rexburg via AF MARS AG5HI and most incoming traffic was handled by K7-CCG, Ricks College Amateur Radio Station.

The van processed hundreds of messages and phone patches between federal and Air Force agencies within Idaho, the American Red Cross headquarters, Hill AFB and disaster relief stations, including one in a church five miles south of Rexburg. Among local amateurs helping were Lee Barrett, WA7HDD; Judy Barrett, WN7BRN; Jim Drummond Jr., WA7MKN; Matt Montagne, WA7GHW; Robert Leo, W7-LR; and Gene Olson, WA7CAC.

According to Barrett, WA7HDD, when a mountain-top repeater station near Rigby Idaho quit working, local officials authorized the purchase of new equipment to arrive by air freight.

Hundreds of morale and welfare messages were handled between families of the flood area and loved ones elsewhere. By Wednesday, 9 June, an excess of 2,000 messages were awaiting transmission and incoming traffic was refused except for bona fide priority messages.

A message center was set up at American Red Cross headquarters and several times a day the Red Cross published a list of persons who had messages awaiting them. A revised list was published and distributed through local radio stations, church offices, sheriffs offices and anyone associated with large groups of people. The system was reasonably efficient with a large percentage being delivered. □

Bruce Johnson, AFB7DVD, operating one HF position and two-meter FM AG5HI. Bruce is a radio maintenance technician with the 1881st Hill AFB, Utah. He operated and maintained stations for five days, without change of clothes for the first three. He departed his home station with only 25 minutes notice, lived in a tent on "C" rations. There were no motels operating.

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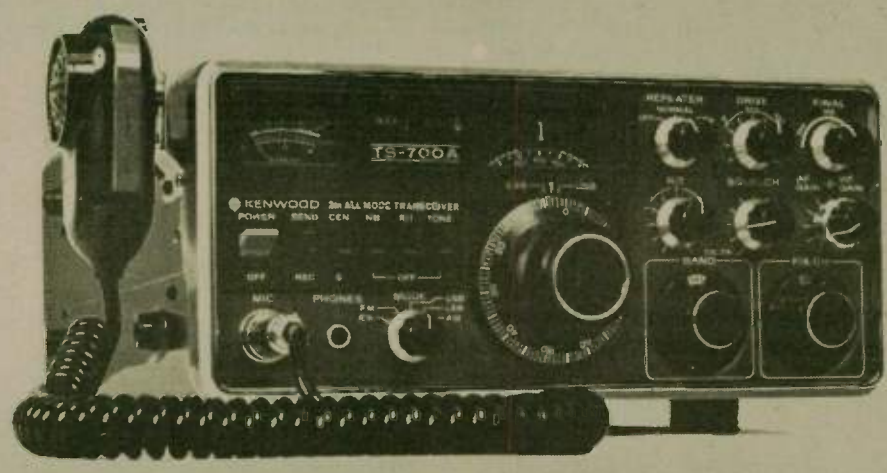

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1976 4-land QSO Party

Starts — 1800 GMT, Saturday, 4 September. **Ends** — 0200 GMT, Monday, 6 September.

Seventh Annual QSO Party — sponsored by the Fourth Call District Amateur Radio Assn. of the IARS, Inc. to make the many counties in the eight fourth district states available to the contestants.

The same station may be worked again on each band and/or mode fixed, and repeated again if operated portable or mobile, and from each different county. Fourth call district stations may work other stations within the 4th call district.

Exchange — RS(T), county and state for 4th call district; state, province or country for others.

Scoring — Fourth call district stations one (1) point for W/VE QSOs, three (3) points for DX contacts (includes KH6 and KL7). Final score is total points times states and provinces. States and provinces count once only.

All others — Two (2) points for each QSO times (fourth district states, plus fourth call district counties). Count each state and county once only. For this Bicentennial year add additional two (2) points for any CHC of FHC member worked. All CHC/FHC members send your CHC or FHC number along with report.

Frequencies — CW: 3575, 7060, 14.070, 21.090, 28.090 (plus or minus 10 kHz). Phone: 3940, 7260, 14.340, 21.360, 28.600. Novices: 3710, 7110, 21.110, 28.110 (plus or minus 10 kHz).

Awards : Certificates to top scorers in each state, VE province and country. Second and third place awards where scores warrant. HHTA (High Honor Trophy Award) certificate to high scorer in 4-land, high W/K outside 4-land, VE and DX country. Also county awards to fourth call district states and special awards to the Novice, SWLer and B/H (blind/handicapped).

Mailing deadline — Contestants must mail logs with score within 30 days of end of party to 4th Call District ARA, Attn. Bob Knapp, W4OMW, 105 Dupont Circle, Greenville, NC 27834. (Send SASE for results.)

The 16th Annual W/W RTTY DX Olympics 21 Sweepstakes

1. Saturday, 2 October, 0200 GMT to Monday, 4 October 1976, 0200 GMT. Not more than 30 hours of operation is permitted. Non-operating periods can be taken at any time during the Contest. Summary of times on and off must be submitted with score.

2. **BANDS** — All amateur bands 3.5 to 28 MHz.

3. **COUNTRY STATUS** — ARRL Country List - KL7, KH6 and VO to be considered as separate countries.

4. **CLASSIFICATIONS** — (a) Single Operator (one transmitter). (b) Multi-operator (one transmitter). (c) SWL Printer. Individual operators of multi-operated stations may submit their logs singly instead of a group log.

5. **MESSAGES** — Message number, Time GMT and Zone.

6. **EXCHANGE POINTS** — (a) all two-way RTTY QSOs with own zone - 2 points.
   (b) All others will receive points listed in Zone Chart (same chart as used last year).
   (c) Stations may not be contacted more than once on any band. Additional contacts counted on different bands.

7. **MULTIPLIERS** — Each country contacted including one's own on each band. e.g. If one country worked on 3 bands, three multipliers given. **EACH USA and Canadian District will be considered a separate country.**

8. **SCORING** — Total Exchange Points X Number of countries worked X number of continents (max. 6). Canadian Bonus Points added last — 100 Bonus Points for each VE/VO contact on all bands.

Use separate Log Sheet for each band. Log Sheets and Zone Charts available for SAE or IRC's. Logs must be received before 1 December 1976 to qualify.

Rules

1. Contacts must be two-way RTTY only, any date.

2. Award will be a Certificate, numbering from ONE.

3. There is no charge for the award, but the necessary QSL cards are to accompany the request. These will be returned.

4. An Official of a RTTY Group or Society may inspect and send in a **signed** list of such QSL cards, including all pertinent information (in place of sending the actual QSLs).

Send all requests to: The Canadian Amateur Radio Teletype Group, VE3-RTT, 85 Fifeshire Road, Willowdale, Ontario. CANADA M2L 2G9.

The "CARTG" Merit Award

The original "CARTG" Merit Award was created in 1967 to be presented to the amateur chosen for his outstanding contribution to the art of Amateur Radio teletype communications. It need not necessarily be confined to technical contributions but recognition of any outstanding achievement world-wide.

RTTY experimental work, RTTY technical articles, Traffic handling or organized net operation - RTTY, DX for world wide good will. Assistance to the blind or handicapped in RTTY. Or for any other outstanding RTTY achievement.

A plaque has been offered for this award, complete with engraving. The "CARTG" is pleased to request the names of suggested qualifiers to be sent in for consideration. Recommendations should be sent to 85 Fifeshire Road, Willowdale, Ontario, CANADA, M2L 2G9, or to Alan Venning, VE7LL, 6171 Brantford Avenue, Burnaby 1, British Columbia. V5E 2T8.

I recommend _____

Qualification _____ ☐

WW9WWW

The Sheboygan County DX Association will once again operate special events station WW9WWW during the period from 0000 GMT, 12 September 1976, thru 2400 GMT, 18 September 1976 in observance of Wonderful Wisconsin Week.

Operation will be all bands, 80-10, CW and SSB, on or close to the following frequencies: 3550, 7050, 14.050, 21.050, 28.050 — 3810, 3910, 7175, 7280, 14.215, 14.285, 21.300, 28.550.

QSL via WA9UEK, PO Box One, Plymouth, WI 53073, USA. SASE or SAE and two (2) IRC's is an absoulte **MUST** for those wishing QSL.

Sierra Nevada Hamfest

Nevada Amateur Radio Association will again host the Sierra Nevada Hamfest 28 August 1976, at the California Building Idlewile Park, Reno, Nevada.

Pre-registration, $10, until August 21. For further details, write PO Box 2534, Reno, Nevada 89505.

DXPO 76

The National Capitol DX Association, sponsor of DXPO 74 and DX Forums at the 1975 ARRL National Convention and 1973 Roanoke Division Convention, is pleased to announce DXPO 76 to be held 25 and 26 September 1976 in the suburban Washington, DC area.

DXPO 76 will be held in two half-day sessions beginning the afternoon of 25 September and winding up around noon of the next day, with a banquet scheduled for Saturday evening. Program content will be tailored around the highly successful DXPO 74.

A DX technical symposium, conducted by the Amateur Radio Research and Development Corporation (AMRAD), to be held on Saturday morning, 25 September, will kick off the DXPO 76 weekend.

To be placed on the mailing list for additional information write to: Rosie Lamb, WA3NGS, Route 1, Box 297, White Plains, MD 20695.

MI Swap & Shop

The Fourth Annual L'anse Creuse ARC Swap & Shop will be held on 19 September 1976 at the L'anse Creuse High School in Mount Clemens, Michigan. Doors will be open from 0900 to 1500 EDST.

First prize $200.00 cash. Talk-in on 146.52 and 146.94. Admission is $1.50 at the door, $1.00 in advance.

For tickets enclose $1.00 and SASE and send to Robert Harder, WB8ILI, 51769 Base, New Baltimore, MI 48047.

John Hendricks, WB6VIQ; NBC correspondent Greg Dumas; Cliff Kimball, W6MMV; and Jack Cumbey, WB6LUD; in front of the KGTV channel 10 van at the San Diego Municipal Airport, Montgomery Field.

NBC Gold Cross Ambulance attendants place Robert Carden on a guerney upon his arrival at San Diego Municipal Airport. Ted Bensen, WA6BEJ, the paramedic who helped during the flight, is in the doorway of the plane.

Imprisoned youth

(*continued from page 5*)

So there it was. Enter Old Father Time.

Now, a new problem. Sure, given a few days or a couple of weeks, the bail could probably have been raised from relatives, aid societies, etc., etc., but there was not time! On Thursday the bank in Mexico would close.

OK, so what? It could be done on Friday, or surely by Monday, couldn't it? Not so! On Thursday the judicial system would step down in Mexicali for 30 days to perform their circuit court functions in the outlying districts. No courts, no release.

So the call went out from Johnny: "We need to raise $1700 by 8:00 a.m. tomorrow morning. Paul Hower, WA6GDC, Happy Flyers Squadron #6 Commander, will get a plane, take the money (cash), fly it to Mexicali, run it to the bank, get a receipt, take it to the court, obtain a court order from Rafael Moreno Henriguez, Chief Justice of the Superior Tribunal, take it to the hospital, get an ambulance, transport the boy to the U.S. Customs gate, transport him to the Calexico airport, fly him home!

And the calls came in: "WA8KME, $5.00," "W6KRE, $10.00," "WA6WFG, $25.00," "WA6CFY, $50.00," "San Diego Repeater Association, $100.00!" "Me, $2.00," "Me, $5.00," "Take mine, $10.00," and on and on, and do you know what! We did it!

Paul took off with the money on Thursday morning. At 1251 the release was in hand. At 1351 the boy was being prepared for the flight. 1400-ambulance dispatched to the border gate. 1431-airborne. 1501-the Laguna repeater crackled to life, "This is WA6GDC. I am over Pine Valley. Is the ambulance there?" (It was.) 1530-plane in visual contact. 1533-touchdown. He is home!

You're probably wondering by now (I hope you are) how this all began. How did this young American ex-Marine get himself into such a dangerous predicament, who is he and where is he from?

He is Robert Lake Carden, Jr., 27, of Lockport, NY. Some two months ago, in Brawley, CA, he met three other Americans and they decided to go to Mexico, using the credit cards allegedly belonging to the mother of one of them for expenses.

While in Mexico, Robert was arrested and accused of the alleged misuse of credit cards supplied by his companions, who at this point abandoned him and left him to face the charges alone. While being held in jail he became ill and was transferred to the jail ward of the Mexicali General Hospital. He could not ingest food and had to be fed intraveneously the whole time he was there.

At the hospital Robert met a Mexican amateur radio operator, Humberto Wong, XE2SM, and being aware of the amateur's tradition of passing messages throughout the world, Robert asked Wong to contact his mother in New York.

The aid of the VHF Club de Mexicali was enlisted and Raul Argeuello, XE2-AZR, with Pedro Lopez, XE2LLP, contacted Johnny Johnston, W6KBT, of San Diego. Johnny in turn was able to contact Robert's mother, but found that she was impoverished and could not possibly raise the required bail. Her plea to Johnny and other radio amateurs was, "Please help save my boy!"

Jim Smith, W6VCE, of Ocatillo, which is near Mexicali in the Imperial Valley in southeastern CA, became involved at this time. Along with other amateurs, who had also become aware of the situation, Jim devoted hours and hours, since 30 May, to the complicated and difficult task of requesting Robert's release from the Mexican courts so that he could be returned to the United States for the needed medical attention which was not available in Mexicali.

The outcome you already know. When the bail was paid and the release obtained, other generous persons contributed their services: a Mexican Red Cross ambulance transported Robert to the border, the Calexico Fire Department volunteered their ambulance to rush him to the waiting plane. Upon arrival at Montgomery Field in San Diego, the Gold Cross Ambulance Service made the first leg of the journey to the Veterans Administration Hospital without charging its usual fee.

Because of Robert's critical condition, a paramedic, Ted Benson, WA6BEJ, accompanied Paul, WA6GDC, on his mercy mission so that Ted could administer to the patient's needs during the return flight.

Amateur operators of the world, take a bow! Even if you were not able to be involved in this particular action, when the opportunity is presented to you, I'll bet my Ringo that *you will be*, because you are who you are.

(Without the kind consent of Judge Rafael Moreno Henriguez, Chief Justice of the Superior Tribunal, to reconsider the case after passing sentence, and without his personal expediting of the procedures which normally take months, Robert Lake Carden could never have gained his freedom. Liberdad!) □

The American Radio Relay League

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

Recently in an article in this series on the American Radio Relay League, I discussed the Communications Department and the Office of Section Communications Manager.

During the past few weeks I have received a number of questions relative to this office, particularly regarding the election procedure. In order to clarify this procedure in the minds of members and interested amateurs, here are some details on how the elections for SCM are conducted.

There are 74 sections in the League and each has a Section Communications Manager elected by the membership of these sections. Any League member holding a General Class license or higher can run for the office upon submission of a nominating petition.

Petitions for nomination must be signed by five full members residing within the section in question. Under the new SCM election procedures, such elections will be held on a quarterly basis, with one-eighth of the sections holding an election each quarter.

Call for nomination petitions appears in *QST* well in advance of the election and the deadline for submitting petitions is given. Those who are interested in running for the office of SCM must submit petitions in advance of the deadline in order to qualify as a candidate.

If there is but one valid nomination received by Headquarters at the nominations deadline, that individual is declared elected and he will take office when the next SCM period starts. Some amateurs and members complain about this provision, since they do not have a choice or a real election. Sometimes it is even suggested that until two or more petitions are received there should be no declaration of a winner.

The difficulty in having a rule that there must be two people running in SCM elections is that in more than half the sections, it is very difficult to find **anyone** to run at all. Most who finally do agree to run would probably drop out if they had to wait for someone else to run with them.

In fact, in many cases there would never be an SCM for a section. Not many people are willing to do all the work involved. Most often, when the people who complain that they don't have two or more candidates to choose from are asked if they are willing to run, the answer is no, they don't have the time or the interest.

Often being SCM is a thankless job, and like many leadership offices in the League, one has to put up with continual criticism from members, and often nonmembers as well, who do nothing of service to the League in any way.

Once an SCM is elected, what are his duties? Well of course there is the monthly section report to write. The difficulty with this report is the fact that very few individuals and clubs ever report to their SCM. All too often, an SCM ends up writing only about those activities in which he is individually involved since he has no reports from others.

Another job of the SCM is to make various station appointments. This is not really a difficult job in most sections because very few amateurs apply for these appointments. Many amateurs complain that we do not have enough OBS or OO or other service appointments, but most who complain never do apply or take such an appointment.

A new job for the SCM is club coordination within his section. This involves visits to various clubs. Fortunately, SCMs are most often welcome to club meetings; members do want to hear about the League.

Often, however, members and nonmembers alike do not know the difference between an SCM and a Division Director. They expect the SCM to take policy matters to Headquarters or the Board of Directors.

SCMs, however, are not involved with policy matters, but rather the operational matters of the Communications Department and the new activities of the Affiliated Club Department at Headquarters.

Policy matters are under the Division Directors, and while SCMs are often assistants to the Director, they are not directly involved in such matters. Members should send their ideas and comments on policy matters to their Division Director.

Sometimes an SCM fails to function, or functions at a very low level, not satisfactory to some of the membership in a Section. Headquarters sometimes receives complaints about SCMs with requests made to remove the SCM in question.

There are procedures for the removal of an SCM. This can be done if the SCM fails to make his monthly reports for a period of time. The Division Director may request the Executive Committee to take such action, or members can make this request directly through the Communications Manager or officers of the League.

Often the fact that an SCM may take office and function very well for six or eight months and then fail to function, leads to difficulties hard to deal with. Each SCM does have three months grace, so to speak, since Headquarters will question him only after he misses three reports. If he then sends one in and fails to function again, another three months may pass before action is taken. Or it will take a month or two of letters to discover that the SCM is not going to function at all.

Now perhaps 18 or 20 months of the two-year term have passed, and if the Executive Committee does take action, it will take two or three months for removal to be effected and someone placed in the office until a new election can be held. This is now right at the time for the next election anyhow, so why go through all the removal procedures when there would be a regular election in any case?

Sometimes members complain about their SCM and say he should be removed because his policy does not agree with theirs. They feel that SCMs should serve everyone. SCM, however, is an elected office and is therefore political.

While you may not agree with what your SCM is doing, others may agree, and in a democratic organization such as the League the majority rules. If the majority wants someone in office, that is who will remain in office.

If you do not like what your SCM does, then run against him next election or find someone who will run against him.

The Section Communications Manager performs very important organizational work for the League and it is unfortunate that more members are not interested in this type of service. We need qualified leadership if we expect to have a well-functioning field organization. If you are interested in such leadership work, run for this office during the next election in your section.

But remember, leadership also means responsibility, and the pay for being SCM is not very high, in fact it's ZERO. This is a volunteer job, but one that is important to the League and Amateur Radio.

The SCMs do receive travel expenses for organizational work in their Sections, but from my own experience as an SCM it often costs something more than what you receive from Headquarters.

If this all makes the job of SCM seem difficult and unrewarding, let me assure you that the job has very great rewards in seeing an organizational job done that might not be done if you were not involved.

And the biggest reward of all is in meeting the members in your section in person and giving them service where needed. Some of my best memories in my Amateur Radio work are of trips that I made to clubs while I was SCM of the Santa Clara Valley Section.

Your SCM needs your support if he is to function well. Instead of criticizing

(*please turn to page 30*)

Drake is pleased to announce a significant new 2-meter FM design, successor to the Drake TR-22 series:

The New TR-33C FM Portable

is significant because in it, Drake brings to 12-channel FM portables:

- **SCPC* Frequency Control**
- **Lower Receiver Battery Drain**
- **Expanded Portable Antenna Choice**

*Single Crystal Per Channel

FEATURES

- 12 Channels—only one crystal per channel provides simplex OR repeater operation on ANY channel. 2 channels supplied. 5 transmit offset positions, 3 supplied.
- All FET front-end crystal filter for superb receiver intermod rejection.
- Small convenient microphone included.
- New lower power drain circuit on squelched receive.
- Nicad rechargeable batteries supplied.
- Built-in battery charger.
- Ac and dc power cords supplied.
- Telescoping screw-on antenna supplied, rubber helix optional.
- Channel indicator light when using external dc supply.
- Carry strap supplied.
- Meter Indicates receive strength, xmit output, or battery voltage.
- External speaker jack on rear panel.
- Auxiliary jack on rear panel—may be used for tone-pad connections, etc.
- Traditional R. L. Drake service backup.

SPECIFICATIONS TR-33C

GENERAL

• Frequency Coverage: 146-148 MHz, 12 channels (2 supplied: 146.52 and 146.94). Crystal determines receive frequency. • Transmit frequency offset for repeater operation determined by 5-position switch: Simplex, +600 kHz, and −600 kHz supplied; any two additional offsets available with accessory crystals. • Power requirements: 13.0 Volts dc ± 15% external supply OR internal battery supply. • Current Drain (Batteries): Squelched receive: 30 mA; transmit: 400 mA. External supply: above plus 45 mA for channel switch indicator lamp. • Antenna: 50 ohm external antenna through SO-239 connector OR screw-on telescoping whip antenna supplied, may be replaced with rubber helix antenna. • Dimensions: 5.45" (138mm) x 2.78" (58mm) x 8.5" (216mm). • Weight: 4.4 lbs (2kg).

RECEIVER

• Sensitivity: less than .5 uV for 20 dB noise quieting. • Selectivity: ± 30 kHz adjacent channel rejection greater than 75 dB. • Modulation acceptance: at least ± 7 kHz. • Inter modulation Rejection: 70 dB referenced to sensitity level. • First i-f: 10.7 MHz with monolithic crystal filter. • Second i-f: 455 kHz with ceramic filter. • Audio Output: nominal 1 watt at less than 10% distortion into 8 ohm built-in speaker or external speaker.

TRANSMITTER

• Rf Output Power: 1.5 watts nominal with 13.0 volts dc supply. • Frequency Deviation: Direct frequency modulation adjustable to at least ± 7 kHz deviation, factory set at ± 5 kHz. • Separate microphone gain and deviation adjustments.

ACCESSORIES

- **Model AA-10 Power Amplifier:** Use with TR-22C, TR-33C, or any transceiver up to 1.8 watts output. 10 dB power increase. At least 10 watts output at 13.8 V-dc. Automatic transmit/receive switching **$49.95**
- **Model AC-10 Power Supply.** Powers the AA-10, TR-22C, TR-33C and TR-72. Simultaneously can charge the TR-22C/33C nicads. Supplies 13.8 volts up to 3 amps from 120 V-ac 60 Hz input **$49.95**
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Hams And Pilots Piloting & Yakking FLYERS

"PROFICIENCY • PUBLIC SERVICE • PLEASURE"

Hart Postlethwaite, WB6CQW

It really doesn't seem possible that each month could be busier and filled with more accomplishments than the month before! But when you start the ball rolling at the top of the hill, it can't help but gain in momentum and size as it moves, especially when it rolls on nearly virgin snow, fulfilling long-overdue needs.

The nearly predictable response of Public Spirited Hams, Pilots and Flyers (observers, passengers and helpers) has been overwhelming to the need for our special type of assistance in the field of electronic search for downed airplanes (ELT), distressed boats (VHF marine band) and Radio Interference (accidental and malicious).

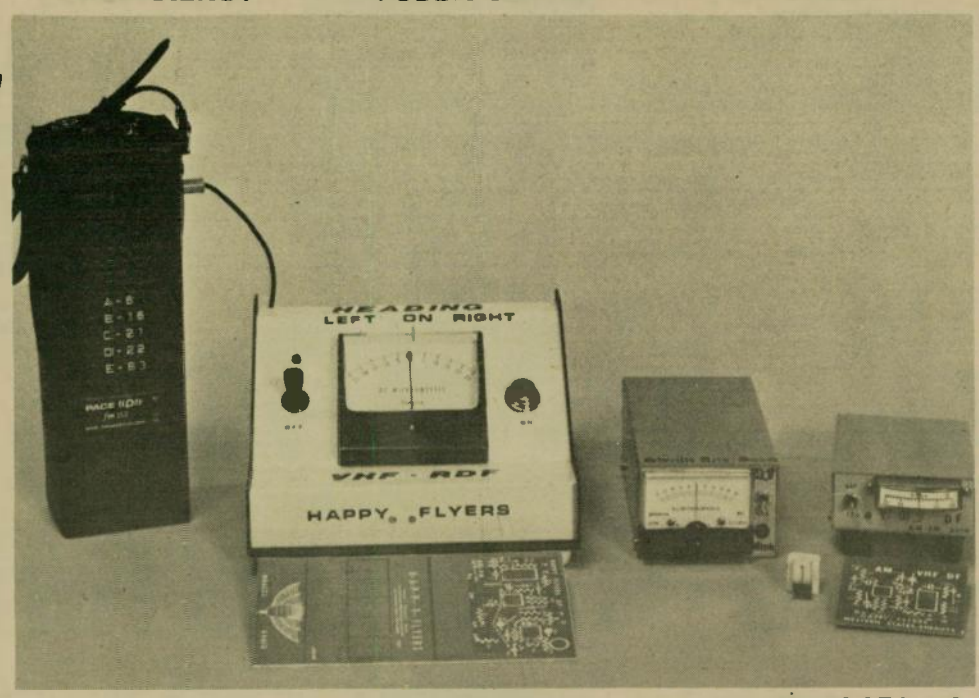
You will notice the names of the Squadron Commanders of our newly-formed groups under our "Flying Microphone" logo on this page. These are but part of those rallying to the need. Squadron #7 in Canada makes us International now (with the possibility of an additional one forming in Germany). There is talk that Squadron #7 may host a Canadian Fly-in for all Squadrons next summer!

If we are going to be International, I can see that the National Commander is going to have to put in for a promotion (at double the pay?). Let's see now, two times zero equals ?? I know we can't double the hours as two times 20 equals 40, minus 24 equals a deficit of 16 hours per day. Anyway, a real WELCOME to all the new HAPPY FLYERS.

Jammer Activities

Last month our column was written at beautiful Catalina Island during the Squadron #1 annual "Long Fly-in". While we (and all our DF equipment and operators) were away, a carrier came on 146.16 and remained nearly the whole three days we were gone.

Unknown to the jammer, Mike Gustatson, WB6PZX, had been unable to attend and had possesion of Commander Lemon's HAPPY FLYERS DF handheld unit. When contacted, Mike took to the air in his Yankee and found that the signal was emanating from an apparantly barren hillside not far from the repeater.



Pictured above are units built by amateurs for others from the HAPPY FLYERS DF boards (which are shown in the foreground). L to R — Handie-talkie owned by 12th Naval District Coast Guard auxiliary, connected to DF unit with additional input for Amateur Radio jammer hunting by Air Flotilla (WB6EVH), Sheriffs Aero Squadron unit (Las Vegas — W7VYC), and hand-held unit for Midland Handi-talkie, battery operated (WB6CQW). The very small meter is pictured to show how little space it can take to make a custom installation in even the smallest area. Information available from Hart, WB6CQW.

They landed, took their HAPPY FLYERS hand-held DF and drove into the mountains. In no time at all they found a crude, homebrew transmitter, connected to batteries, hidden under a bush, with a wire strung in the branches for an antenna.

When law enforcement officals were notified, they discovered that for the same period of time there had been a low-level carrier on two Bay Approach (aircraft) frequencies and two public service channels! The location of this device was within the range of the commercial approach path to San Jose Municipal Airport!

This malicious and dangerous interference must be stopped and the HAPPY FLYERS pledge their all in this endeavor. If one wonders about the value of APPREHENSION CAPABILITY versus JAMMER ACTIVITY, please note that this sick individual waited until the HAPPY FLYERS were gone for the three days to play his game. Of interest also is the tremendous decrease in jammer activity in areas where amateurs began to arm themselves with hand-held and airborne DF equipment. Those units include our own homebrew HAPPY FLYERS DF, the "Lil" Elper, and the Micro Electronics.

Seminars

DF Seminars this month have been great. Solano County Sheriffs Air Squadron got together with amateurs (led by Dean, WA6WAH). Commander Kolsters, head of the Western States Association of Sheriffs Air Squadrons, became the first person to complete my course in Electronic Search Techniques. He had attended the seminars and then flew my 182 to a "find". He was so over it that neither of us could see it from eigher side. He couldn't believe what he had done; he laid the plane on its side and "there it was" right below us.

Squadron #3 hosted me for a seminar in Seattle and Don Rose, W7JPH, arranged an all-day meeting with the Department of Aeronautics, CAP, Mountain rescue, etc. William Hamilton, Director, and his teams were the best organized and most capable group I have met. Washington State has been doing their own electronic searching since the inception of the ELT program. We had a marvelous exhange of information and techniques, and I sure enjoyed the steak and their beautiful country.

We then traveled to Los Angeles for a seminar co-hosted by Squadron Commander Norm Friedman, W6ORD and ARRL leader Lenore Jensen, W6NAZ — a fantastic exchange of information and some scientific explanations from the audience of things we had learned by experience.

On then to San Diego Squadron #6, hosting a meeting at the Coast Guard Base. Among those in attendance was local FCC Chief Clarence Spillman, a real great person with lots of savvy. As luck would have it, the local amateurs were having a transmitter hunt the next morning (with a $50 first prize). The leaders challenged me to find it and I gracefully declined to take their money.

The next day Commander Hower, WA6GDC, and Steve Adams, K6PD, called and said let's go secretly. It took us about seven minutes to take off and get to altitude. They gave us four one-minute bursts of carrier and we found them — some 29 nautical mailes from Lindburg Field — back in the mountains, (about 21 minutes from identification). Average groundspeed was about 142 mph. We were back on the ground at Lindberg (after a 360° and a 270° in the pattern, new controller I guess), for a total tach. time of .78 hours.

The hiding place was a little valley nestled in the hills — quite typical of (*please turn to page 41*)

National Wing Commander
Hartley Postlethwaite IV WB6CQW
1811 Hillman Avenue
Belmont, Calif. 94002

Commander Squadron #1
Richard Lemon, WB6CTA
5041 Trenary Way
San Jose, Calif. 95118

Vice-Commander Squadron #1
Richard Altman WA6AXV
1053 Shrader Street
San Francisco, Calif. 94117

Commander Squadron #2
Jerry Johnson W5URJ
1613 Camero Drive
Carrolton, Texas 75006

Commander Squadron #3
Donald E. Rose W7JPH
19001 - 40th Place N.E.
Seattle, Wash. 98155

Commander Squadron #4
Jerry Mann, W7VYC
3909 Brighthill
Las Vegas, Nev. 89121

Commander Squadron #5
Norm Friedman, W6ORD
5400 Lindley Ave. #312
Encino, Calif. 91316

Commander Squadron #6
Paul Hower, WA6GDC
Box 2323
La Mesa, Calif. 92041

Commander Squadron #7
Claude Oram, VE6LH
6504 - 30 St. S.E.
Calgary, Alberta T2C 1N4

STATION APPEARANCE

Our station appearance award this month goes to Luis Caamado, HI8LC. He will get a one year extension of his **Worldradio** subcription.

Luis' station is very attractive indeed. The large ARRL map above his operating table and all of the framed awards are definitely contributing factors. His matching equipment is neatly arranged and he has in view both a microphone and a key, attesting to his well-rounded amateur activities. What we are looking for is a set-up that gives our avocation a favorable impression to on-lookers, and Luis' definitely does.

Luis is a 46-year-old electronic technician who works in the telephone field in Santo Domingo, Dominican Republic. He is married and has four children (one daugther and three sons). He has been a radio amateur for about 14 years and is active from 1.8 to 144 MHz (seven bands), both on CW and SSB. (That's what we like to hear, a person who doesn't limit himself to just one category.)

Luis presently uses the Heathkit line, with inverted "V's" on 80 and 40 and a TH4 HyGain for 20, 15 and 10. He has about 200 diplomas including WAZ, WAS, WPX, WAC, DXCC (with 236 confirmed) and CP-26, among many other awards.

Luis' first license in 1962 was HI8-LPC. During his 14 years as an amateur he has had about 140,000 contacts. He also enjoys chasing DX and participating in contests. In addition, he works different national and international nets to help other people.

Last year Luis was President of the Radio Club Dominicano, Inc. and is also a member of IARU Region II executive committee, ARRL, ISWL, INDXA, IARC, Ten-Tec #6315 and YL1SSB #9352.

Luis is a coordinator in the HI-land for the IARH (International Amateur Radio Host) so if any amateur comes to the Dominican Republic, Luis would be glad to send any information about his country. And best of all, Luis "enjoys very much reading the FB **Worldradio News.**"

May we feature your station next? Send us a photo and information about yourself and your activities. □

Pitcairn Generator Fund

(*continued from page 2*)

Worldradio) is US $2500 and as of today, thanks to the generosity of amateurs and others interested in the project, the fund has reached $1,660.

This generator project is even more important today than ever. Three weeks ago the main Island generator (the one that supplied power from sundown to 11 p.m.) ran itself to death, blew up and caught fire, and now the entire island is without its major source of power. And we think WE have problems.

Well here's the honor roll of donors since the July **Worldradio** issue listing on page 15.

Crescenta Valley Radio Club
Lockheed Amateur Radio Club, W6LS
Dr. Andrew Peterson, W4MMH
Alex & Leta Sheriff, WA6HUE
QCWA So. CA Chapter
Orange County Radio Club
Warren E. Gilleran, WA6QQB
Al Guy, WA6DVE
Amaheim Amateur Radio Club
Inter-City Radio Club
Monterey Park Radio Club
Dave Bell, W6BVN
Wally Wiggins, W6C[illegible]Z
Howard N. Schmidt, K5BLV
Gene Etchells. W6OED
John Lyons, WA6WCZ
The Cunninghams, W6PIF-WA6ISY
John Hitt, KØKFV
Mort Grotenstein, K6JT
Ralph Cabanillas, W6IL
John Coleman, W8SK
Bill Stewart, K6HV
Bob Miles, WA6LLW
Perry M. Rockwell, WA4JBZ
Carl Jolly, SOWP
Austin Regal, K4YFQ
Stewart Woodward, K4SMX
Rus Daley, W6TPR
Martin Laine. OH2BH
Robert Leo, W7LR
Harry Miles, W2JKB
Bill & Marie Welch, W6DDB-W6JEO
Joe McKee, K6KW
Ed Day, Ham-2-B
Dave Stoddard, K6INY
Mike Morris. WA6ILQ
Bill Roussel Jr., K5RVF
Bill Nielsen, W7UR
Bill Sedore, W5SZV
Dr. Valentine, K4LRO

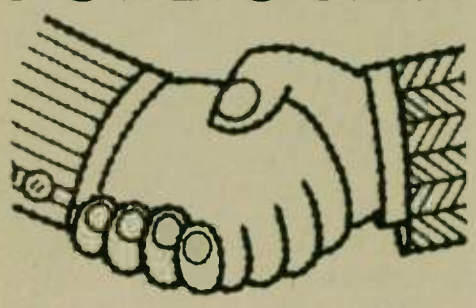
Ron Carpenter, WB6YID
Jack Caughey, WA6CWG
Joe W. Brownell, W2BSI
Al Trumble, WB6MUS
Moe Joffe, W6PHE
G. Wesley Parr, W6BWG
Erick A. Pfeiffer, WA6EGY
Bob Killion, W6PG
Martin Cornell Jr., K6NS
Jack Tielrooy, W6HDT
Ed Berzin, W2MIG
Radio Club of America members:
Tuxen, Boyle, Gurian, Shunaman & Duskis
Luis Caamano, HI8LC
Monterey Park Radio Club (second donation to fund)
V.E. Neilly, K3CA
Wm. Johnson, W6FD
Homer Obuchon, W6EPD
Wm. Hall, K6TLG
Stuart Meyer, W2GHK
Sam Grossman, W2JDG

Vi Grossman, W2JZX
Charlie Farek, WB5IYB
Roy Rehbein, WN1VHX
Glenn Myers, WB4TIN
Andrew Toth, W5LQN
LaMar Ray, W9LT
Henry J. Celli Jr., WN6FSQ
Larry Shambaugh, KPH-9581
Les Hepburn, W6AJL
Lou Barnes, WA6TFR
Richard Martin/ Mrs. Murrin, WA6DQR
Henry Sjaardena, CARE
Joe Rundle, WB6ACL
Robert Smith, K4PHE
John Palmer, W2ARV
George Apfel, W2GHK
Dr. S. Gumport, WB2RVU
Henry Paufisen, W2AQ
Frank Gunther, W2ALS
Lloyd Fleming, W2CLI
Leon Simons, K2MJN
Ron Benatti, WA1JMP
Ralph Ladd, W3KA
Floyd Gerald, WB5HVY

Walt Joos, W6EKM
Charlotte & Jean (daughters of W6NTR, silent key)
Don Moses, WA6LLY
Howard Kenkel, W6TA
Anonymous
J.D. Matheny, K6MI
C.D. McFeeley, K6SV
Jules Sisskim
Milt Kiesner, W6WC
Ron Plummer, K6GJN
Wm. E. Trumbull, M.D., WA6DPT
Ray Biederman, WB6NSJ
Jan H. van Balen, WB6OYJ
A. Draugelis, WB6EBB
Tony Masvidal, WB6PCU
Bob De Lorenzo, WA6GGC
S.E. Burdette, W6YYV
A.Clark, W6OHS
Harvey Ross, WB6YNO
Dennis H. Barthel, W6HRH
Will Wilson, W6FCF
Tom Coleman, K6VW
John N. Elwood, W7GAQ/6

(*please turn to page 48*)

PUBLIC RELATIONS



For our first Public Relations column we are printing the Guidelines for an ARRL Public Relations Assistant (PRA). It is hoped that this can also serve as a guideline for others. In future columns we would like to print ideas, experiences, articles, etc. from our readers. This is your invitation to contribute to this first-of-a-kind column.

The ARRL Board of Directors has established the appointed position, Public Relations Assistant (PRA). Each division director is authorized to appoint amateurs in his division who are professionally or technically qualified to plan, administer and coordinate appropriate public relations programs and activities within the division as directed and/or approved by the Director.

The general purpose, scope and functions of the PRA are outlined in these Guidelines as a means of assisting the Director and the PRA in developing a program appropriate and effective to the needs of the Division.

Purpose

Everyone agrees that good public relations are highly desirable for Amateur Radio — but without always asking why.

To have amateur efforts and activities recognized and appreciated by the public is only part of the story. More important is the effect of that recognition and appreciation on actions at international frequency allocation conferences, on national regulatory decisions and on local, community antenna regulation, zoning, TVI, RFI and other real or potential problems affecting amateur operating rights and privileges.

Good "grass roots" public relations have a major impact at the local, community level and support broader efforts at the national and international levels. Good grass roots public relations involves the regular and frequent dissemination of information about amateur activities, public service and accomplishments primarily through local publicity via press media, television and radio channels — but also involve community activities, school programs, presentations to service clubs and community organizations, exhibits and demonstrations, public code and theory classes and other efforts which provide visibility to the public. PRAs, therefore, should be selected and appointed on the basis of individual qualifications, locations in metropolitian or significant media centers and access to Amateur Radio clubs and other organized activities.

PRA Scope

The basic areas of responsibility of a PRA are as follows:

- To act as public relations advisor to the Director, keeping him informed as to specific needs and opportunities, developing and recommending appropriate programs and projects for the Division.
- Developing and coordinating the public relations function among affiliated clubs, encouraging and assisting club publicity chairmen.
- Establishing and maintaining good personal press relations with the major print, audio and visual media in his area.
- Providing liaison with ARRL headquarters and its public relations counsel on public relations matters.
- Assisting the Director in the preparation and dissemination of communications within the Division, including newsletters, convention programs, etc.

PRA Functions

- Establish contact with affiliated clubs in his area to encourage appointment of a publicity chairman in each, assist the chairman in carrying out an effective program, supply materials available from Head quarters (such as the *Publicity Handbook*), etc.
- Seek out and develop significant stories in his area and promote their dissemination.
- Establish and maintain personal contact with major media in cooperation with club representatives, encourage good press relations among club chairmen.
- Develop and promote good ideas for community projects and special events to display Amateur Radio to the public.
- Maintain regular contact with the Director and with other PRAs in the Division.
- Distribute locally releases and announcements originated by Headquarters on national stories, supplying a local angle wherevever possible. Provide a channel of communications on PR matters to and from Hq and the ARRL public relations counsel.
- Advise and assist the Director in the preparation of division newsletters, convention PR programs and PR planning for the Division.
- Promote the distribution and showing of League films via schools, community organizations and TV stations in his area.

Expenses

The ARRL Board has authorized $150 to each Division for reimbursement of postage expense. Proposals involving other expenditures, especially during the early developmental stage of the PRA appointment, should be reviewed with the Director for possible consideration by the Board. The $150 allocation, obviously, is in no way intended to reflect the costs of a PR program. □

EDITOR'S LOG

Armond Noble, W6AJY
Editor, Worldradio

Guest Editorial
Gary Maples, WØOXT
Douglas/Sarpy County, NE, E.C.

Our hobby, exciting as it is, is virtually invisible to the general and official public.

Don't believe for a minute that we have no need for PR via public service, because **you know** that public and private agencies will automatically flock to Amateur Radio when disaster or emergency strikes. **No other agency,** private or civil, had an accurate survey of the damage caused by the May 6th Omaha tornado until the Wednesday or Thursday following the tornado.

Amateur radio operators in Omaha had a reasonable survey done by 8:30 p.m. on the Tuesday of the tornado. When this was mentioned to a local public official he exclaimed, "Where were you guys?!" In other words, we had information he was desperately in need of that Tuesday night, but he didn't know who we were, what we could do, or how he could get a hold of us.

This situation ponts out a failure on our part to accomplish effective public service public relations. We need to get to that point where the general public knows and understands the difference between Amateur Radio and other radio services. We need to get to the point where the public official knows who we are and what we can do. To allow Amateur Radio to perform its public service duty, we need to take advantage of every public service opportunity that we can reasonably handle. We won't get those opportunities unless we effectively perform public service operations that make people aware of us.

If public service is one of the few ways we can get the story of our hobby in the news media, then that is what we must do in order to reach the public. If we don't get our story out, then what recently happened to me may happen to you.

An associate at my place of employment approached me because he wanted to get into radio and he had heard that I "messed around with that sort of stuff." He told me that he wanted to get into this "CB thing."

I explained to him that Amateur Radio was another alternative he should consider. We talked about Amateur Radio at great length, discussing the opportunities and fun that was available. I even gave him some Amateur Radio magazines to take home and read.

When he came back, he informed me that he wanted to get into CB instead of Amateur Radio. He said that he had heard and read much more about CB and besides, it looked like Amateur Radio was dead and that CB was going to be the future.

The above story certainly indicates that we need every form of PR that we can get. If we don't reach the general public and civil authorities with the story of Amateur Radio then we had best start tuning all our antennas for that top megacyle of 10 meters.

It is going to be more and more important that we justify our very existence. Not only must we continue to justify our existence, and a good public service record is the best way to justify that existence, but it is imperative that we inform people just what we are doing to warrant our continued spectrum authorizations.

What do I mean by "informing people"? Tell your neighbor, the guy you work with, and local, state and governmental authorities. And most importantly, help people and organizations via Amateur Radio.
—Ham Hum

(Editor's note) As never before, Public Relations is important to every amateur radio operator. Thus, Worldradio News announces the start of a monthly column devoted to that subject. We ask all clubs and individuals who have had successful projects and experiences to send in details.

There are, of course, the national and international levels where rages the battle to keep our present frequencies and hopefully obtain new ones. The FCC, OTP, State Department and other government agencies must be made aware of the greatness of Amateur Radio and just what it has to offer as a national resource.

On the local level we are seeing a great increase in restrictive tower and antenna ordinances. The reason for such is that the members of city government just don't know what Amateur Radio is or what it can offer their community.

Recently a junior college cancelled its Amateur Radio course. The admimistrators had confused Amateur Radio with another radio service and didn't want such on the campus. Only after much explaining by amateurs of the area was the class allowed to continue.

When we have failed to reach educators, government officials and the like with what Amateur Radio is, all we can say is we have done a very poor job.

There is probably no other activity that has as much to talk about and does so little talking about it. There may be some who say "Well amateurs don't like to blow their horn". That may well be true but we must take it out of the "horn-blowing category and replace it with an informing-others attitude.

It would be interesting if an amateur in each community would query his city councilman as to what "Amateur Radio" means to him. Just how many would say, "Oh, they're a group of people who stand ready to assist their community in any emergency or public service project."?

(*please turn to page 32*)

DX DIGEST

Gary Stilwell, W6NJU

The months fly by much too fast. Here it is August already and it seems like the year just started. I guess that's what happens when one gets involved in far too many projects. Before we know it summer will be well past us and another winter season and contest season will be here.

Last month we took the opportunity to congratulate the editor and publisher, Armond Noble, W6AJY, on his achievement of attaining DXCC. Armond is still waiting for his QSL cards to be returned from the DX desk at ARRL, but his problems in getting his 100 QSLs together may be of some help to some of the beginners.

Getting that DXCC certificate seems to take a little more than just getting 100 cards. In Armond's case, the incoming cards had not been carefully checked to make sure that they had been properly made out to W6AJY. Such items as incorrect call signs, inadequate information put on the card or the year left off the date information make a QSL inadequate for DXCC approval.

Well, we got passed the waiting period for additional cards to come in the mail and now the application is on its way. Remember, it's a good idea to check that QSL when it arrives to make sure it is proper. It's better to get a QSL corrected if you make the request right away than waiting several months after the card has been received.

In July we passed along some information submitted by Orin Levis, W6DZK, as obtained from the local FCC office regarding the fees sent in for special call signs. Turns out that *QST* published information in July which was in direct conflict with the information obtained by Orin. We would suggest the guidelines as they appear in *QST*. The whole matter just goes to show that we can get two different stories from a governmental agency. Guess the FCC doesn't have the precise word out to all the field offices.

Grand Cayman Island

Joe Lynn, W3GPD, and Paul Schmid, W4HET, operated from Grand Cayman Island is June as ZF1JL and ZF1SP respectively. They used the Triton IV transceiver on the expedition and QSLs are now being processed for mailing.

QSL Information

Bob Donovan, KH6AHZ, QSL Manager for VR3AK, asks the US amateurs requesting QSL cards to please send stamped envelopes, **not** IRCs. IRCs are too expensive for all concered when mailing within the United States.

Drake Peddie, WA5ZWC, 5027 Braesheather, Houston, TX 77096, is QSL Manager for HL9WI, VP2VBH, EL4D, 5N2ESH, 3B8DL and 3B9DL.

QSLs for XE1UFA should go to WB4KPZ, James Joyce Jr., RFD 3, Box 430, Reidsville, NC 27320.

Al Wessel, K4DAS, 6321 NW 1st Ct., Miami, FL 33150, will be handling QSLs for EP2VW. EP2VW is now active on CW at 025 kHz on all bands.

Tom Dornback, K9MKX, 2515 College Road, Downers Grove, IL 60515, is the QSL Manager for ZS6ZE and G3JXE.

Europa

Guy P. de la Rhodiere, FR7ZL, should be operating from Europa until the middle of September. Guy is hoping for some good conditions and a good place to watch is 14.025 MHz and just below the 20-meter phone (US) band on SSB. Guy should be using an HW-32, Hy-Gain 12AVQ and dipoles.

Bill Rindone, WB7ABK

Bill Rindone, WB7ABK, has started the Africian portion of his DX travels and recently has been operating from Sudan as ST2SA/0. It would appear that 025 kHz on the CW bands is a good place to watch these days.

Netherland Antilles

W2BBK will be operating from Neterland Antilles as PJ8AA for two weeks starting 4 August.

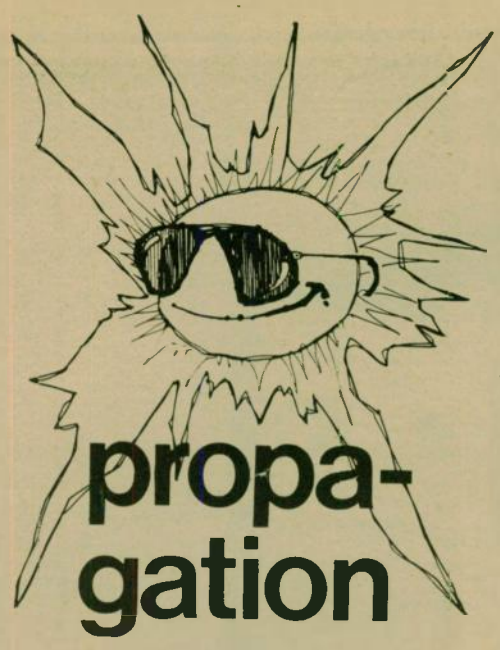
Joe Hypnarowski, WA6VNR/ZF1JH, was the man behind the QRP two-watt signal (RF output) from Grand Cayman during April 1976, his last ZF1 QRP DXpedition. Joe reported the trip was very successful with 900 contacts in 10 days operating off and on. He used an 18 AVT mounted on the beach 10 feet from the Caribbean. Joe is planning a QRP DX trip to more locations in November 1976 as PJ8JH, FG0CSC, 1FS7.

Five Islands DXpedition

The Malaysian Amateur Radio Transmitting Society, using the special call sign 9M0EXP, plans to operate from 14-18 August 1976 on five small islands, namely Tioman, Rawa, Pemanggil, Aur and Tinggi, off the southeast coast of West Malaysia in the South China Sea.

The 9M2-land operators will operate 24 hours a day. SSB and CW, on all five amateur bands.

Special commemorative QSLs will be send **direct** to those who send in their QSLs with $1.00 (or equivalent in any



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.

AUGUST 1976

UT	AFRI	ASIA	OCEA	EURO	SO. AM
01	9.3	17.4	20.1	9.9	16.2
02	7.8	17.9	19.9	9.3	16.1
03	8.6	17.5	19.9	9.5	14.9
04	13.2	17.4	20.1	10.3	13.4
05	13.0	17.8	19.5	11.4	12.6
06	11.6	16.1	17.7	11.7	11.8
07	10.1	14.9	15.7	10.6	10.1
08	8.9	13.1	14.2	9.7	8.8
09	8.2	13.1	13.0	9.1	10.2
10	8.3	11.9	12.1	8.9	11.6
11	9.2	10.7	11.8	9.3	11.1
12	10.9	9.9	11.9	10.4	11.9
13	12.9	10.2	11.0	12.2	14.3
14	14.7	11.9	11.9	15.1	16.5
15	15.7	12.1	12.8	16.4	16.8
16	16.0	11.1	12.7	16.3	16.3
17	16.2	10.9	11.5	16.1	16.7
18	16.6	11.6	10.3	16.5	18.4
19	16.8	10.8	10.8	17.2	20.3
20	15.8	12.5	13.3	16.0	21.7
21	14.0	14.1	16.3	15.0	22.7
22	12.6	15.1	18.2	13.2	21.3
23	11.5	15.7	19.2	11.7	18 4
24	10.6	15.3	19.9	10.7	16.5

currency) or sufficient IRCs. Submit QSL to DXpedition 9M0EXP, PO Box 777, Kauala Lumpur, Malaysia.

VIEWPOINT

Frank Jerome, K5CM

How interesting is Amateur Radio DX to you? Is the present DX awards system working for you? Are the big guns on the honor roll really the big guns? Are any changes needed?

Yes, I think change is needed. I propose two changes to the DXCC award to be made in the near future.

1. Operate the DXCC award under jurisdiction of IARU instead of ARRL with international representation rather than DXAC of ARRL.

2. Make DXCC country totals accumulative for honor roll purposes. The amateur with 100 countries from 10 locations is higher on the honor roll than the old timer with 350 from a single location.

RATIONALE 1: Operating DXCC by IARU with international representation would not allow quickie, flash in the pan, overnight political influence to make a new country on the list. Rule changes would be slow simply because of coordination time, likewise country list changes. The DXCC award has international popularity; logically, it should be internationally governed. No more accessions for simple brownie points.

RATIONALE 2: De-emphasize the use of super power in a super antenna farm by a super grand-daddy. While this person presently can hold his spot at the top of the honor roll, does he really enhance Amateur Radio, motivate new DXers to follow his footsteps and create international goodwill by his sophisticated operating procedures and tactics?

Possible, but I think not likely. The world traveling innovative amateur and his suitcase transceiver and some copper wire does more for international goodwill in one weekend from an ordinary semi-remote island then the denizen of aluminum acres has in the last twenty years. The DX chase could become common ground for the masses of amateurs.

There are a couple of persons on each continent who have vast totals of countries when you use their total accumulative count. These are the DXers who should be on the top of the honor roll, instead of the affluent owners of acreages and the aluminum. The present method of staying at the top of the honor roll requires wealth, age and a single location. This present method eliminates anyone under age 30 with less than five acres and less than rock solid job security.

Please discuss my proposals at your next DX club meeting. Do not fall into a trap of trying to improve the present ARRL DXCC award by modifying Rule 9 (or any other rule). My proposals do not have to be acted upon right now; however, it would be nice to have a DXCC award with a new look before the next sunspot maximum. Most of the postwar DXCC honor roll group have already enjoyed their last sunspot maximum according to life insurance statistics. Now is the time for some changes.

NOTE: I have held calls KR6LJ, KG6AQ, KL7AGM, PJ8CM, W5OJZ, K1CQP and WA6CEJ, and have a total accumulative country count of about 700 — not a big gun compared to many others.

Tri-lingual German Amateur Radio license

Alfred Mueller, DL1FL

A new tri-lingual document of Amateur Radio license has been issued by the Deutsche Bundespost (Federal Republic of Germany). With this document in the languages German, English and French, the German Telecommunication Administration wants to signalize that time has come to generally withdraw time and expenditures wasting application regulations and to acknowledge Amateur Radio licenses everywhere in the same way as pilot or motor car driver's licenses are recognized.

In fact, since reciprocal licensing has been granted in principle between most of the European countries, there should hardly be any reason to refuse a visitor license as long as the visitor holds a comparable valid license of his own country. It should, however, be recognized that every visitor should inform the Postal and Telegraph administration of the country of his destination about his intended travels to that country, in the same way as he is obliged to report any changes in the residence circumstances in his own country.

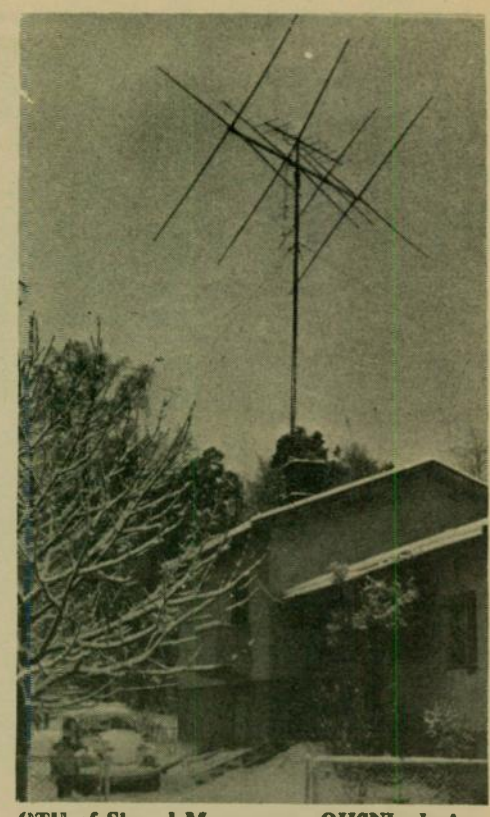
Active YL

Marilyn Lassanske, WB9MFC, has just completed 4-band WAS, finishing up with KH6IMO and KL7JDO. She only needs 14 more states on 10 meters for 5BWAS, and she has just completed DXCC.

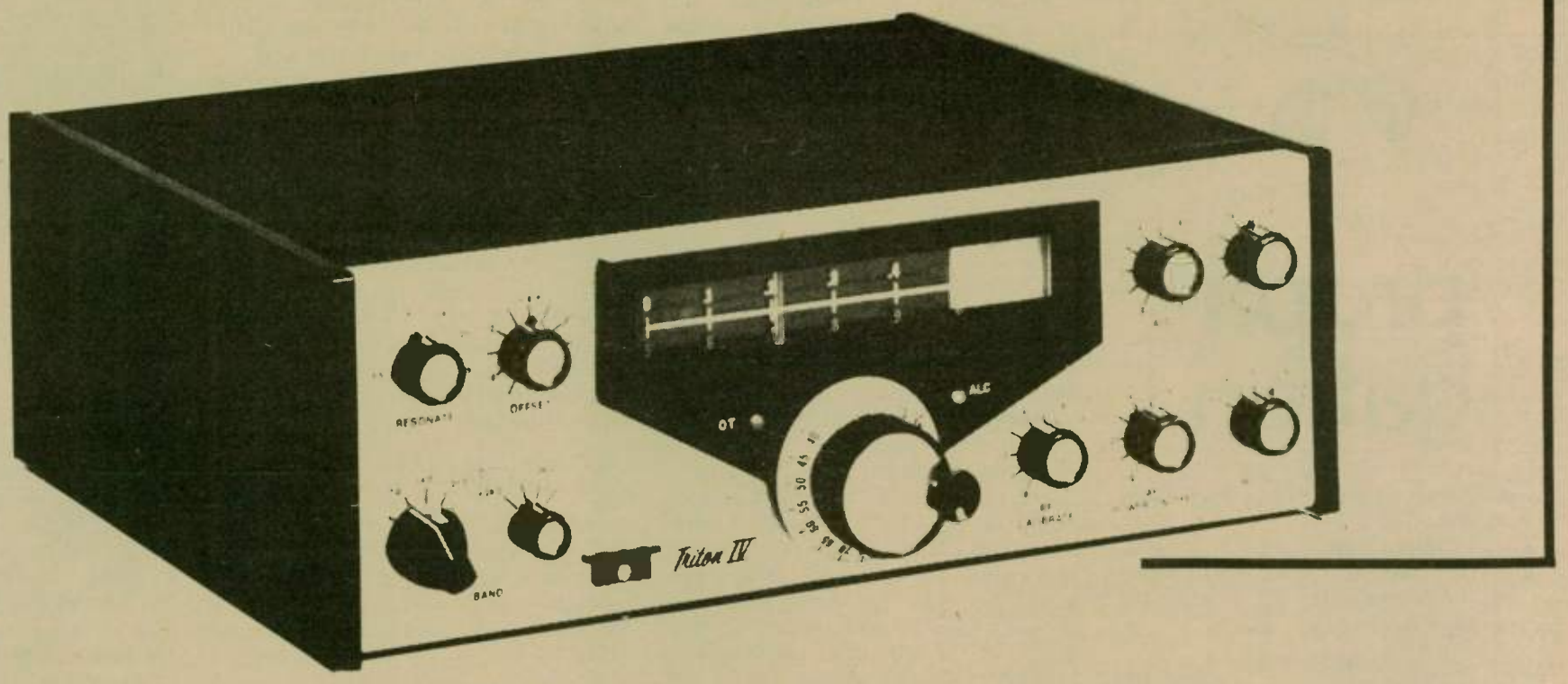
Congratulations, Marilyn.

Pass it on!

WORLDRADIO NEWS to your Family and Friends.



QTH of Sigurd Mansneras, OH0NI, during the winter of 1975. Siggy is QRV on all bands, 160 to 2 meters. He was the first RTTY in OH-land. Siggy also reports that Einar, OH0NJ, is QRV on 14 MHz with a Drake-line and a four-element mono-bander. He received 5-band DXCC, the first in OH0-land. Ove, OH0JN, ex OH1JN, is QRV 80-10 meters with a TS-520 and SB-230 on SSB and CW. QSL address to OH0-land is Box 1, SF-22101 MARIEHAMN, Finland.



OPERATIONAL FEATURES

GENERAL:

- Frequency band: 3.5-4.0, 7.0-7.5, 14.0-14.5, 21.0-21.5, 28.0-28.5, 28.5-29.0. 29.0-29.5, and 29.5-30.0.
- 10 meter crystals furnished for 28.0-29.0
- All circuits permeability tuned
- Direct frequency readout
- Accuracy ± 1 kHz from nearest calibration point
- 25 kHz pulsed calibrator
- Automatic sideband selection, reversible
- 12-14 VDC, 500 m.A. receive, 18A (max) transmit
- Size: HWD 4½'' x 13 5/8'' x 13''. Net weight: 12 lbs.

RECEIVER:

- Preselector resonate control
- Meter automatically switches to ''S''-meter when receiving
- Offset tuning with defeat switch and LED indicator light
- Built-in speaker in bottom, eternal 8 ohm speaker/phone jack
- Less than 2% audio distortion
- Color coded, illuminated dial and tuning scale

TRANSMITTER:

- 200 watts input, SSB and CW
- Instant band change, no tune-up required
- Amplified Automatic Level Control on front panel
- LED panel indicator light shows operation in ALC region
- Automatic CW offset of 750 Hz
- Press-to-talk
- Meter indicates SWR when transmitting
- RF output impedance 50-72 ohms

ACCESSORIES:

	PRICE
POWER SUPPLY MODEL 252G. 13 VDC at 18A. 117 VAC 50-60 Hz input. Size, HWD: 4½'' x 8¼'' 13''. Wt. 14½ lbs.	99.00
POWER SUPPLY MODEL 262G. Same as Model 252G but with complete VOX system and speaker. Size: HWD 4½'' x 9¼'' x 13''. Wt. 16 lbs.	129.00
MODEL 207. For all Triton IV Power Supplies	14.00
CW FILTER MODEL 245. Plug-in.	25.00
MODEL 212. For 29.0-29.5 MHz	5.00
MODEL 213. For 29.5-30.0 MHz	5.00
MICROPHONE MODEL 215P. Ceramic, PTT switch, plug, base	29.50

Power supplies available for 115/230 VAC as Models 252G/E and 262G/E a $7.00 additional.

Crystals available for addt'l. 10-meter operation.

WARRANTY: We warrant all TRITON transceivers and accessories to be free from defects in workmanship and material for a period of one year from date of purchase.

TEN-TEC at M-TRON

M-TRON Used Specials

Drake 2NT Novice transmitter		99.00
Magnum 6 speech processor (Heath)	was	89.00
	now	69.00
Curtis EK-38 electronic keyer		49.00
Hallicrafters model #PS150-12 mobile supply		49.95
Galaxy XO5-550 crystal adapter (GT-550)	was	19.00
	now	14.95
National NCX AC PS (NCX 3 or 5)		69.95
Heath SB-303 receiver with 400 Hz CW filter		249.00
Hallicrafters HT-32 CW/SSB transmitter		169.95
Heath HW-32A SSB xcvr		79.95
Hammerlund HQ-200 general coverage receiver w/speaker (mint)		195.00
Swan 250 6-meter SSB transceiver w/noise silencer (clean)		249.00
National NCX3 SSB xcvr		169.95
National NCX AC PS (NCX3)		69.95
Swan 500 SSB transceiver		349.00
Swan 117XC power supply		75.00
Realistic DX-150 general coverage rcvr w/speaker		89.95
Ameco TX-62 6- and 2-meter transmitter		75.00
Ameco model 621 6-meter, 2-meter & 220 MHz VFO		39.00
Drake 2B hamband rcvr		189.00
Drake 2BQ Q-multiplier (2B)		29.95

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Drake TR-33C 2-meter
FM portable
expanded portable
antenna choice
lower receiver battery drain
SCPC frequency control
single crystal per channel
12-channel FM portable
229.95
Available soon.
Contact us for details.

HyGain

TH3MK3	199.95
TH6DXX	239.95
14AVQ/WB	67.00
18AVT/WB	97.00
TH3JR	144.50

DX Engr. speech processors

For Collins 32S1, 3 and KWM-2	98.50
For Drake T4X, B, C and TR4, TR4C	128.50

MFJ station accessories

SSB filter	29.92
receiver preselector	49.95
speech processor	49.95
QRP VFO	24.95
QRP transmitter	24.95
CW filter	27.95
CMOS keyer	39.95
Frequency standard	24.95
12-volt supply	24.95

Micellaneous

Touch tone pads - 12 button each	14.95
Vibroplex keyer paddles	33.00
Rubber ducks - 2M antennas in stock	
w/BNC	9.00
w/PL-259 connector	7.00

Magnum 6 speech processor
Swan 500 series
was 180.00 SALE 99.00
Yaesu FTDX series
was 150.00 SALE 99.00

Baluns

Hy-Gain 1:1-2 kw 50 ohm	15.95
KE 1:1-2 kw 50 ohm	9.95

Kriket speaker
External speaker specially designed for communications use 14.95

ARRL publications and maps	
Callbooks and maps	
Radio publications	
Tab publications	
Monthly periodicals available over the counter:	
Worldradio News	.50
QST	1.00
Ham Radio	1.00
73	1.50

Viking double knob key	8.20
Viking Hybrid phone patch	36.50
Curtis EK-430 Keyer	124.95

Wattmeters/SWR bridges

Drake W4	3-30 Mhz	72.00
Drake WV4	20-200 MHz	84.00
HyGain 421B	3-30 MHz	69.95
Dentron 2-30 MHz dual meters		99.00
Single meter Philmore SWR bridge		17.95

Omega-T noise bridges

1-100 MHz	29.95
1-300 MHz	39.95

Drake

R4C receiver	599.00
T4XC transmitter	599.00
TR4C transceiver	599.00
MS4 speaker	24.95
SPR4 SW receiver	629.00
AC4 power supply	120.00
SSR-1	350.00
filters for R4C .250	
.500	52.00
1.500	ea.
Model TV-3300 LP low pass filter	19.95

Dentron

Skyclaw 160-40m vertical w/radials	84.50
4V 40-10m vertical	79.50
Trimtenna 20M	129.50
All-band doublet	24.50
Moblie 160M antenna	59.00
80-10 AT long wire tuner	59.50
160-10 AT 2 kw tuner	129.50
160-10 monitor 3 kw tuner	299.50

Close out special
Dentron 160-10M 3 kw Super Super Tuner
was 229.00 now 195.00

Dentron tuners (2 kw pep)

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160M AT long wire reg	59.50
close-out	**now 49.00**
160-10 AT dipole, beam or long wire	129.50
160 XV transverter	199.50

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160-10L table top linear amplifier, 1 kw CW, 1.2 kw pep SSB	499.50

Nye

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Viking double knob key	8.20
Viking Hybrid phone patch	36.50
Viking code practice oscillator key	18.50
Curtis EK-430 keyer (under misc)	124.95
ladder-line wire, 450 ohm 100 ft.	12.95
transmitting twin lead wire, 300 ohm 100 ft.	19.50

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5/8 wave 2-meter or 450 6db mobile antenna	29.40
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REPEATERS

Operating procedures

Dave Schultheis, WB6KHP

The following are thoughts submitted by members of the Santa Clara Valley (CA) VHF Repeater Society, WR6ADE, and are "as they see it":

After close scrutiny of Part 97.87 (station identification), I have made the following observations relative to stations operating through WR6ADE. They apply equally to other repeaters and simplex conversations.

A person shall identify by call sign when he first transmits. A person shall identify by call sign every 10 minutes that he/she is in the conversation. When signing clear, a person shall identify one other station (or the repeater), his station by call sign and, as applicable, portable or mobile, followed by the call sign area in which he is operating.

So, when a person enters a conversation he is not required to say "W6XX portable 6," but he may do so if he wants to.

Every ten minutes a person must say his own call sign. Period. Just his own — not mobile 6 or portable 6 or anybody else's call.

When a mobile station is signing clear he must say "W6XX mobile 6" and the call of one other station (or the repeater). When a portable station is signing clear he must say "W6XX portable 6" and the call of one other stations (or the repeater). Comment: It's acceptable to get into the habit of saying "mobile 6" whenever mobile, but it is not required except when signing clear.

It is not sufficient when mobile to say "mobile at rest." If one is in one's own driveway, signing clear, one could conceivably say, "W6XX mobile at rest." The "W6XX" is required; the "mobile at rest" is optional. But for example, if someone from San Jose is in downtown San Francisco, signing clear as he drives into a restaurant parking lot, he must say, "W6XX mobile 6 clear with W6ZZ."

Part 97.3m gives the definition of mobile as ". . . while in motion or during halts at unspecified locations."

Pet peeve: Why do people say "W6XX for ID"? Anytime you say your call it's for ID, either for FCC rules or for another amateur.

I also do not understand what "fixed portable" means. If you want to say "W6XX fixed" or "W6XX fixed 6" you may. But if you are actually portable, away from your licensed QTH, you must say "W6XX portable 6" or "W6XX portable 4" or whatever. (Does "fixed portable mean your Wilson isn't intermittent any more? Does "fixed 6" mean your '48 Chevy is running again?)

—Voice of '76

OSCAR with your FM rig

Joe Kasser, G3ZCZ/W3

After listening to a number of spacecraft passes you'll find that you'll want to get in there and join the fun. Come on in and get your feet wet; it isn't difficult.

The easiest way to get on is to equip yourself to transmit on two meters and use the equipment you have already monitoring the spacecraft as your 10-meter receiving setup. If you equip yourself in this manner you will be able to work both AMSAT-OSCAR 6 and OSCAR 7 (mode A).

Almost any two-meter FM transmitter can be modified to transmit CW for OSCAR use. In fact, it you have a solid state rig running 10 watts output or more, all you need do is get a crystal for an output frequency of between 145.90 and 145.95 MHz. I use a TR-22 (TR-2200) with an amplifier and key it on the push-to-talk line.

If you do choose to key the rig using the ptt line, disconnect the mike lead because any noises (audio) will FM your carrier. Those receiving will copy it as drift and you will not get a T9 report. As VE3QB pointed out, a sneeze does wonderful things to your carrier.

If you have an older rig such as the GE progress line, you can modify it by incorporating some sort of keying in the final stage. Grid block or screen grid (*please turn to page 32*)

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SSTV

Dave Ingram, K4TWJ

Computerized SSTV

During recent months I've discussed a variety of SSTV related subjects that included everything from video sampling monitors to digital scan converters, color SSTV systems and much more. All of these systems were operational, and they were well worth the time required to build any of them. However, the progressive SSTVer was faced with one problem: soon he was spending all his time building, and he seldom had a chance to actually operate that fine setup.

Now there's a unit available which "gets it all together" for avid SSTVers: the WØLMD microprocessor. This unit seems to be a real winner because it's everything in one package. The machine can be programmed to function as a Slow to Fast Scan converter, Fast to Slow Scan converter, picture tilter, picture processor, color SSTV converter, or any other Slow Scan innovation that may evolve in the future. Small modifications or vast changes can be directly programmed into the unit via cassette tape, rather than requiring hardwiring by its owner. In fact, Dr. Suding (WØLMD) can produce modification tapes for individuals who are not interested in making changes themselves.

Applications for this microprocessor are not limited to Slow Scan TV. Quite the contrary: WØLMD's dynamic little package can be programmed to keep business records, store menus, plan meals, etc. It will also give graphic displays for Fast Scan TV, play TV games and do several other operations. Can you visualize what would happen if the full capabilities of this beast leaked out? Soon the microprocessor would be programmed to assign time priorities among family members and the poor SSTVer might only be allocated an hour a week. I can see the OM sneaking in after hours to "have a talk" with his computer. Gad!

When Dr. Suding demonstrated this unit at the recent Dayton Convention there was standing room only. Once, the unit was playing ping pong with three balls: one red, one green and one blue!

Then, a quick re-program from a cassette tape turned the unit into a computer working in mini-basic language. Likewise, another cassette programmed the unit for Slow to Fast Scan conversion, color SSTV, etc.

Naturally, an "everything package" like this microprocessor isn't inexpensive. However, it does cost less than most exotic amateur gear (unless you add two of every imaginable peripheral), and its applications are truly limitless. Fantastic, eh?

Motion SSTV

Several amateurs have asked for information on the motion SSTV system which I mentioned recently, so here's a brief summary of that technique.

First, we must realize that full motion SSTV requires a wider bandwidth than high frequency regulations allow. Thus, we must accept a compromise solution. Fortunately, this isn't as bad as it seems. The nature of SSTV material doesn't require picture content to change 100 percent between successive frames. In fact, a 10 percent change is quite satisfactory for most SSTV applications. Keeping these thoughts in mind, we can now consider the diagram in Figure 1.

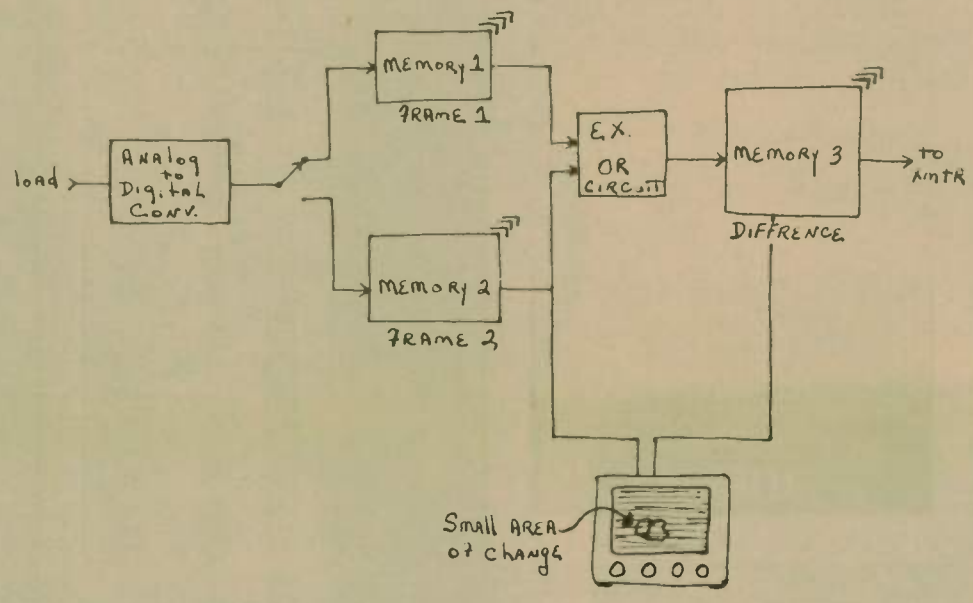


Figure 1 — Motion SSTV system described in text.

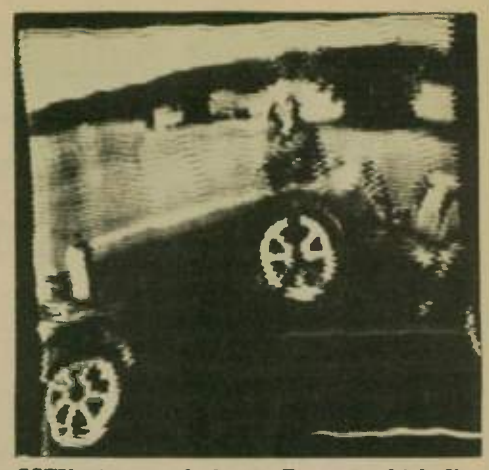
Let's assume that an SSTV picture has been stored in memory 1, transmitted and also stored in the receiving station's scan converter. As the receiving amateur views this picture, the next frame loads memory 2 of Figure 1. Frame 1 and Frame 2 are then exclusive ORed bit for bit and the results are stored in memory 3. (Exclusive OR gates are very unique items: they compare two inputs and output with binary "o" for no difference and binary "1" for a difference.) The contents of memory 3 are then transmitted and used to refresh the receiving station's display.

The next SSTV frame then reloads memory 1, is exclusive ORed with memory 2, and the resulting difference is loaded into memory 3. Again, this data is transmitted and used to refresh the receiving station's display. As you've probably surmised, the next SSTV picture will reload memory 2, be exclusively ORed with memory 1 and again used to update the received display. The end result is motion SSTV. This system is being researched primarily by Dr. Don Miller, W9NTP. Watch for more details in the near future.

SSTV programs

Now let's turn from the new areas of SSTV being pioneered by technical-minded amateurs and discuss a Slow Scan frontier which is wide open to innovations from everyone — the area of programming. As you know, many aired SSTV pictures contain printed information which could just as easily be exchanged verbally. While some lettered pictures are fine, they shouldn't become the standard procedure for all contacts. If one picture is truly worth a thousand words, then let's prove it. Of course we're interested in what the other person looks like and how his gear is arranged, but the "show" doesn't need to stop there. We can exchange schematics of gear modifications and simple circuits we build. We can illustrate how to build a desk, lay flooring for a lawn house, adjust a car's timing, etc. If you think of SSTV as an instructional scratch pad, the list of applications becomes endless.

I can't think of any geographical area in the world which wouldn't prove to be interesting SSTV material. An array of



SSTV picture of classic Bugatti which I'm planning to build in the near future. This picture has generated many interesting QSOs.

such pictures could turn SSTV roundtables into a living room travel bureau. I'm sure that amateurs in the southwest United States, accustomed to seeing the surrounding desert land with its small hills and barren landscapes, would find pictures of the South, with its vast quantity of trees and majestic Civil War homes, very interesting. Wouldn't out-of-state SSTVers be interested in viewing pictures of those slim two and three story houses which are particularly unique in the Cincinnati area? And how about some pictures of hang glider action on the West Coast, or the vicious California freeway systems? Yes, the area of programming is an open door to all SSTVers.

Inputs

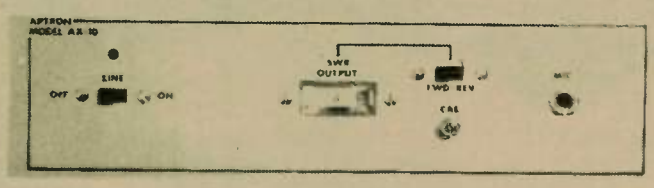
That's a roundup of activities from my end, now how about you? What new projects have you been working on? How many states and/or countries have you worked on SSTV? Do you have any interesting pictures you would like to share in this column? (I can photograph them from tape if you don't have a camera). Send us your info and we'll get it into the column shortly thereafter. 73, Dave, K4TWJ, Eastwood Village #604N, Rt. 11 Box 499, Birmingham, Alabama 35210.

ARRL

(*continued from page 18*)

what he does, why not ask him how you can help him in the organizational work in your section. Better yet, how about running for the office of SCM and helping us make your ARRL stronger in its field organization?

We need your support. We need the help of everyone if we are to build a strong ARRL. □



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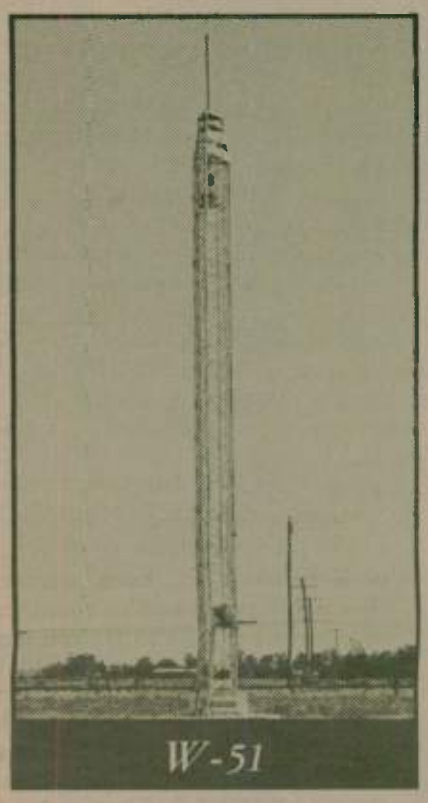

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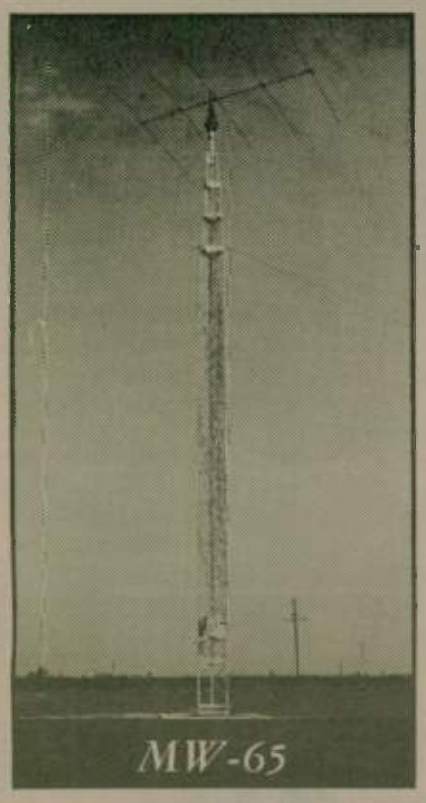
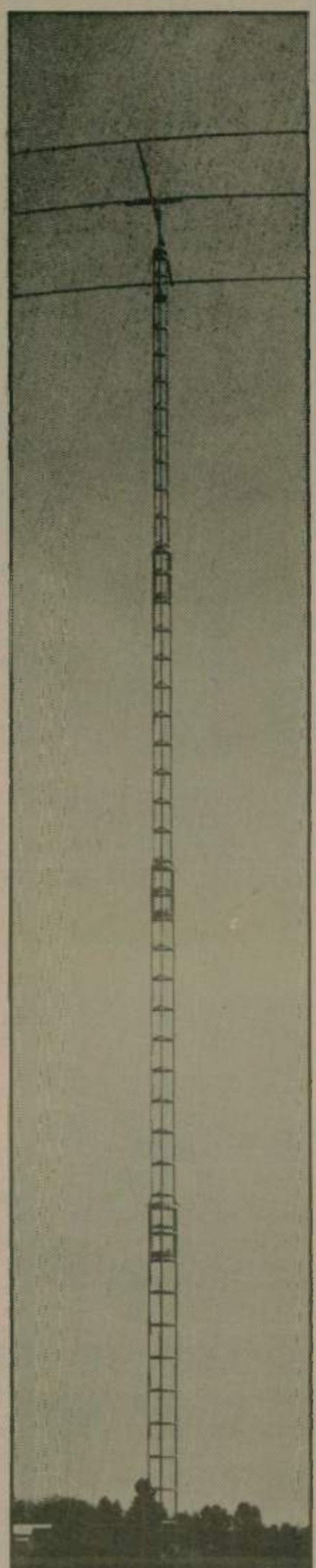
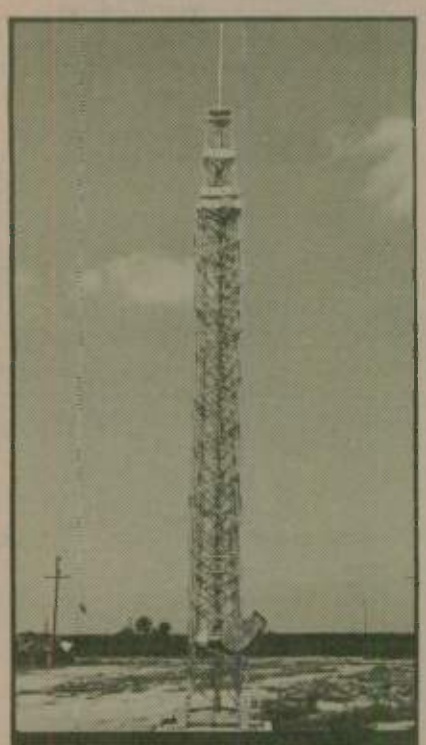


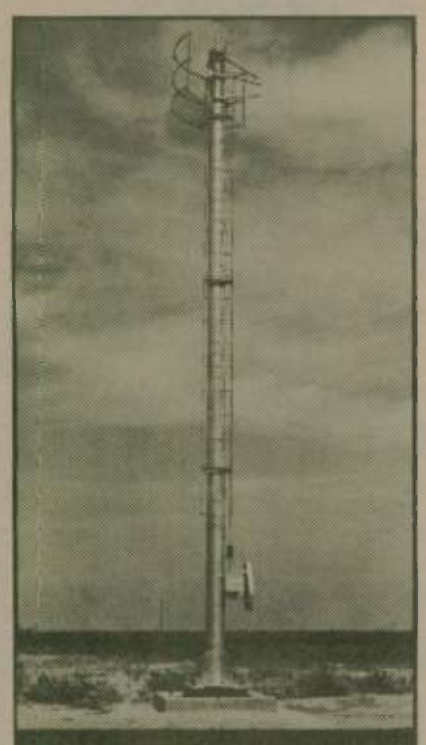
MW-65



THD-471



LM-470D



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MARITIME MOBILE

Phyllis Riblet, W5CXM

Since I started writing this column, I have had many inquiries from all over the world for more information about the Maritime Mobile Amateur Radio Club. I will list the different memberships available in the club and hopefully answer the questions many of you readers have concerning membership in MMARC.

Membership is open to those amateurs who can qualify under one of the following categories:

MARINE MEMBERSHIP: A licensed radio amateur operator who is actively engaged in a sea-going capacity. (Dues-paying member.)

MARINE (RETIRED): A licensed radio amateur operator who is retired from an active sea-going capacity and maintains an active interest in maritime mobile operations. (Dues-paying member.)

COASTAL MEMBER: A licensed radio amateur operator who submits application to the Secretary-Treasurer with a resume of his maritime mobile related activities or interests. He has no voting privileges. (Dues-paying member.)

ASSOCIATE MEMBER: A licensed radio amateur operator who submits to the Secretary-Treasurer confirmation of 30 contacts with maritime mobile stations with which he has communicated. Photostats or certified log records are acceptable. He will receive a certificate only. (No dues required.)

HONORARY MEMBER: A licensed radio amateur operator who is nominated by a Marine or Marine (Retired) member of the club and is approved by 14 Marine or Marine (Retired) members. He will receive all privileges of the club with the exception of voting and there will be no fees or dues paid.

MMARC newsletters are mailed quarterly (January, April, July and October) to Marine, Marine (Retired), Coastal and Honorary memberships. Initiation fee and first year dues are $10.00. Dues thereafter will be $5.00 per year, payable 1 January of each year. Any amateur joining after October of the year will be paid up through the following year. Those joining throughout the year will receive the year's newsletters.

The Maritime Mobile Amateur Radio Club was organized in the early 1950's to promote fraternal and friendly relations between and among the members of the club and other radio amateurs throughout the world; to effect a better acquaintanceship among its members; to develop and encourage Amateur Radio communications; and to provide representation for maritime mobile radio operators as a group.

Present membership in MMARC is made up mostly of amateurs who sail with the merchant fleet; however, it is not closed to yacht owners and we do have those who sail MM as part of the active Marine membership.

The Coastal membership, which was established two years ago, provides our amateur friends shoreside the opportunity to become members. These members are very involved in traffic handling for the MMs and participate in the different MM nets. MMARC does not have a scheduled net at the present time.

In 1974 the first convention of MMARC members was held in Houston, Texas. This gathering was so successful in bringing together MMs from all over the world, who had known each other for years and never hit the same port at the same time, that it was decided to hold another convention this year, 1976, once again in Houston, Texas. The dates set for the 2nd MMARC Convention are 1-2-3 October at the Holiday Inn-Astroworld, Houston, Texas. All indications point to a bigger and better convention than before. All members and friends of MMARC are invited to attend. Pre-registration closes 20 September at $25.00 per person, with registration at the door $27.50 per person. This fee includes the Pre-Convention Party, Saturday night Banquet and Sunday morning "73 and 88" Brunch. Although we call this a convention, it is more like a "family reunion". We share the sea, the ships and our friendship via Amateur Radio which, when combined, gives to all a very special relationship.

Anyone desiring more information can write to the Maritime Mobile Amateur Radio Club, 5627 Tiffany Drive, Houston TX 77085.

At present the MMARC enjoys a total membership of 303. 260 are active sea-going members. This represents maritime mobile amateurs from the United States and 12 foreign countries. A total of 595 Associate membership certificates have been issued to amateurs throughout the world who have contacted 30 MM's or more.

Amateurs who operate maritime mobile share more than their hobby of radio — they share the love of the sea, and combined, it forms a unique bond of friendship. □

OSCAR with your FM rig

(*continued from page 28*)

keying will be suitable. Details of how to implement these modifications may be found in most any handbook, especially if it is 10 years old or so, when these techniques were much in vogue on the HF bands.

Any antenna will put out some sort of signal. People have worked the satellite using anything from groundplanes and turnstiles to multi-element beams. The recommended maximum power level is 100 watts radiated from the antenna.

The 100 watts is not an absolute requirement. W4BFR reported on the AMSAT net one night that he had heard his own signals coming back from space when he was transmitting on two with an output of five watts to a groundplane antenna six feet off the ground. Of course, the nearer you get to the 100 watt **radiated** power the stronger your signals will be and the more contacts you will get.

If you report your first QSO to AMSAT you will become a member of the Satellite Communicator's Club and receive an appropriate certificate.

So if you have a decent two-meter FM station, you can work OSCAR by using the proper crystal as discussed above. Do **not** use FM, but key the rig for CW. —*Auto-Call*

DX breakfast

(*continued from page 7*)

collectively are the best group of DX operators. Their magazines and clubs teach them the proper procedures, etc. He said maybe it is the Asian morality and their polite nature that makes them that way. Pace went on to say that possibly we should examine our own morality and look within ourselves for better behavior.

From the audience someone said that gentlemen's agreements take gentlemen.

Harry Hyder, W7IV, said that the CW pile-ups seem less nerve-wracking and to him the romance of radio is CW, but there seen to be fewer and fewer CW stations to work.

Don Wallace, W6AM, concurred with the sentiments about CW saying CW is a lot more sport. He then told about his Palomar keyer with which he goes CW mobile.

Carl Smith, WØBWJ, ARRL Vice-President, talked to the DX breakfast group about the Sister City program. He said this presents a unique opportunity for us to make a real contribution to international goodwill. Smith told the group not to pass it up or we "will slit our own throats." Smith pointed to the FCC Basis and Purpose for Amateur Radio and said we need all the public relations we can obtain so we'd best get the ball rolling regarding Sister Cities.

He said that from his own experience nothing in Amateur Radio is more truly satisfying than to really learn something about the amateur at the other end. This program needs amateur participation, and when you make it possible for the mayor of your city to talk to the mayor of your Sister City in another country you will not only find it personally satisfying but will be doing something that reflects well on Amateur Radio. such is something we can point to with pride at the international conferences that divide up the spectrum. Equally important is the image of Amateur Radio that is given to th local politicans. Such is most important when restrictive ordinances regarding antennas are brought up.

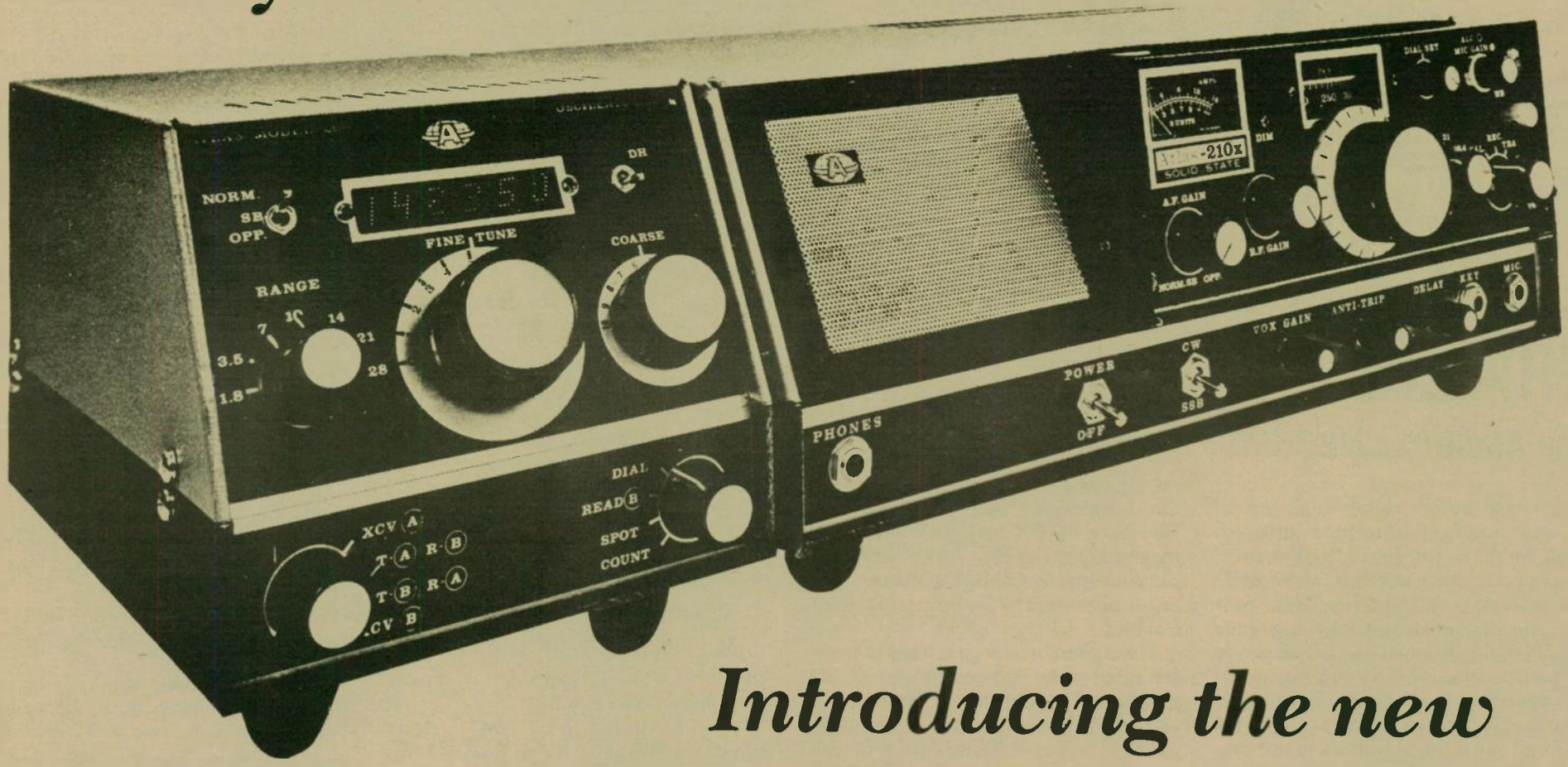
Editor's Log

(*continued from page 23*)

If that isn't the answer they would give, then we have failed in our Public Relations efforts.

So let's get cracking and correct the confusions and wrong opinions in the minds of those persons who will have a great deal to say about how you enjoy Amateur Radio.

Get more operating pleasure with your Atlas Transceiver!



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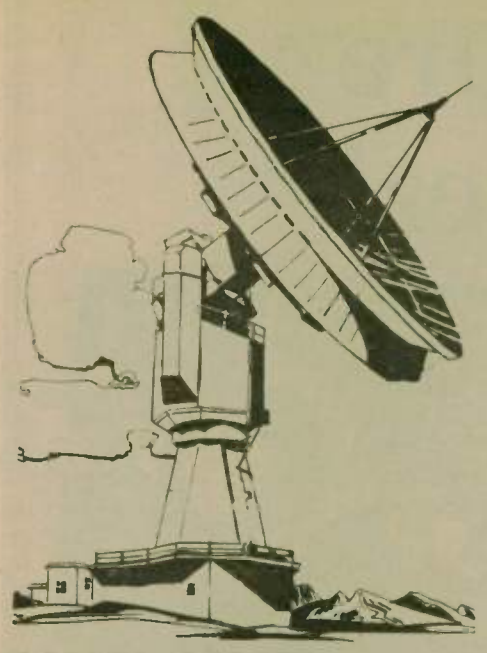

VHF-UHF

Lou Anclaux, WB6NMT

June will be remembered as one of the best propagation months in recent years for both the lower VHF bands. Two spectacular weekends of 50 MHz propagation occurred. The first, over the June VHF contest weekend of June 12-13, provided some spectacular scores for participants. The second big weekend was over the Field Day weekend of June 26-27. Six-meter propagation that weekend provided almost as many contacts and sections as were obtainable in the HF bands.

The 8th of June this year provided state no. 50 on the 50 MHz band for two Oregon stations, WA7RTA, Art Moe in Oregon and Scott MacGregor, WA7ECY, in Gresham, OR. Both stations worked Bert Ingals, KH6EQI. Bob Christianson, WA7UPS, in Beaver Creek, OR also managed a QSO with Bert. The beacon first appeared at 1700 GMT, at Art's QTH. Signals were last heard around 1820 to 1825 GMT same date.

For future reference, when the beacon is heard the best way to get through to Bert is to call his home (808) 689-0111. His wife will notify Bert and he will come up on the beacon transmitter as soon as possible.

During the day, while at work, he has control of the EQI station from his desk. Occasionally he'll interrupt the beacon, send 'K' and stand-by and listen. If such is heard, the station should call him one kHz higher in frequency, since he is not able to hear zero beat signals. From his home QTH, he also has land-line control of the EQI station and an auxilliary receiver to allow tuning over a substantial part of the band.

The June VHF contest provided some exceptional 50 MHz openings throughout the country. Contestants were greeted with virtually every call area from the West Coast, including KL7. KH6 call area was heard, but apparently not worked during the contest. K8REG, Vince Varnes, operating from Alaska under the call of KL7HLE, indicates he has worked nine states from his Alaska location during this past month. Vince unfortunately is leaving Alaska in the near future and we will loose a very excellent operator in that part of the world.

All of the information is not in yet, but there is a good chance that many records have fallen during the VHF contest. In the East Bay section of Northern California, the crew operating from Mt. Diablo put on a superb show this year, managing over an 82,000 score. This surely will put them into the top category nationwide. This year they ran under Carl Cooks' call, WA6JUD. I did not get Wayne Overbeck's K6YNB score, but it surely must have been another record breaker.

It had to happen sometime and apparently it has. Invariably, you can count on Wayne being on some mountaintop for every VHF contest, operating full bore on all bands. The distaff side of the Overbeck house has finally won out. Donna, WB6IDK, will be running the Bicentennial contest, 24-25 July, from some southern California mountain location. Look out Wayne; you may be in trouble!

The June contest gave rise to a new FM rule for the first time. Basically, this new rule prohibits use of repeater reversed pairs for contest contacts. Additionally, repeater frequencies not used locally but used within 150 miles of the operating station also are prohibited from use. Initial reactions observed on the West Coast indicate general acceptance. Bill Shaw, WA4MMP, editor of the *Tide Water Sideband Net Report*, voices his objection to that new rule in Volume IV issue. Pro and con reactions to this new rule should be sent to Wayne and/or the contest advisary committee c/o the ARRL or direct to Wayne at 5113 Whitecap Street, Oxnard Shores, CA 93030.

The next big weekend for VHF was during the Field Day operation on 26 and 27 June. Extremely good propagation on 50 MHz allowed very large scores to be accumulated in certain sections of the country on that band. A very instense, sporadic E opening occured in the eastern part of the country on 2 meters the evening of the 26th (local time) providing many stations with new space on that band. Bill Tynan, W3KMV, indicated he picked up six new 2-meter states. The opening extended at least from the Gulf states into the eastern seaboard and up into the north part of the Great Plains area and back again to the Atlantic coast.

Interestingly enough, Saturday evening also saw a very unusual and dramatic 6-meter opening between Hawaii and the mainland. Bert, utilizing KH6-EQI station, managed a few West Coast contacts via 50 MHz Es. The beacon station was copied in excess of three hours here on the West Coast. Bert indicated he was hearing and had partial contact with some of the following stations: K1ZSE, WA1INE, K8TQK, WA8HPY, WB0PNW and several W6's.

The interesting thing about this is the great extent to which he was able to hear stations from the East, particularly during a non-F2 period. Bert's primary frustration was his inablility to break the far eastern stations due to heavy interference from intervening West Coast stations.

Most of these openings appeared to be multiple clouds coupled as opposed to multiple hop openings. Intervening areas at single hop levels were generally few and far between, if at all during the multiple hop openings. This may help explain why Bert was able to hear stations as far away as New England, which is some considerable distance for multiple ground hopping paths at Es. Signals from the EQI station were copied starting at approximately 0150 GMT on 27 June in San Diego, dying out approximately 0410 GMT the same evening.

28 June finally saw a path to Hawaii open up at 2 meters. Approximately 1630 GMT the 6-meter band was noted to open to the east. During a conversation with Jerry Gastil, K6DYD, I suggested he take a look at the repeater frequencies as I suspected a remote possibility of an opening.

Approximately 1645 GMT, Jerry came on and indicated that he was hearing both the 22/82 repeater in Hawaii on 2 meters, as well as the 449.15 interlink frequency coming through from Hawaii. Jerry made several QSOs via the 22-82 repeater. We were unsuccessful in rousting out any of the other KH6's for direct work at that time.

At 0140 GMT on the 29th, I found KH6IAA in QSO with K6YNB on 145 MHz SSB direct. Wayne was mobile up near his Oxnard Shores home and Al was mobile on the slopes of Mauna Loa volcano on the big island of Hawaii — elevation approx. 7,500 feet. Al was using a Multi-2000 transceiver into a standard mobile whip. Subsequently, Al erected a small four-element beam, horizontally polarized, and proceeded to work a great number of stations up and down the California coast as far north as Morro Bay and as far south as San Diego.

The most interesting QSO apparently occurred between Al and Gene Powers, WB6CXF, located inland about 50 miles from the San Diego coast in the small town of Julian, elevation in excess of 3,000 ft. Gene likewise was running about 10W out of a Multi-2000 into a small antenna. The fact that they were able to complete this QSO over that great an inland distance from the coast is of considerable significance as in past years QSOs have generally been limited to coastal regions of the U.S. mainland.

Several tests were conducted at other than 2 meter frequencies without success. Equipment at KH6BZF was apparently not functioning on any frequency adequately to allow reception of signals from either end. Additional QSOs were made via direct FM, not only by Al on the big island of Hawaii but by two other Hawaiian amateurs on the island of Maui who drove up the slopes of Haleakala. The last known Hawaiian signals heard on the mainland were approximately 2100 GMT on the 29th of June via the 22/82 repeater.

A flash log at the last minute received from Katashi Nose, KH6IJ, indicated that quite an extensive 50 MHz opening occurred on 7 July between 1833 and 1842 GMT. Nose worked several Southern California stations on 50 MHz, and between 2146 and 2307 GMT he had 15 QSOs with various Japanese stations. Approximately half were on CW and the other half on SSB. I have no indication of any peculiar solar activity, or any other activities, occurring during that time frame due to my being out of my San Diego QTH. I would appreciate any information, from any source, regarding phenomena which might lead to some explanation of this extensive an opening.

(*please turn to page 45*)

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OSCAR AMSAT

A.L. Finch

Search and Rescue Satellite

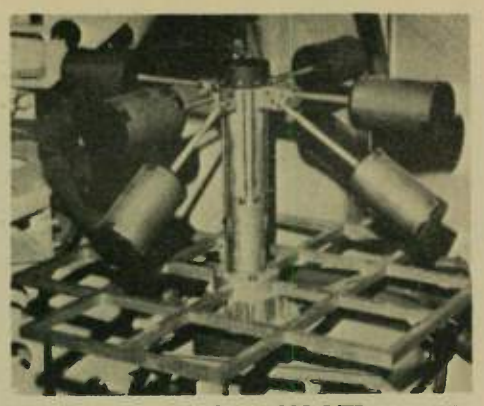
Once again the AMSAT/OSCAR satellites have been involved in experiments of public safety and rescue communication concepts which prove the value of the small terminal on the surface and an orbiting satellite as an effective emergency communications tool.

The Communications Research Center of the Federal Communications Department, Ottawa, Canada, has successfully demonstrated the feasibility of satellite-aided search and rescue communications by which considerable timesaving and economic advantage is gained over conventional methods of locating downed aircraft. Using AMSAT/OSCAR-6, simulated distress signals were transmitted through the transponder in experiments which showed that crash sites can be pinpointed in Canada and elsewhere in the world to accuracies as good as a mile, and generally within five miles in as little as 15 or 20 minutes after the satellite first "hears" the signal.

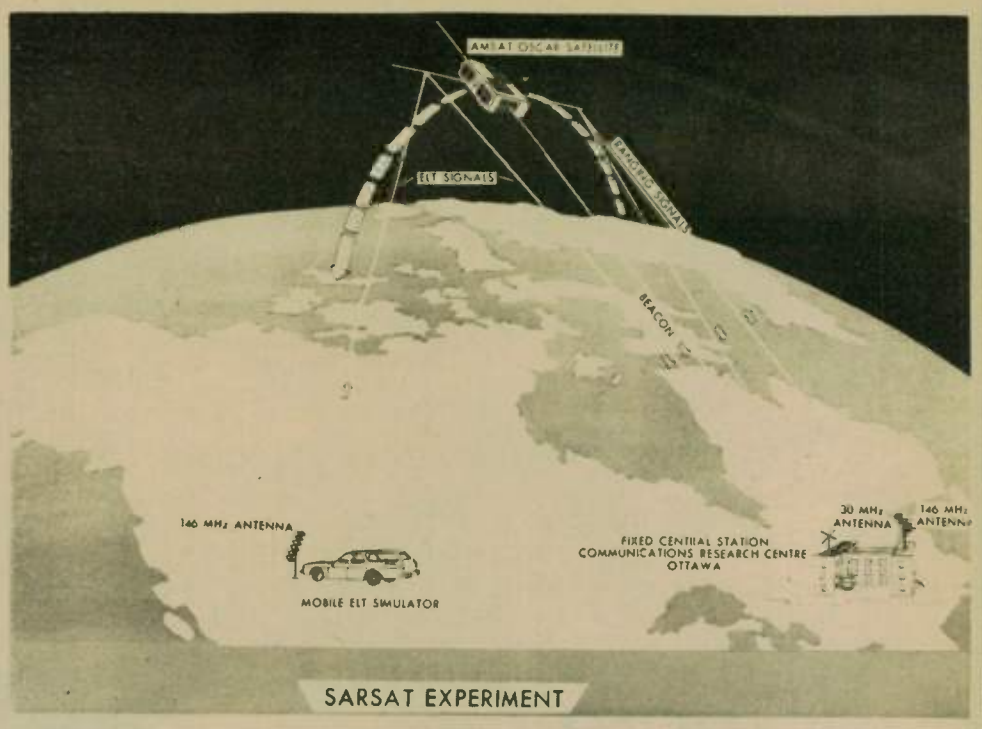
Conventional emergency locator transmitters (ELTs), which are mandatory in the U.S. and Canada for aircraft, would be the ground signal source providing an up-link signal to the satellite on the international distress frequency of 121.5 MHz. ELTs are designed to be activated automatically on crash impact and provide a signal for at least 100 hours for search and rescue aircraft to home in on. The present homing range is only about 30 miles from the crash site. Many aircraft criss-crossing the area presently consume many risky flying hours in a typical search and rescue operation.

The vital elements necessary for the satellite-aided concept experimentally demonstrated were provided by the AMSAT/OSCAR satellites. These are an exact set of orbital predictions such as those provided by W6PAJ for AMSAT/OSCAR 6 and 7, and appropriate ground computer systems for processing the distress signals relayed to a central station. The system operates by measuring the doppler shift in the frequency of the ELT signal as the satellite passes over the crash site. As soon as the nearest satellite to the crash location appears over the horizon visible from the crash site, ground stations are alerted to the reception of an alarm. Within about 15 minutes a gross location will be determined and refined to within one to five miles within 2-15 minutes later, depending on the capacity of the computer being used. The plans are to fly a

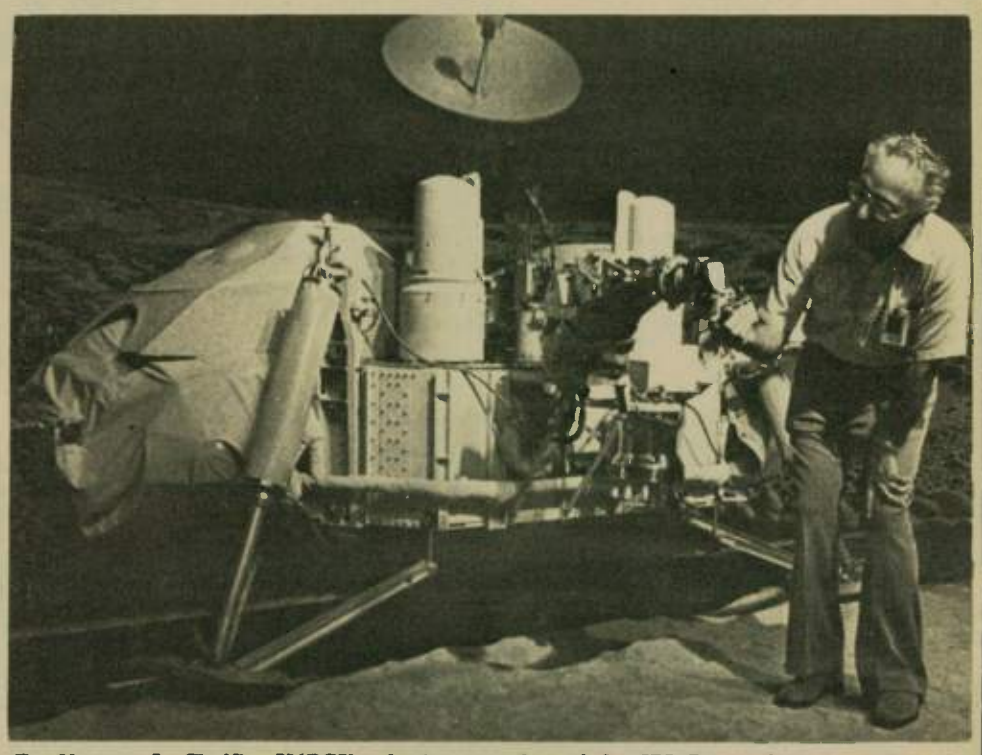
please turn to page 37



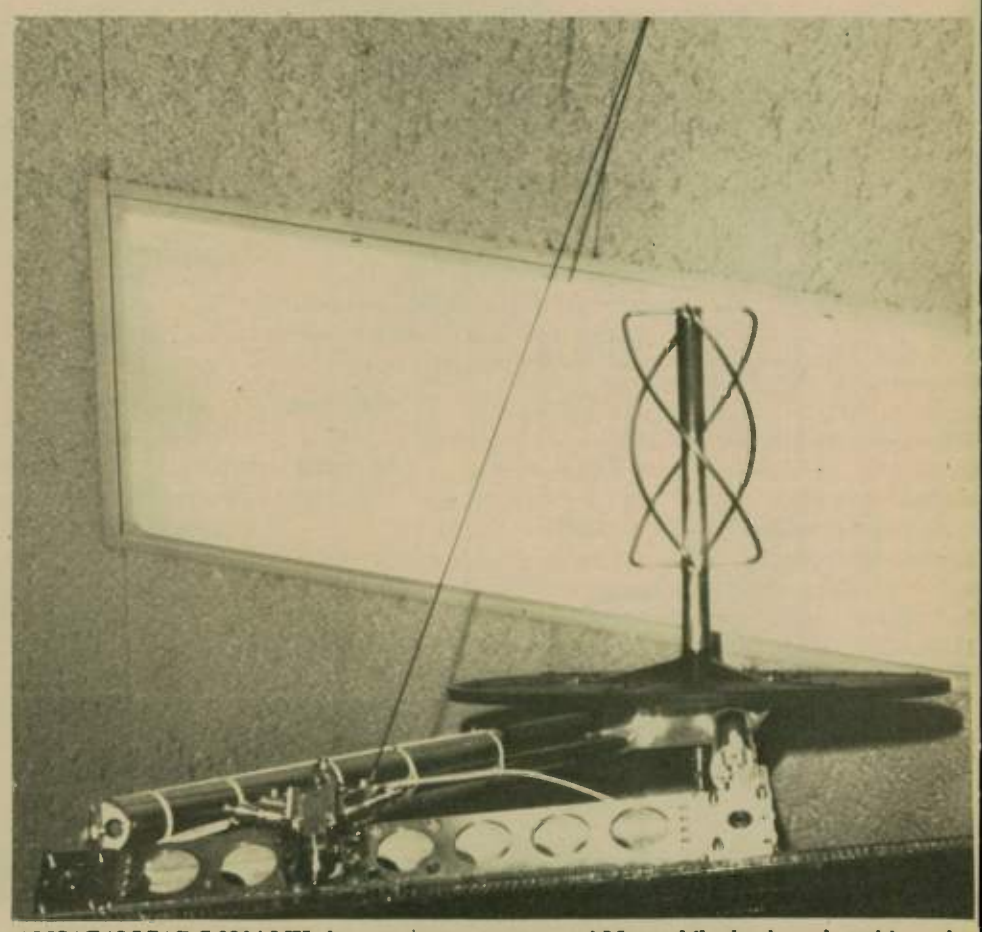
On the Viking Lander a 385 MHz turnstile antenna is used to transmit the life-seeking chemical analysis data from the surface of Mars to the orbiter. The "beer cans" on the ends of the elements are to prevent arcing in the Martian atmosphere. (*Photo by K6PGX*)



SARSAT EXPERIMENT



Dr. Norman L. Chalfin, K6PGX, who is a member of the JPL Patent Staff, examines the scoop on the Viking Mars Lander. Martian soil picked up by the scoop will be studied by an on-board chem lab for signs of life.



AMSAT/OSCAR-7 2304 MHz beacon antenna grows up! Meanwhile, back on the orbiter, the quadrifilar antenna will receive date signals from the turnstile antenna on the lander. The data about whether there is life or not will be relayed to Earth. This is a 385 MHz antenna; could be easily cut for 432 MHz. (*Photo by K6PGX*)

SEPTEMBER AMSAT-OSCAR 7

Sunday

SAVE THE SATELLITE BATTERIES
USE LOWEST POWER POSSIBLE

SUN 5 SEP 76 (249)

ORBIT	TIME	LONG
8260A	0025:24	56.1
8261A	0220:21	44.9
8262A	0415:18	113.6
8263A	0610:14	142.4
8264A	0805:11	171.1
8265A	1000:08	199.8
8266A	1155:04	228.6
8267A	1350:01	257.3
8268A	1544:58	286.0
8269A	1739:54	314.8
8270A	1934:51	343.5
8271A	2129:48	12.2
8272A	2324:45	41.0

SUN 12 SEP 76 (256)

ORBIT	TIME	LONG
8348B	0100:33	54.9
8349B	0255:30	93.7
8350B	0450:26	122.4
8351B	0645:23	151.1
8352B	0840:20	179.9
8353B	1035:16	208.6
8354B	1230:13	237.4
8355B	1425:10	266.1
8356B	1620:06	294.8
8357B	1815:03	323.6
8358B	2010:00	352.3
8359B	2204:57	21.0
8360B	2359:53	49.8

SUN 19 SEP 76 (263)

ORBIT	TIME	LONG
8436A	0135:42	73.7
8437A	0330:38	102.5
8438A	0525:35	131.2
8439A	0720:32	159.9
8440A	0915:28	188.7
8441A	1110:25	217.4
8442A	1305:22	246.1
8443A	1500:18	274.9
8444A	1655:15	303.6
8445A	1850:12	332.3
8446A	2045:09	1.1
8447A	2240:05	29.8

SUN 26 SEP 76 (270)

ORBIT	TIME	LONG
8523B	0015:54	53.6
8524B	0210:50	82.5
8525B	0405:47	111.2
8526B	0600:44	140.0
8527B	0755:40	168.7
8528B	0950:37	197.4
8529B	1145:34	226.2
8530B	1340:31	254.9
8531B	1535:27	283.7
8532B	1730:24	312.4
8533B	1925:21	341.1
8534B	2120:17	9.9
8535B	2315:14	38.6

Monday

Present Schedule: Oscar 7 Mode A (145.85-.95 MHz to 29.4-.5 MHz) on A-orbits. Mode B (432.125-.175 MHz to 145.975-.925) on B-orbits. Do not transmit on X-orbits, which are reserved for experiments and educational uses. Latest information on AMSAT nets, Sunday 1800 GMT on 14.280 MHz and 1900 GMT on 21.280 MHz from Washington D. C., USA

MON 6 SEP 76 (250)

ORBIT	TIME	LONG
8273B	0119:41	69.7
8274B	0314:38	98.5
8275B	0509:35	127.2
8276B	0704:31	155.9
8277B	0859:28	184.7
8278B	1054:25	213.4
8279B	1249:21	242.1
8280B	1444:18	270.9
8281B	1639:15	299.6
8282B	1834:11	328.3
8283B	2029:08	357.1
8284B	2224:05	25.8

MON 13 SEP 76 (257)

ORBIT	TIME	LONG
8361A	0154:50	78.5
8362A	0349:47	107.2
8363A	0544:43	136.0
8364A	0739:40	164.7
8365A	0934:37	193.4
8366A	1129:33	222.2
8367A	1324:30	250.9
8368A	1519:27	279.7
8369A	1714:23	308.4
8370A	1909:20	337.1
8371A	2104:17	5.9
8372A	2259:14	34.6

MON 20 SEP 76 (264)

ORBIT	TIME	LONG
8448B	0035:02	58.6
8449B	0229:59	87.4
8450B	0424:55	116.0
8451B	0619:52	144.8
8452B	0814:49	173.5
8453B	1009:45	202.2
8454B	1204:42	231.0
8455B	1359:38	259.7
8456B	1554:35	288.4
8457B	1749:32	317.2
8458B	1944:29	345.9
8459B	2139:26	14.7
8460B	2334:22	43.4

MON 27 SEP 76 (271)

ORBIT	TIME	LONG
8536A	0110:11	67.3
8537A	0305:08	96.1
8538A	0500:04	124.8
8539A	0655:01	153.5
8540A	0849:57	182.3
8541A	1044:54	211.0
8542A	1239:51	239.8
8543A	1434:48	268.5
8544A	1629:44	297.2
8545A	1824:41	326.0
8546A	2019:38	354.7
8547A	2214:36	23.4

Tuesday

ALL TIMES ARE GMT

TUE 7 SEP 76 (251)

ORBIT	TIME	LONG
8285A	0019:02	54.6
8286A	0213:58	83.3
8287A	0408:55	112.0
8288A	0603:52	140.8
8289A	0758:48	169.5
8290A	0953:45	198.2
8291A	1148:42	227.0
8292A	1343:38	255.7
8293A	1538:35	284.4
8294A	1733:32	313.2
8295A	1928:28	341.9
8296A	2123:25	10.7
8297A	2318:22	39.4

TUE 14 SEP 76 (258)

ORBIT	TIME	LONG
8373B	0054:10	53.3
8374B	0249:07	82.1
8375B	0444:04	110.8
8376B	0639:00	139.5
8377B	0833:57	168.3
8378B	1028:54	197.0
8379B	1223:50	225.8
8380B	1418:47	254.5
8381B	1613:44	283.2
8382B	1808:40	312.0
8383B	2003:37	340.7
8384B	2158:34	19.4
8385B	2353:31	48.2

TUE 21 SEP 76 (265)

ORBIT	TIME	LONG
8461A	0129:19	72.1
8462A	0324:16	100.9
8463A	0519:12	129.6
8464A	0714:09	158.3
8465A	0909:06	187.1
8466A	1104:02	215.8
8467A	1258:59	244.5
8468A	1453:56	273.3
8469A	1648:52	302.0
8470A	1843:49	330.8
8471A	2038:46	359.5
8472A	2233:43	28.2

TUE 28 SEP 76 (272)

ORBIT	TIME	LONG
8548B	0009:31	52.2
8549B	0204:28	80.9
8550B	0359:24	109.6
8551B	0554:21	138.4
8552B	0749:18	167.1
8553B	0944:14	195.8
8554B	1139:11	224.6
8555B	1334:08	253.3
8556B	1529:04	282.1
8557B	1724:01	310.8
8558B	1918:58	339.5
8559B	2113:54	8.3
8560B	2308:51	37.0

Wednesday

WED 1 SEP 76 (245)

ORBIT	TIME	LONG
8210AX	0038:10	59.3
8211AX	0233:06	88.1
8212AX	0428:03	116.8
8213AX	0623:00	145.5
8214AX	0817:57	174.3
8215AX	1012:53	203.0
8216AX	1207:50	231.8
8217AX	1402:47	260.5
8218AX	1557:43	289.2
8219AX	1752:40	318.0
8220AX	1947:37	346.7
8221AX	2142:33	15.4
8222AX	2337:30	44.2

WED 8 SEP 76 (252)

ORBIT	TIME	LONG
8298BX	0113:18	68.1
8299BX	0308:15	96.9
8300BX	0503:12	125.6
8301BX	0658:08	154.3
8302BX	0853:05	183.1
8303BX	1048:02	211.8
8304BX	1242:59	240.5
8305BX	1437:55	269.3
8306BX	1632:52	298.0
8307BX	1827:49	326.7
8308BX	2022:46	355.5
8309BX	2217:42	24.2

WED 15 SEP 76 (259)

ORBIT	TIME	LONG
8386AX	0148:27	76.9
8387AX	0343:24	105.6
8388AX	0538:21	134.4
8389AX	0733:17	163.1
8390AX	0928:14	191.9
8391AX	1123:11	220.6
8392AX	1318:07	249.3
8393AX	1513:04	278.1
8394AX	1708:01	306.8
8395AX	1902:57	335.5
8396AX	2057:54	4.3
8397AX	2252:51	33.0

WED 22 SEP 76 (266)

ORBIT	TIME	LONG
8473BX	0028:39	57.0
8474BX	0223:36	85.7
8475BX	0418:32	114.4
8476BX	0613:29	143.2
8477BX	0808:26	171.9
8478BX	1003:23	200.6
8479BX	1158:19	229.4
8480BX	1353:16	258.1
8481BX	1548:13	286.8
8482BX	1743:09	315.6
8483BX	1938:06	344.3
8484BX	2133:03	13.1
8485BX	2328:00	41.8

WED 29 SEP 76 (273)

ORBIT	TIME	LONG
8561AX	0103:48	85.7
8562AX	0258:45	114.5
8563AX	0453:41	143.2
8564AX	0648:38	172.0
8565AX	0843:35	200.7
8566AX	1038:31	229.4
8567AX	1233:28	258.2
8568AX	1428:25	286.9
8569AX	1623:21	315.6
8570AX	1818:18	344.4
8571AX	2013:15	13.1
8572AX	2208:12	41.8

Thursday

THU 2 SEP 76 (246)

ORBIT	TIME	LONG
8223B	0132:27	72.9
8224B	0327:23	101.6
8225B	0522:20	130.4
8226B	0717:17	159.1
8227B	0912:13	187.9
8228B	1107:10	216.6
8229B	1302:07	245.3
8230B	1457:04	274.1
8231B	1652:00	302.8
8232B	1846:57	331.5
8233B	2041:54	.3
8234B	2236:50	29.0

THU 9 SEP 76 (253)

ORBIT	TIME	LONG
8310A	0012:39	53.0
8311A	0207:35	81.7
8312A	0402:32	110.4
8313A	0557:29	139.2
8314A	0752:26	167.9
8315A	0947:22	196.6
8316A	1142:19	225.4
8317A	1337:16	254.1
8318A	1532:12	282.8
8319A	1727:09	311.6
8320A	1922:06	340.3
8321A	2117:02	9.1
8322A	2311:59	37.8

THU 16 SEP 76 (260)

ORBIT	TIME	LONG
8398B	0047:47	61.7
8399B	0242:44	90.5
8400B	0437:41	119.2
8401B	0632:38	148.0
8402B	0827:34	176.7
8403B	1022:31	205.4
8404B	1217:28	234.2
8405B	1412:24	262.9
8406B	1607:21	291.6
8407B	1802:18	320.4
8408B	1957:14	349.1
8409B	2152:11	17.8
8410B	2347:08	46.6

THU 23 SEP 76 (267)

ORBIT	TIME	LONG
8486A	0122:56	70.5
8487A	0317:53	99.3
8488A	0512:50	128.0
8489A	0707:46	156.7
8490A	0902:43	185.5
8491A	1057:40	214.2
8492A	1252:36	242.9
8493A	1447:33	271.7
8494A	1642:30	300.4
8495A	1837:26	329.2
8496A	2032:23	357.9
8497A	2227:20	26.6

THU 30 SEP 76 (274)

ORBIT	TIME	LONG
8573B	0003:08	50.6
8574B	0158:05	79.3
8575B	0353:02	108.1
8576B	0547:58	136.8
8577B	0742:55	165.5
8578B	0937:52	194.3
8579B	1132:48	223.0
8580B	1327:45	251.7
8581B	1522:42	280.6
8582B	1717:38	309.2
8583B	1912:35	337.9
8584B	2107:32	6.7
8585B	2302:29	35.4

Friday

FRI 3 SEP 76 (247)

ORBIT	TIME	LONG
8235A	0031:47	57.7
8236A	0226:44	86.5
8237A	0421:40	115.2
8238A	0616:37	144.0
8239A	0811:34	172.7
8240A	1006:30	201.4
8241A	1201:27	230.2
8242A	1356:24	258.9
8243A	1551:21	287.6
8244A	1746:17	316.4
8245A	1941:14	345.1
8246A	2136:11	13.8
8247A	2331:07	42.6

FRI 10 SEP 76 (254)

ORBIT	TIME	LONG
8323B	0106:56	66.5
8324B	0301:52	95.3
8325B	0456:49	124.0
8326B	0651:46	152.7
8327B	0846:42	181.5
8328B	1041:39	210.2
8329B	1236:36	239.0
8330B	1431:32	267.7
8331B	1626:29	296.4
8332B	1821:26	325.2
8333B	2016:23	353.9
8334B	2211:19	22.6

FRI 17 SEP 76 (261)

ORBIT	TIME	LONG
8411A	0142:04	75.3
8412A	0337:01	104.1
8413A	0531:58	132.8
8414A	0726:55	161.5
8415A	0921:51	190.3
8416A	1116:48	219.0
8417A	1311:45	247.7
8418A	1506:41	276.5
8419A	1701:38	305.2
8420A	1856:35	333.9
8421A	2051:31	2.7
8422A	2246:28	31.4

FRI 24 SEP 76 (268)

ORBIT	TIME	LONG
8498B	0022:16	55.4
8499B	0217:13	84.1
8500B	0412:10	112.8
8501B	0607:07	141.6
8502B	0802:03	170.3
8503B	0857:00	199.0
8504B	1151:57	227.8
8505B	1346:53	256.5
8506B	1541:50	285.3
8507B	1736:47	314.0
8508B	1931:43	342.7
8509B	2126:40	11.5
8510B	2321:37	40.2

OSCAR 7: longitude progresses 28.73620443° west per orbit. Period 114.944834 minutes.

TELEMETRY:
Mode A: 29.502 & 435.103 MHz
Mode B: 145.972 MHz

Saturday

SAT 4 SEP 76 (248)

ORBIT	TIME	LONG
8248B	0126:04	71.3
8249B	0321:01	100.0
8250B	0515:57	128.8
8251B	0710:54	157.5
8252B	0905:51	186.3
8253B	1100:47	215.0
8254B	1255:44	243.7
8255B	1450:41	272.5
8256B	1645:37	301.2
8257B	1840:34	329.9
8258B	2035:31	358.7
8259B	2230:28	27.4

SAT 11 SEP 76 (255)

ORBIT	TIME	LONG
8335A	0006:16	51.4
8336A	0201:13	80.1
8337A	0356:09	108.8
8338A	0551:06	137.6
8339A	0746:03	166.3
8340A	0940:59	195.0
8341A	1135:56	223.8
8342A	1330:53	252.5
8343A	1525:50	281.3
8344A	1720:46	310.0
8345A	1915:43	338.7
8346A	2110:40	7.5
8347A	2305:36	36.2

SAT 18 SEP 76 (262)

ORBIT	TIME	LONG
8423B	0041:25	60.1
8424B	0236:21	88.9
8425B	0431:18	117.6
8426B	0626:15	146.4
8427B	0821:11	175.1
8428B	1016:08	203.8
8429B	1211:05	232.6
8430B	1406:02	261.3
8431B	1600:58	290.0
8432B	1755:55	318.8
8433B	1950:52	347.5
8434B	2145:48	16.2
8435B	2340:45	45.0

SAT 25 SEP 76 (269)

ORBIT	TIME	LONG
8511A	0116:33	58.9
8512A	0311:30	87.7
8513A	0506:27	116.4
8514A	0701:24	145.1
8515A	0856:20	173.9
8516A	1051:17	202.6
8517A	1246:14	231.4
8518A	1441:10	260.1
8519A	1636:07	288.8
8520A	1831:04	317.6
8521A	2026:00	346.3
8522A	2220:57	25.0

WAPAI

(continued from page 36)

satellite at a 700 mile polar orbit to permit a roughly 2,000 mile swath of the earth's surface to be covered in each pass.

N6V to transmit via OSCAR 6 and 7 during Viking I and II activities

The Special Commemorative Station call N6V (NASA 6 VIKING) of the JPL Amateur Radio Club is being used during the orbit insertion of the orbiter and landing operations of the landers on the Viking Missions to Mars.

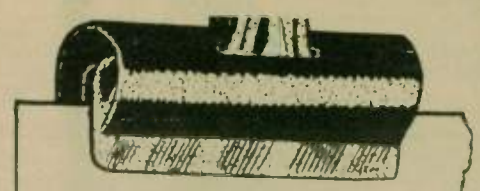
Joseph Reymann, W6PAJ, will operate from N6V from the evening of 16 July through 18 July during the AMSAT/OSCAR passes, and also during the orbit insertion period for Viking II to occur in August. Present thinking by JPL scientists suggests a delay in the landing of the Viking II lander until as late as November.

Photographs of orbital and surface images of Mars made by both the landers and the orbiters will be broadcast via N6V-SSTV on 14.230 MHz through 14.245 MHz during the July 16-30 period. During the orbital insertion period, 7 through 12 August, more SSTV images of Mars will be transmitted via N6V on the same frequencies.

Late flash!

In the period 7 through 11 August, AMSAT/OSCAR-6 and AMSAT/OSCAR-7 orbits will be so nearly coincident with one another that AMSAT has proposed that any satellite users who plan to communicate during those

(please turn to page 45)



TRAFFIC

Paul Gagnon, WA6DEI

RTTY AND TRAFFIC

Traffic men and RTTY men are generally in two unique areas of Amateur Radio operation. This shouldn't oughta be, folks!

A traffic man picks his mode and does his thing. An RTTY man puts together the necessary mass of gears and machines and commences to hunt and peck. RTTY is the most inefficient method of communications I can think of. QSOs on RTTY take three times as long to say the same thing as on SSB. The real advantage of RTTY is in transmission of record traffic. Wouldn't it be great if we could convince some of the RTTY men to become involved in traffic handling? Or some traffic handlers to get equipped for RTTY?

There are limitations on the use of RTTY. QRM must be less than that required for CW. The amount of traffic is another factor. If only four or five messages are to be passed on a schedule, it isn't worth the extra effort to use the RTTY mode. But how about mass quantities of traffic that are originated from fairs and celebrations and special events? How about mass quantities of health and welfare traffic after a local disaster? A perfect application for RTTY! A recent Bicentennial celebration in Ventura, CA serves as a good example.

A small booth was set up by the Poinsettia Amateur Radio Club in Ventura to explain Amateur Radio to the public. Included was a model 19 Teletype machine (appropriate for the Bicentennial theme) and a small sign indicating free radiograms could be sent anywhere in the country. It was expected that maybe 50 or so messages would be originated during the day and a half affair. This isn't a very heavy load for the National Traffic System so no extra schedules were arranged.

Well, as Murphy would have it, over 150 messages were originated in the first half day. Another 150 came in the next day. This is a rather heavy load for one evening's skeds on NTS. So how do you handle this amount of traffic in a quick and efficient manner? You guessed it . . . RTTY.

This was a small scale operation. How about the pre-planned large operations? The problem suddenly grows.

A schedule was arranged with Bob Schmidt, W5GHP, in New Orleans to clear the Eastern and Central area traffic. Tapes were punched on the spot into these two major groups and sent via two meter autostart RTTY to WA6DEI for retransmission on 20 meters. The sked worked beautifully and the traffic was cleared quickly.

This cleared the immediate area of the traffic quickly but left Bob with a bundle of traffic to clear from New Orleans. He did a magnificent job and the traffic was delivered to the East Coast in a very timely manner. RTTY was very useful in handling this bulk traffic.

Expand the size of the event and the quantity of the traffic is going to increase accordingly. The use of RTTY needs to be expanded to cover these operations. Ideally, traffic system operators simply need to resort to their RTTY equipment on their regular skeds. But, remember, traffic system operators and RTTY operators are not generally one and the same.

In order to even the traffic load and not put a burden on any one individual, many stations from many areas of the country should copy traffic at the same time and acknowledge receipt for their particular area. The region level of the NTS is a reasonable breakdown. From region level it could be disseminated into section nets. This would only require a dozen RTTY stations across the country.

How about it folks? Can we find an RTTY station in each of the 12 regions to volunteer to be on call to clear traffic from special events?

The public relations gleaned from the Ventura booth was tremendous. Crowds were always around asking "How does the message get delivered?" and other questions about Amateur Radio. The large quantity of return messages also provides an excellent means for public relations. When delivering the message, take a few minutes to explain how the system works.

Q Signals, QN signals, procedure (*from K7NHL*)

It should not really be necessary for any NCS or other station on an area net, the highest level net in the NTS, to spell out anything which can be expressed by a Q signal or by QN signals. For example, QRY W6EOT: "Your turn is (number —) (or according to any other indication) in this case, **after W6EOT**. When going to a frequency where the station you are to contact is already working, or when reporting into net when the NCS is already calling, YOUR call sign is all that is necessary. Both call signs are required only when you **finish working.**

Sending stations to Area Nets

It is suggested that when sending stations to area nets for the first time, that the operators be advised to listen to net operations before the date of first QNI. Besides checking for speed qualification, sufficient signal strength and knowledge of procedure, it would seem adivisable to send the operator in a **send** slot first. After a while, exposure to the pace of area net operations will give the operator enough confidence so that he will be able to handle any assignment on the net. Aside from the NCS, the Region Net Managers and the Transcontinental Corps directors who appear on the area the operators who appear on the area nets (EAN, CAN, PAN). Shortcomings will be reported to the Area net manager, who will notify the Region net manager or TCC director. — *K7NHL*

When NCS is late

If the regular NCS does not show up within three minutes after the net is supposed to begin, anyone should take over as NCS. If the regular NCS comes on later, normally the one who has taken over should continue to function to the end of the net as changing command takes time and really accomplishes nothing. One exception would be if the net has just begun. Another would be if the substitute is having difficulty or has to leave the net.

Of course, the regular NCS should make every effort to be on time. But with a volunteer operation like ours, this is not always possible. Most of us have other responsibilities that have priority over Amateur Radio, and domestic emergencies arise.

Should I take over? No, if you have a high noise level, are running maybe 100 milliwatts or have to leave in 10 minutes. The same if you have a big stack of traffic or expect to receive a lot. A net control with a lot of traffic to handle tends to slow things down. But otherwise, if you've been checking in regularly and know what to do, don't hesitate to QNG.

If you're supposed to be NCS and foresee that you can't make it, get a substitute or ask the manager to get one for you. Even at the last minute you can get on the air on the net frequency and put out a call. There's always a good chance that someone will be there waiting for the net to start. — *WB4OBZ*

QNC

The new manager of Daytime Seventh Region Net is Art Spence, VE7-DKY. DRN7 representation from each state and province continues to be a problem. Please encourage all who can to QNI. Art needs all the help he can get. DRN7 meets daily on 7268 kHz at 1700Z and 2000Z. The Seventh Region is all of the Northwestern states. — *W7GHT*

Deliveries in the San Francisco Bay Area are aided via two new nets (80M and 2M). Known as BARTN — Bay Area Regional Traffic Net — run by Jim Pratt, WA6BMV, as Manager and Gary Caldwell, WA6VEF, as Assistant, BARTN/1 meets Fridays and Saturdays on 3740 kHz at 1930 local; BARTN/2 meets same days on 146.52 MHz FM at 2000 local. Tell your Novice and Technician friends about BARTN. — *K6TP*

Due to the continuous AM interference to a majority of the MNN (Mich.) stations on 3720, the net frequency will be moved up to about 3722 kHz for the summer months and any other days that the QRM is bad. — *WB8NCD*

The Hit and Bounce Slow Net has a new manager. Due to increased professional responsibilities, Kurt Meyers, W8IBX, has been forced to give up managership of HBSN. The new manager, effective 1 July 1976, is Bill Dickson, WB8TRK. Bill solicits continued support from net members. HBSN meets Friday, Saturday, Sunday and Monday on 3714 at 0730 Eastern and on 7140 at 0800 Eastern. Bill announced that HBSN will continue as a two band operation this summer. This allows for daily operation of net regardless of band conditions. Bill is also looking for net control stations, especially on 40 meters. Control stations in the South are most effective due to long skip. Can you help? Contact WB8TRK.

Thanks to all who sent information this month. The above was gleaned from the following publication: *IMN Bulletin* (Idaho/Montana), *MNN Bulletin* (Mich.), *The Relay* (No. Cal.), *The PAN Bulletin* (K7NHL), *CN News* (Carolinas) and *Hit and Bounce Report* (W8-IBX). □

"They don't make 'em like they used to..."

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Model 262G Power Supply/VOX	129.00

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INTERFERENCE

Dr. Theodore Cohen, W4UMF

RFI LEGISLATION IS DEAD

With only a few months left in the Second Session of the 94th Congress, there now appears to be little chance that either H.R. 7052 or S. 3033 will receive a hearing before the House or Senate Subcommittee on Communications.

While much of the blame for the lack of action on RFI legislation can be charged to the FCC's failure to take a position on the matter (see **Worldradio News**, July 1976), amateurs, too, are at fault. Despite repeated pleas in the press for letters to the Congress, we have learned that the House Subcommittee on Communications received only 1000 letters on H.R. 7052 from amateurs. Put another way, less than 0.5% of the amateurs in the United States voiced their opinion on RFI legislation to their elected representatives in Washington. This is a terrible indictment of our Service!

Perhaps the amateur community feels that it is above matters politic. Nothing could be farther from the truth! We operate under regulations set forth in the Communications Act of 1934, and the agency tasked with regulating the Service, the Federal Communications Commission, answers directly to the Congress. In short, until we develop the ability to make our voices heard in Washington, efforts to control the future development of the Service will stand in jeopardy.

Proposed expansion of frequency allocations for the Citizens Radio Service has brought a flood of protests to the FCC, the majority of which cite CB operations as causing interference problems which now border on "catastrophic". As noted in *Broadcasting* (5 July 1976), the National Association of Broadcasters (NAB), in comments filed with the Commission in June 1976, stated that to expand the CRS at this time would exacerbate interference problems to television receivers and would create new problems for AM radios. In its response to Docket 20120 (CB Expansion), the NAB stated that the Commission has grossly understated the interference problems posed to television reception by the CRS. Further, the Association took the position that any further proliferation of CRS transmitters "could destroy vast portions of the television service now enjoyed by the viewing public."

With due respect for our learned colleagues in the NAB, we wish to note that 80% or more of all RFI problems which involve electronic home-entertainment equipment result from design deficiencies in that equipment, and not in the nearby radio transmitter. Thus, the NAB would do well to address their concerns to the manufacturers of home-entertainment equipment as well as to the FCC. (Thanks to L. Phil Wicker, W4ACY, for supplying a copy of the *Broadcasting* article).

We have previously reported that while amateurs are involved in only 7% of all RFI problems, we are blamed for more than 80% of such problems. This is amply demonstrated in a recent letter to Mr. Tom Kleveland, a columnist with the *Santa Barbara News Press*. Writing Mr. Kleveland, a reader who signed his (or her) letter "Up Set" (sic) noted:

"I wish these people who own CB radios would keep off illegal frequencies because they ruin a lot of TV programs. I understand that they have the right to own and operate them, but I'm sure they wouldn't like me to jam their radios, especially right in the middle of a conversation.

"Is there anything I can do?"

In response, Mr. Kleveland stated:

"You might protest to Washington. The Santa Barbara Libertarian has this to say on a closely related subject:

"Amateur radio operators often disturb their neighbors' TV reception with stray signals in an obvious example of airwave pollution. So a bill has been introduced in the Senate that would require that an anti-stray signal filter, costing about $10, be installed on every new TV set.

"Yes, the victims are to be saddled with the cost of preventing their own victimization!

Guess who introduced this execrable bill. None other than Barry Goldwater, the amateur radio operator."

(Robert N. Dyruff, President of the Santa Barbara Amateur Radio Club, SBARC, supplied this information. Needless to say, the SBARC set the record straight in a letter to Mr. Kleveland.)

Finally, we close with a note from Dean McKay, Board Chairman of AH Systems, a leading EMI instrumentation company:

"People are conditioned to the interference they get on radio and TV, but what about the data processing equipment? The problem can no longer be ignored." (*Electronic Engineering Times*, 5 July 1976)

Perhaps Mr. McKay is conditioned to RFI on his television receiver, but 120,000 people who have not quite become accustomed to the problem will write the FCC in Fiscal Year 1977 to complain.

Enough said?

The following was sent to us by Leo Benzini, WA6YAC.

Too Loud and clear

Is there anything that can be done about these amateur radio operators? We have three of them near our house and they constantly interfere with our television reception. Mrs. C.H., Bellflower.

The major cause of TV interference is the rapidly increasing number of citizens' band radio owners, not trained ham operators, and there currently is no completely effective solution to this nationwide problem, said a spokesman (*please turn to page 45*)

HAPPY Flyers

(*continued from page 20*)
where a plane might crash in marginal VFR weather. It gave erratic signals at first until we reached a high enough altitude, an excellent exercise. I might add that all ground contestants also found the hidden transmitter. Jammers in San Diego better BEWARE; expertise and equipment are there.

I am sure you will hear much more about San Diego and their success. The FCC, Sheriffs Air Squadrons and the HAPPY FLYERS are all working together. People down there plan to make San Diego #1 in many things. You might see the first really big fine levied down there!

Then on to Delano and another good group, eager to learn, build, work and share — another area where amateurs and Sheriffs Air Squadrons will be working together.

Deterrent Value

When Janie and I returned home, we were told a jammer was really bothering a repeater group. The members intimated the Sheriff's plane had been called and the jammer came on in a muffled voice to say, "Oh no, he's in LA this week."

Friends, we are happy to report that more and more people are becoming equipped and ready. Soon no jammer will be safe or be able to jam because he knows the usual searcher is out of town. Any plane overhead could be one of us, or a Sheriffs Air Squadron plane.

The leaders of WR6ADE have just about completed the design of a system to use our HAPPY FLYERS DF board at their repeater site. Their design would cause the antennas to be automatically controlled so that they would stop, pointed directly to a jammer — then send down by telemetry a direct readout of the magnetic bearing to the offender.

We are also working on the area-wide program that will place spotters like VOR stations. If we can find a good volunteer to draw the diagram, we will put it in **Worldradio News** soon.

Volunteer pool

As mentioned in earlier issues of **Worldradio News,** we are compiling a file of state and area volunteers and their capabilities. We now have people in 22 states and Canada on that list. Anyone needing help may request the name of the nearest volunteer and their capability and availability. Anyone wishing to help in the jammer finding program or other civic functions may send a SASE envelope for a form to be entered in the file.

We have no dues or membership fees and there are no charges. We are an association of volunteers only. All volunteers are eligible to wear the "Flying-Microphone" gold pin (with blue mic and gold wings) with the words "Hams and Pilots" around the top and HAPPY FLYERS across the front (price $6.00).

A complete explanation about our group and how to start a local Squadron will be the feature of next month's article. Keep those cards and letters coming — and get going on the finish of your constructions (your DF units) to the destruction of the jamming problem.

Coast Guard Auxilliary news

Vic Borgnis, WB6EVH, is working with us in coordinating with the 12th Naval District for VHF marine DF work. A new manual is being written by the HAPPY FLYERS covering their specific needs and special requirements and restrictions. The cannot transmit on marine VHF channels above 1,000 feet above water.

Technical developments

We are sorry to report that due to the press of other business, Bob Broadway, WA6CZJ, is no longer able to donate time to the DF work. We take this opportunity to thank him and all the others involved in this project. We were able to coerce Jim Williams, K6HIO, who started the project with me, into returning for some engineering evaluations and to design an adapter board for radios that feedback revealed a special need for. These have been made available at no charge to early board purchasers.

One repeater group is about 2/3 through a design for placing our DF board and switched antenna system on their mountain-top with automatic tracking and telemetry. They promise more details when working.

There was too much correspondence this month to complete our 450 tests using the new Spectrum International transverter. It sure sounds beautiful with my EBC 144 Jr. If it works as planned, we will have all 450 channels covered without buying crystals. I sure have surprised some people by showing up on some 450 frequencies.

Some people in smaller communities have reported trouble in acquiring the necessary parts to build our DF units. We do not wish to become commercially involved. Some local amateurs (like Carl and Jerry) have made large purchases of some of the parts to assist others and cut costs. However, it ties up more money than most of us have.

The parts for the small board are about $15 through mail order houses. The deluxe board is a problem in that we have not found a distributor that carries all the parts. Bud Kirsh, WB6MVE, who owns Metro Electronics in San Francisco (they assemble things) has volunteered to try to get us a price for everything in one package. If it works out, it will have nothing to do with the HAPPY FLYERS — it is only intended to be a convenience. We will let you know.

SANDRA Air Force

I'm out of allotted space, but I must tell you about this group. I will be going to San Diego for a series of our free seminars in July. In our correspondence I found that one of SANDRA'S volunteer jobs to the community is their special fire-watch program. It is in cooperation with the Human Society. They patrol (in their amateur-equipped airplanes) in (*please turn to page 45*)

NOVICE

VINCE, WN6KDA

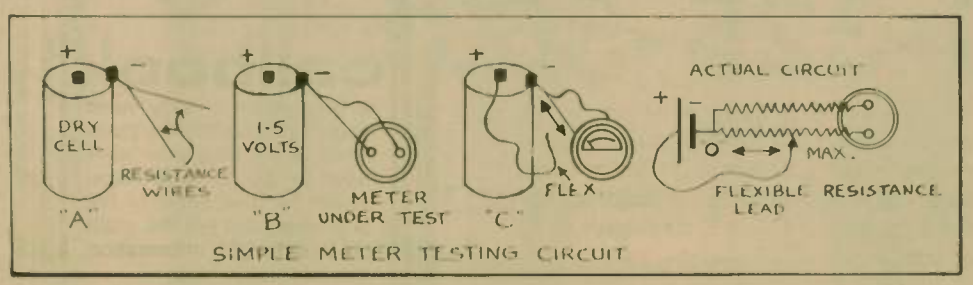
If to an auction thou wouldst go!

Oft times it is quite exciting to browse and inspect equipment that will be sold at a club auction. Like many people, we Novices usually are not unduly burdened with much money, so the Novice is generally a bargain hunter. (Aren't we all?)

In this interesting and delightful avocation of Amateur Radio, we all need to acquire a few indicating instruments. Most auctions usually have various types to be offered for sale.

BUT we need to know if the instruments are good or defective **before** we purchase them.

An old instrument maker's trick is to have available, even in remote places, a quick surefire method of testing all ac and dc instruments. All that is needed is a dry cell and two pieces of resistance wire. Any wire size between #20 and #30 is okay (obtainable from a flat iron or toaster element, etc.)



SIMPLE METER TESTING CIRCUIT

1) Cut a piece of resistance wire approximately 20" long and sandpaper off any insulation so that you have a smooth bare wire. Do not use a knife on this because the wire will not be smooth.

2) Connect the center of this wire to the negative post of the battery as shown in "A" in the diagram.

3) Connect the meter to be tested to each end, as shown in drawing "B".

4) Cut a piece of the same resistance wire approximately 10" long, only remove the ½" insulation from each end. Connect to the battery positive post as in "C".

5) Touch the flexible positive wire to a point slightly beyond the negative post and a sensitive instrument (1 ma or less) will deflect. To increase the deflection, move the 10" flexible wire slowly towards the meter under test. Note: If the meter reverses, use the other resistance leg.

6) The reason we use an insulated 10" flexible resistance lead is that it could become hot if used for too long and too near the negative battery post.

7) The current available even from a small battery is considerable, so even one to five ampere instruments can be tested easily. By using finer resistance wire, microammeters can be tested safely.

Operation — By moving the flexible lead from zero (the negative post) very slowly toward the meter, and by carefully watching the instrument pointer as it moves, sticking or hesitation of the pointer can be determined. If no motion of the pointer is noticed, the meter has an open circuit.

8) By using this method, hot wire or thermocouple (RF) meters can be tested before purchasing, using this simple circuit so you will not get a burned out meter.

9) Even ac instruments can be tested because they will give some sort of a deflection on dc, showing their internal circuit is not open.

10) By having this battery set-up in your pocket or on your workbench, always available, meter testing can be done swiftly without bother.

Try it; you'll like it!!

• • •

Comraderie? Oh, yes!

We recently overheard this remark: "As an educator, I wish my school classes were as devoted and intent as this Novice class. It must be a joy to its instructor!"

All too true! It is one of life's good experiences to be an active member of a beginner or Novice class. There is an "instant comraderie" between Novices.

As a Novice, you just know what the other Novice is going through — that uphill struggle to 13 words per minute, that the book of books is the *ARRL License Manual.*

(*please turn to page 45*)

CLUBS

New Alabama club — Gung Ho!

George Walborn, W4ZEC/WA4MUK

The Twin Base Amateur Radio Club was organized at Gunter Air Force Station, Montgomery, AL during the early part of 1976. Jan Heise, WA4VQD is serving as President, with Bruce Mertz, WA8KLH/4, as Vice President. Membership at present numbers about 50, consisting of amateurs of the Montgomery area, about evenly divided between active duty military personnel from Maxwell Air Force Base and Gunter Air Force Station and retired military personnel of the area and civilians of the local community.

The first project of the club was to start code and theory classes for those wishing to obtain a Novice license. To date, about 30 students have successfully passed their code tests and have either passed their written examinations or are awaiting the tests.

A very successful Field Day was conducted, with two positions operating for about 20 hours on emergency power and with over 700 successful radio contacts.

The club is affiliated with the ARRL and is actively engaged in obtaining station equipment and a permanent facility for classrooms and station operations. The call sign for the station is WB4PRY. Plans are to operate on all bands as soon as facilities permit.

A two-meter repeater has been fabricated and is now being tested prior to going into use during July; field tests indicate that very excellent coverage can be expected. An autopatch will be added in the near future.

Club meetings are being held twice monthly and programs are scheduled for each meeting. Plans are to provide information on items of interest such as severe weather reporting, public service communications for community projects and new developments in Amateur Radio equipment.

Club members are also operating two radio nets on a weekly basis. One on two meters each Sunday evening and the other on 10 meters each Wednesday evening. These nets are designed to pass out current information to amateurs in the local (central Alabama) area, to advise of future meetings and to maintain operator proficiency. □

Success

Fred Hermann, W3HYT

Success in any club endeavor is the result of a symbiotic intertwining of mutual effort. Negative, non-productive attitudes and approaches can destroy what we all want to accomplish. Our success rests on these fundamentals:

1. The welfare of the club is our primary goal.
2. Mutual cooperation is the pathway to success.
3. All ideas and approaches are given respectful consideration. Each individual must express his views, and upon reaching consensus, close ranks with others and make it succeed.

—VOX

Anaheim Amateur Radio Ass'n Inc.,
Post Office Box 2242
Anaheim, Calif., 92804

Dear Members;

The membership of the Orange County Motorcycle Club, its officers and the Great Bear race committee wish to convey a hearty thanks to you. The professional manner and conductivity of each of you is certainly a fine demonstration of your ability.

Your volunteer communication service contributed much to the over-all success of this year's Great Bear Grand Prix. Certainly, without your services, the program would have been much more difficult.

We understand that while this was voted a club project, it was placed strictly on a volunteer basis. Your members and those of the Fullerton Radio Club who joined in helping you, are to be commended. You helped make a great racing event possible with your excellent and well regimented communications project. A Great Bear thanks to all of you!

Sincerely yours
Wayne King, Race Director.

The member who never came back: a parable

"It amuses me now to think that your organization spends so much time looking for new members — when I was there all the time. Do you remember me?

"I'm the fellow who was asked to join. I paid my dues and then I was asked to be a loyal and faithful member.

"I'm the fellow who came to every meeting, but nobody paid any attention to me. I tried several times to be friendly, but everyone seemed to have his own friends to talk to and sit with. I sat down among some unfamiliar faces several times, but they didn't pay much attention to me.

"I hoped somebody would ask me to join one of the committees or to somehow participate and contribute — but no one did.

"Finally, because of illness, I missed a meeting. The next month no one asked me where I had been. I guess it didn't matter very much whether I was there or not. On the next meeting date I decided to stay home and watch a good television program. When I attended the next meeting no one asked me where I was the month before.

"You might say that I'm a good guy, a good family man, that I hold a responsible job and love my community.

"You know who else I am? I'm the member who never came back."

—Mike Shy

Club growth

Worldradio supplies a service in conjunction with the *Callbook*. We supply Amateur Radio clubs with gummed labels of the names and addresses of all amateurs in their respective areas who are newly licensed or upgraded.

It is hoped that the clubs will send these new people a copy of their news-

(*please turn to page 50*)

JACKPOT

CONLEY RADIO SUPPLY

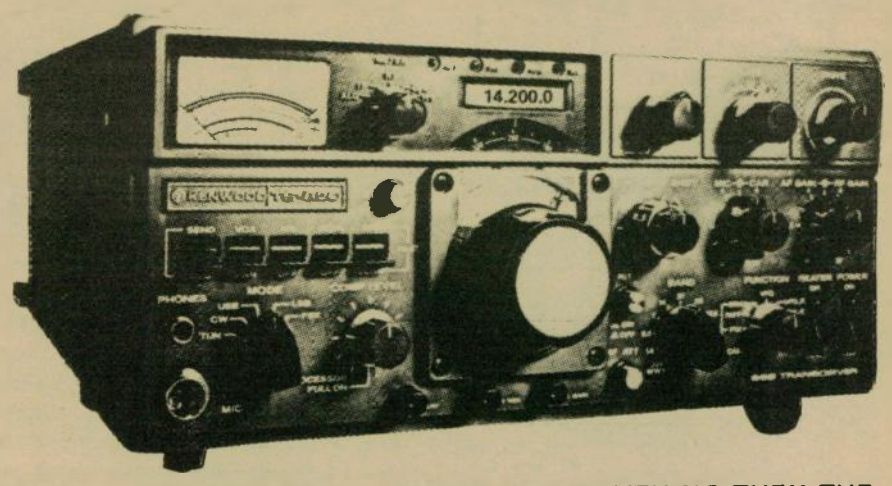
OFFERS YOU THE

SENSATIONAL

NEW KENWOOD TS-820

HF TRANSCEIVER

TS-820 SERIES
TS-820/VFO-820

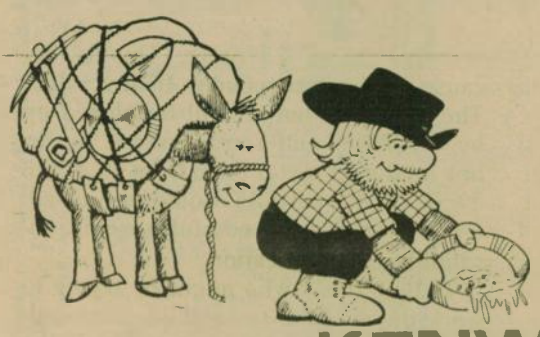


IF YOU HAVE BEEN WANTING A UNIT WITH EVERYTHING THEN THE TS-820 IS THE RIG FOR YOU. FEATURE AFTER FEATURE THERE IS NO RIG ON THE MARKET TO COMPARE WITH THE NEW TS-820.

** JULY DELIVERY ** COLORED BROCHURES UPON REQUEST ** NO SALES TAX IN MONTANA **SHIPPING PREPAID WITH CERTIFIED CHECK OR MONEY ORDER. ** IF YOU WOULD LIKE TO BE ADDED TO OUR MAILING LIST PLEASE SEND US A QSL CARD.

"THE FRIENDLY LITTLE DEALER IN THE WEST"

TS-820 TRANSCEIVER	VFO-820 EXTERNAL VFO	CW-820 CW FILTER	DG-1 DIGITAL DISPLAY KIT	DS-1A DC-DC CONVERTER
$830.00	$139.00	$45.00	$170.00	$59.00



CONLEY RADIO SUPPLY

101 - South 31st Street Billings, Montana

(406) 259-9554

KENWOOD TS-820 PACESETTER

The Pacesetter Transceiver is here..... the fruit of an all out effort by Kenwood's engineering department to produce a progressive ham rig for the amateur who wishes to experience the ultimate. The finished product is here..... The Kenwood TS-820 Pacesetter. Loaded with functional features, the 820 allows you to command the band with superb selectivity, integral IF SHIFT, and much, much more.

TS-820 PERFORMANCE SPECIFICATIONS

Frequency Range	160 meter band	1.8 to 2.0 MHz
	80 meter band	3.5 to 4.0 MHz
	40 meter band	7.0 to 7.3 MHz
	20 meter band	14.0 to 14.35 MHz
	15 meter band	21.0 to 21.45 MHz
	10 meter band	28.0 to 28.5 MHz
		28.5 to 29.0 MHz
		29.0 to 29.5 MHz
		29.5 to 29.7 MHz
	WWV	15.0 MHz (receive only)
	A U X band	
Mode	CW, USB, LSB, FSK	
RF Input Power	SSB 200 Watts PEP	
	CW 160 Watts DC	
	FSK 100 Watts DC	
Antenna Impedance	50 to 75 ohms, unbalanced	
Carrier Suppression	Better than 40 dB (Mod. freq. at 1.5 kHz)	
Side-Band Suppression	Better than 50 dB (Mod. freq. at 1.5 kHz)	
Microphone	High impedance (50 kΩ)	
AF Response	400 to 2,600 Hz	
Spurious Radiation	Harmonics Less than -40 dB	
	Others Less than -60 dB	
Receiving Sensitivity	S/N 10 dB or better at 0.25 μV	
Image Ratio	160 to 15 meter band: Better than 60 dB	
	10 meter band : Better than 50 dB	
IF Rejection	Better than 80 dB	
Frequency Stability	Within ± 1 kHz during one hour after one minute of warm-up, and within 100 Hz during 30 minute period thereafter	
Receiving Selectivity	SSB: 2.4kHz (-6 dB)	
	4.4kHz (-60 dB)	
	CW: 0.5kHz (-6 dB), with optional CW filter	
	1.5kHz (-60 dB), with optional CW filter	
AF Output Power	More than 1.5 watts (with less than 10% distortion) into an 8 ohms load	
Audio Output Impedance	4 to 16 ohms (speaker or head phone)	
Tube and Semiconductors	3 tubes (2 x S2001A, 12BY7A)	
	5 ICs	
	30 FETs	
	74 transistors	
	165 diodes	
Power Requirements	120/220VAC, 50/60Hz	
Power Consumption	Transmit: 280 watts	
	Receive : 26 watts (with heater-off)	
Dimensions	13-1/8 (333) wide x 6-0 (153) high x 13-3/16 (335) deep inch (mm)	
Weight	35.2 lbs (16kg)	

● Specification and designs are subject to change without prior notice.

PLL

The Kenwood TS-820 employs the latest phase lock loop circuitry. PLL technology allows accurate frequency derivation without introducing spurious signals which are known to play havoc with some amateur equipment. The single conversion receiver section performance offers superb protection against unwanted cross-modulation. And now, PLL allows the frequency to remain the same when switching sidebands (USB, LSB, CW) and eliminates having to recalibrate each time.

HIGH STABILITY VFO

The VFO, heart of any SSB transceiver, is an exclusive Kenwood design using FET technology. The housing which serves to protect the components from vibration and shocks in mobile or field use, and assures lasting stability is a large, heavy gauge, deep drawn aluminum case.

CW AUDIO CHARACTERISTICS

During CW reception, a special filter is used to alter the audio frequency response to provide a more comfortable, easy to copy tone.

FINAL AMPLIFIER

The TS-820 is completely solid state except for the driver (12BY7A) and the final tubes. Rather than substitute TV sweep tubes as final amplifier tubes in a state of the art amateur transceiver, Kenwood has employed two husky S-2001A (equivalent to 6146B) tubes. These rugged, time-proven tubes are known for their long life and superb linearity. The input power of the TS-820 is conservatively rated at 160 Watts DC, 200 Watts PEP. The tubes run cool with the aid of a noiseless fan (standard) mounted on the rear panel. The above tube and power combination minimizes the possibilities of TVI and helps to maintain the Kenwood reputation for excellent audio quality.

DIGITAL READOUT DG-1 (optional)

Along with the easy to read dial, a digital counter display can be employed as an integral part of the VFO readout system. More than just the average readout circuit, this counter mixes the carrier, VFO, and first heterodyne frequencies to give you your exact frequency. The counter actually figures the frequency down to 10 Hz and the digital display reads out to 100 Hz. Both receive and transmit frequencies are displayed in handsome, easy to read, Kenwood Blue digits.

DRS Dial

A new VFO tuning dial system is incorporated in the TS-820. It includes the same satin-smooth planetary drive found on other fine Kenwood models plus special, high-precision gears to add a new "monoscale" feature for easier frequency readout. LSB, USB, and CW operating frequencies can be directly and accurately read from the same pointer.

IF SHIFT

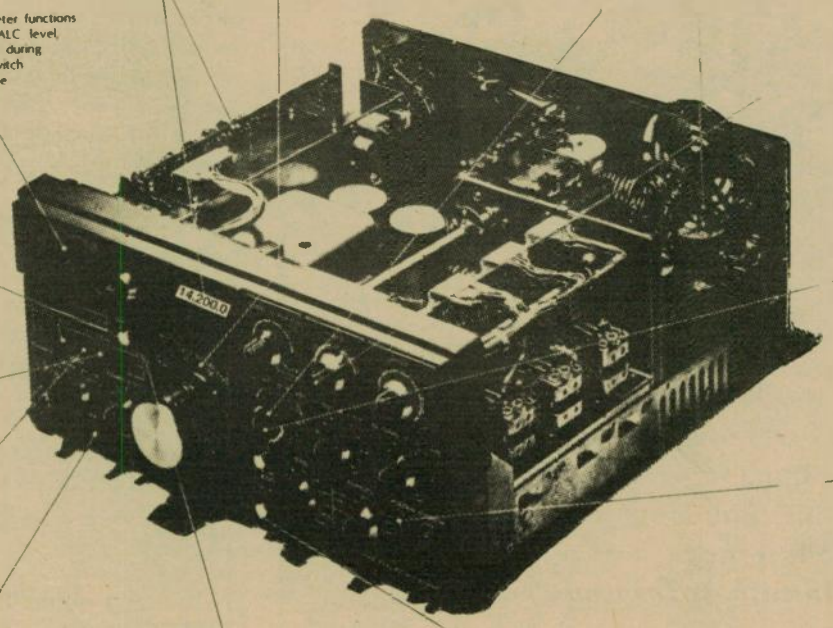
Sometimes called a "passband tuning" circuit, the IF SHIFT control varies the IF passband without changing the receive frequency. This special feature enables the operator to eliminate unwanted signals by moving them out of the passband of the receiver. This feature alone makes the TS-820 the pacesetter that it is.

VERNIER TUNING

Precision vernier tuning has been incorporated with the plate tuning control to provide rapid and accurate adjustment during tune-up.

FULL METERING

During receive, a handsome, easy to read meter functions as an S-meter. The same meter displays ALC level, plate current, RF output, and plate voltage during transmit. The five position meter selector switch includes a COMP setting for adjusting the compression level of the built-in speech processor.



DIGITAL HOLD

A single pushbutton switch offers the operator unprecedented versatility in digital frequency readout. The digital hold circuit will lock the counter and display at any frequency, but will allow the VFO to tune normally. Ever wanted to return to a certain spot on the band and forgotten the frequency? That won't happen again with the new digital hold feature on the Kenwood TS-820.

RIT

The quick and easy way to vary the receive frequency 5 kHz either side of the VFO frequency. Of course, the effect of the RIT will be displayed by the DG-1 digital counter display.

RF MONITOR

The built-in monitor circuit allows you to hear your own voice during transmission by sampling the RF signal. This circuit is especially useful for adjusting the RF Processor.

HEATER SWITCH

The filaments of the three vacuum tubes may be turned off during periods of "receive only." Because the 820 is "all solid state" with the heaters off, it draws less current than the dial lights in most automobiles.

NOISE BLANKER

The TS-820 uses an efficient noise blanker circuit, another Kenwood exclusive. By employing a special crystal filter, it assures unsurpassed efficiency in eliminating unwanted pulse noises such as ignition noise.

SPEECH PROCESSOR

The TS-820 also incorporates a unique RF speech processor. It utilizes a 455 kHz circuit to provide quick time constant compression. This feature is a true RF compressor as opposed to an IF clipper and the amount of compression is adjustable to the desired level by a convenient front panel control.

VOX

A voice-activated microphone circuit is built into the TS-820 with VOX GAIN, ANTIVOX, and VOX DELAY controls placed on the front panel for convenient adjustment any time.

RF ATTENUATOR

Easy, one touch activation of the attenuator supplies 20 dB of padding on receive. The switch is conveniently located on the front panel.

OTHER FEATURES INCLUDE:

- Built-in 25 kHz calibrator ●
- Built-in speaker ●
- CW Sidetone and semi-break in ●
- Rear panel terminals for linear amplifier, IF OUT, RTTY, and XVTR ●
- Handy phone patch IN and OUT terminals ●

Interference

(*continued from page 40*)
for the Federal Communications Commission. TV and radio supply shops sell inexpensive filters that can be attached to a television set to block out some of the CB-caused interference, but the spokesman said these filters won't work if they're not properly installed and they rarely are, even by professional TV technicians. The filters aren't effective if they're attached to the outside of the set; they must be grounded inside the set near the RF tuning unit. Even if a filter is properly installed, a nearby CB operator — especially one with an illegally souped-up transmitter — can still cause interference. It's estimated there are about 13 million CB operators in this country and that by 1980, at the present growth, three out of every four cars in the United States may be CB-equipped. The FCC has commissioned a study on ways to design future TV sets to filter out CB-caused interference. "We also expect that improved add-on filters will be developed, but these possible solutions won't help the problem now," the spokesman said. FCC officials maintain they don't have the manpower to investigate the thousands of complaints they receive about CB radios. "When the FCC was formed in 1934, it had 1,500 employees and very little to supervise. Today we have only 2,500 employees and we're supposed to try to regulate everything from CBs to TV."

—Action Line, Long Beach, CA

Flyers

(*continued from page 41*)
front of a forest or brush fire and inform the ground crew of displaced wildlife fleeing the fire. The animals are then safely returned to another area.

My hat is off to SANDRA. We should all be proud of another amateur community service. They would have joined us at Catalina but stayed for their planned drill. Hopefully, they will become our Squadron #5.

Jammer service file

We now have addresses in 16 states. Also our knowledge pool is growing. Feel free to call on us. (Send SASE with all correspondence.) DF Boards and Manuals are still available. (We are no dues and nonprofit.)

Short notes of interest

When involved in airborne electronic search (whether real or practice), and more than one airplane is involved, BE SURE TO USE DIFFERENT ALTITUDES to avoid collision. Once a downed aircraft is found and you have no further part of the rescue operation, please leave the area to allow safety margins for the rescue planes and personnel.

All Squadron members please note: our new gold wings with blue microphone pins are now available for $6.00. They have the words "Hams and Pilots" around the top of the mic and the words HAPPY FLYERS on the main body. Very attractive for lapel, tie tack, shirt. Janie, WB6ODQ, wore one in her ear at Catalina.

Please contact us if you are interested in information about starting a HAPPY FLYERS Squadron in your area — or having a free DF seminar in your area (on the West Coast).

The ink is still drying on my new IFR license — thanks Vern, for your articles. Would also like feedback as to other community services provided by amateurs and Pilots — like the SANDRA Air Force. □

Novice

(*continued from page 42*)
In a group, when it is known that you are a Novice, any Novice within hearing will automatically gravitate toward you. It's a wonderful feeling — instant friendship that could and does, many many times, last for a lifetime.

If an amateur is a General or Advanced, then it takes time to learn that he or she is interested in CW, phone, RTTY, OSCAR, SSTV, etc. But not so with the Novice. As a Novice you know where the other Novice is, like yourself, slowing climbing that code knowledge hill.

Being a Novice is a wonderful time of life, so don't be in a hurry to leave its special "comraderie." Take it easy; enjoy its all-too-short time so you won't have to look back and think, "I wish I had known then what I know now." □

VHF/UHF

(*continued from page 34*)
Our station of the month belongs jointly to Lee and Fred Fish in Edgewood, New Mexico. Lee and Fred recently completed a 32 ft. diameter dish in their back yard in time for the last WA6LET test series. Unfortunately, the LET test did not allow 220 operation so tests were successfully conducted on 432. A frantic card from Lee dated 5 June indicated, "IT WORKS!!!! We fired up the dish on 220 MHz last night, 5 June, from 0025 GMT to 0035 GMT and got our own echo, besides having K7NII hear us over there."

Tom's antenna in Arizona consists of four 12 ft. Yagi's on an El-Az mount running approximately 20 dB gain. The 32 ft. fish dish probably runs between 23 and 24 dBd. This now gives Fred and Lee capability of EME on at least three bands from New Mexico.

Due to work commitments, coupled with considerable traveling and an upcoming job assignment which will preclude total devotion to this column, I would like interested parties to drop me a line indicating their possible desire to either assume this column responsibility or at least take it on for brief periods, several months at a time, or some such arrangement. Let me know via normal address of any VHF activity. Reports to 4519 Narragansett Avenue, San Diego, CA 92107. □

OSCAR AMSAT

(*continued from page 37*)
days in which AMSAT/OSCAR-7 is in mode B, attempt to operate satellite-to-satellite.

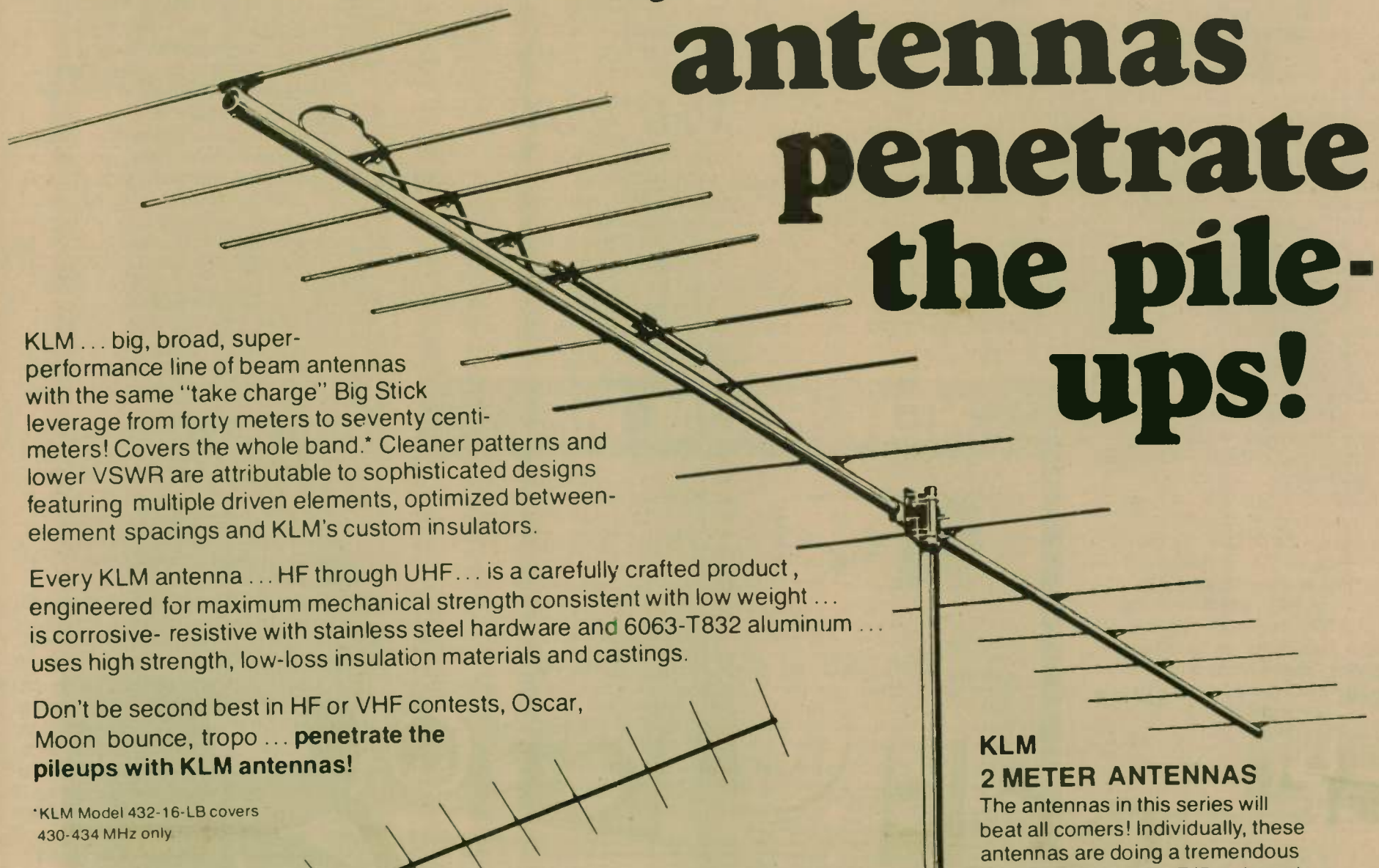
In the satellite-to-satellite operation, a transmission up-link on a frequency between 432.125 MHz and 432.175 MHz will output from the satellite (OSCAR-7) at 145.975-145.925 MHz. This is because of the transponder IF inversion. The OSCAR-7 output will be picked up by OSCAR-6 and retransmitted down-link on the 10-meter band from 29.475 to 29.525 MHz. AMSAT would appreciate any reports of successful satellite-to-satellite communication.

To help those who might be trying to work the satellite-to-satellite communications, it would be appreciated if the OSCAR-6 users do **not** operate in the 145.925-145.975 MHz range on GMT days 7, 9, 11 August 1976.

Next month we will discuss a proposed replacement satellite for OSCAR-6, some of ARRL's plans in cooperation with AMSAT for amateur comsat development, and JAMSAT's (The Japanese AMSAT) entry in the amateur comsat field. □

Please see page 11.

KLM HF, VHF, UHF antennas penetrate the pile-ups!



KLM . . . big, broad, super-performance line of beam antennas with the same "take charge" Big Stick leverage from forty meters to seventy centimeters! Covers the whole band.* Cleaner patterns and lower VSWR are attributable to sophisticated designs featuring multiple driven elements, optimized between-element spacings and KLM's custom insulators.

Every KLM antenna . . . HF through UHF . . . is a carefully crafted product, engineered for maximum mechanical strength consistent with low weight . . . is corrosive- resistive with stainless steel hardware and 6063-T832 aluminum . . . uses high strength, low-loss insulation materials and castings.

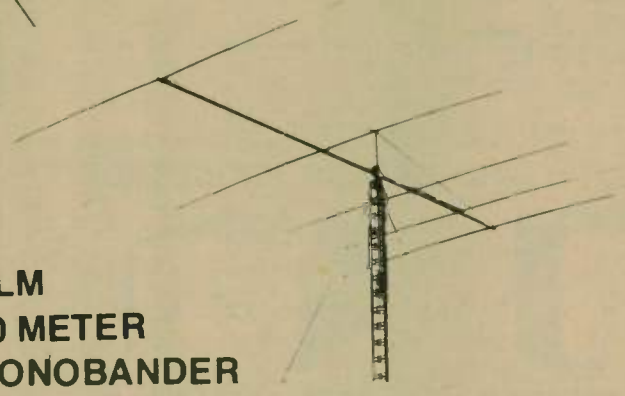
Don't be second best in HF or VHF contests, Oscar, Moon bounce, tropo . . . **penetrate the pileups with KLM antennas!**

*KLM Model 432-16-LB covers 430-434 MHz only

KLM 70 CENTIMETER ANTENNAS

The fine series of UHF antennas consists of 6, 14 and 27 element high gain, broad coverage antennas (6 and 14 element types are rear mountable). **All antennas** (except the 432-16-LB) **cover 420-450 MHz without need for tuning.** These are ideal, maximum gain antennas for point-to-point or repeater control applications. An available **long boom** 12′ model), optimized at 432 ±2MHz, is particularly desirable for EME and DX communications. Eight of these beams, using KLM high efficiency couplers are comparable to a 128 element, extended, expanded collinear array.

A typical antenna: (KLM-420-470-14)
Elements: 14
Gain: 11.5db (dipole reference)
Beam width: 18 degrees @ 3db pts
Diameters: Boom 1″ (25.4mm)
Elements ⅜ D (9.5mm)



KLM 20 METER MONOBANDER

Do you operate both phone and CW and so are forced to compromise with higher VSWR on one or the other mode? **Not with this KLM 20 meter monobander!** Multiple driven elements and other KLM design exclusives, give broad-band action, low VSWR over 13.9 to 14.4MHz. F/B (and sides) ratio is excellent, gain is exceptionally high. (9.75 dipole reference). Impedance is 200 ohms balanced (matched w/KLM's 4:1 4KW p.e.p. balun (optionally available). Assembly is simple and fast.

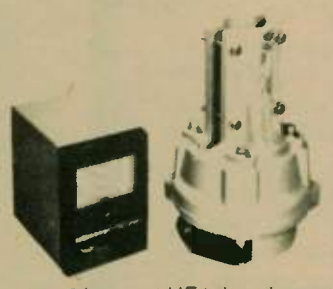
Other KLM beams for 40, 15 and 10 meters feature dual driven elements for high gain, F/B ratio and low VSWR over both phone and CW band sections. **Also, a 7 element log periodic** w/26′ turning radius, 30′ boom (3″, 76 mm) D **that gives continuous coverage, 10-30MHz!** Makes an excellent **NO TRAP**, 20-15-10 meter beam with gains equivalent to long boom, 3 element Yagi. Matches 50 ohm line w/4KW p.e.p. balun (supplied).

5 full size elements: Boom: 42′, 3″ (76mm) D
Turning radius: 28′ **Wgt:** 65 lbs. (29.4KG)

KLM 2 METER ANTENNAS

The antennas in this series will beat all comers! Individually, these antennas are doing a tremendous job where high gain, F/B ratio and low VSWR are important . . . in VHF DX contests for example. Many are stacking them for moon bounce and tropo work using available KLM baluns and couplers. Included in the series are antennas with 7, 8, 9, 11, 12, 14 and 16 elements, **all providing broad coverage. 143.5 to 148.5MHz (without tuning)** plus exceptionally high gain.

A typical antenna: (KLM-144-148-14)
Elements: 14
Gain: 14.2db (dipole reference)
Beam width: 18 degrees @ 3db pts
Boom: 208″ (5283mm) **Wgt.:** 9 lbs (4 KG)



NEW AZIMUTH ROTATOR

Model KR-400

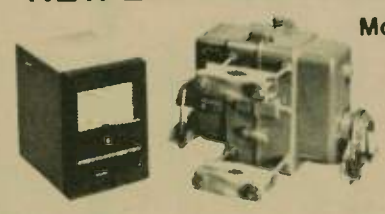
99.95

Ideal for most HF tribanders and VHF arrays
Medium duty w/ electrical brake/limit switches
1 minute/360 degrees Rugged weatherproof
Attractive direction indicator

NEW ELEVATION ROTATOR

Model KR-500

149.95



Use for OSCAR 6-7, Moonbounce, etc. Medium duty w/ electrical brake/limit switches
1 min. 180 degrees Rugged weatherproof
Attractive direction indicator

At your dealers. Write for descriptive catalog.

KLM electronics

17025 Laurel Road, Morgan Hill CA 95037 (408) 226-1780, (408) 779-7363

KLM exclusive

2-way channel scan

plus 23 fixed channels

Now . . . continuous, sequential monitoring of your favorite four repeaters or fixed/mobile stations . . . safely conveniently . . . eyes on the road.

Four channel scanning **both** receive **and** transmit. A transmit control crystal, selected for simplex or repeater duplex as required, switches with each electronically-scanned position. Just flip the "manual" toggle and break in.

In **addition** . . . both **Multi-11** and **U-11** also give you 23 switchable, crystal controlled transmit and receive channels.

Compare prices, operating features (many exclusive) of either transceiver with any other available. You'll find the KLM feature-per-dollar ratio very hard to beat.

- All solid-state . . . no tubes.
- Double conversion receiver.
- Two stage crystal filter.
- Two RF stages w/dual gate MOS FET.
- Fractional microvolt sensitivity.
- Sensitive squelch w/0.5uV threshold.
- RIT for receiver, ±5 kHz.
- Multi-function metering: Power out/"S" units. Also switchable to FM centering.

- Auto or manual scan (Four channels), transmitter and receiver.
- NBFM, 10W output (switchable to 1W)
- Protective circuit for output transistor.
- Available solid-state amplifiers boost output 70-160 watts.
- Tone osc. w/sw. For test, control, etc.
- 13.5VDC negative ground.
- Compact: 2.2"(56mm)H, 6.41"(163mm)W, 9"(230 mm) D. Wgt: Approx. 4.4 lbs(2KG).

MULTI-11 TRANSCEIVER
Freq.: 144-146MHz (or 146-148MHz)
Channels: 23, manually switchable, 4, auto-scan.
Freq. control: Quartz crystals. External VFO or synthesizer input.

$325 *

MULTI-U-11
Freq.: 420-450MHz (any 4MHz segment).
Channels: 23, manually switchable, 4, auto-scan.
Freq. control: Quartz crystals. External VFO or synthesizer input.

$379

MULTI-7,
FULL-FEATURED
COMPACT, LOW PRICE,
2-METER
TRANSCEIVER

23 xtl chans. (external VFO). NBFM. 10W power out. Sensitive, double-conversion receiver. Mobile. 13.5VDC **$239** *

KLM electronics

17025 Laurel Road, Morgan Hill CA 95037 (408) 226-1780, (408) 779-7363

* **NOW AVAILABLE** for **Multi-11** and **Multi-7**. **5 common crystal pairs**. .22-.82. .28-.88. .16-.76. .52-.52 and .94-.94. **Only 17.50**

Joe, W7HQT: G-Man, Internal Revenue Agent, lawman, oldest active RACES radio operator in the USA?

James Carpenter, K7EP

Joe Foley, W7HQT, of 4339 Rancho Road in Las Vegas, has had one of the most colorful careers of any amateur. One of the original "G-Men" in the early 1930's, and an Internal Revenue Agent when the G-Men became the FBI, Joe stayed with the IRS to avoid an assignment in Washington, DC, preferring to stay in his first love, the West.

Joe has always been an expert with guns of any type. His trailer home in Las Vegas is filled with guns, reloading equipment and bullets scattered among his amateur gear. In a story in a 1933 Dectective Magazine, Joe attributed his life to being the "fastest on the draw" with his regulation military 45.

During the late 1940's Joe was several times World Champion 45 Caliber Pistol Shot. His service in the Mexican campaign, two World Wars, Federal law enforcement and Amateur Radio fields have prompted reams of articles about "G-Man Joe", "fighting Marshall of El Paso" and numerous other tags hung on him by various reporters.

Many of the old-time radio amateurs in New Mexico, Wyoming, Montana and Nevada can trace their start in Amateur Radio to Joe. Licensed for over 30 years, off and on, Joe can remember working to old spark gaps for the U.S. Government and as an amateur.

Born in 1887, Joe has resided in the West almost all of his life, except for official assignments that have taken him elsewhere for several years at a time.

At 89 years young, Joe may just be the oldest active RACES radio operator in the nation. Joe can be heard on 3996.5 kHz, the Nevada state RACES Net, almost every Monday night that he is at home. Or if you're driving to Las Vegas, just shout W7HQT on the RACES repeater, 147.78/18, and Joe will probably answer you.

The picture shows Joe preparing for his annual summer trip to the Arizona desert where he usually spends several weeks along the Mexican border. His Metro Communications Van has a bunk, stove, refrigerator, power plant 2-meter and SSB gear with lots of reloading equipment for his several guns that travel with him. In spite of his many years in law enforcement, Joe has been known to poach a few birds or rabbits for supper.

Joe is also proud that he still makes his own living alone in his trailer in Las Vegas. Although his surviving sons and daughters have threatened to kidnap him and move him back East, Joe prefers the desert and calls himself a "desert rat", born and bred, and will die in the desert.

One of his sons in Virginia has built a museum to house the many old guns, souvenirs and other data covering Joe's long career. □

SOWP Bicentennial CW QSO Party

The first Society of Wireless Pioneers (SOWP) CW QSO Party is now history. For those who took part, it was a time for meeting old friends and making new ones. A total of 182 members participated making the event a gala affair. The only complaint heard was that there weren't more participants.

One of the significant differences between this party and most other QSO parties was that this was not a contest. Although some stations made many more contacts than others, the name of the game was on-the-air commaraderie. To provide an atmosphere of something for everyone, all members who contacted at least 10 fellow members and submitted a log will receive a specially designed certificate as a momento of the event.

Plans are underway to make this an annual event. The most likely date will be the first weekend in June. Results of this year's party, along with the comments submitted, are being evaluated and will be used as a guide to future events.

Membership in SOWP is open to anyone who has ever worked as a full-time commercial, government or military CW operator. All members are accepted as LIFE MEMBERS when they join.

Additional information and applications for membership can be obtained by contacting: Bill Willmot, K4JPF, 1603 Venus Street, Merritt Island, Florida 32952. □

Pitcairn Generator

(*continued from page 21*)

Terry Lamb, WA6EKO
Harry Adelman, K6IB
Stan Dusza, WA6GGH
Bert Ayers, W6CL
Frank Aliano, WB6CNB
Steve Bein, K6MBP
Herb Gleed, W6FQ
Wm. F. Diaper, WB6JOY
Gene Konig, W6HVR
Sam Glassberg, WB6JNA
Lyn Holliday, WB6GFT
Tom Whipple, WB6CNV
Ed Luckey, W6MJ
Grant Velie, K6BNX
Dave Talley, W2PF
F.V. Walsh, W2KRD
William Haas, W2GMY
Max Wolff, W2AJM
Bob Martiny, W2FYL
Rus Tighe, W2ALH
W. Moritz, W2EEN
C. Roebling, W2AOT
Larry Barge, W1GUW
Fred Link, W2ALU
Dud. Phelphs, W2QU
Frank Frimerman, W2FZ
Jack Berliant, W2GUJ
John Richards, W2ZCE
Paul Beckberger, K2GH
Bob Scruggs, W2FRX
Ralph Hasslinger, W2CVF
George Diehl, W2IHA
John Rider, W2RID
Nat Schnoll, W2PN
G.A. Stewart, K3ZOL

(*please turn to page 50*)

NI-CADs
AA Cell
1.25 volts
49¢ each or
10 for 3.95

MHz electronics

2543 N. 32ND ST.
PHOENIX, ARIZONA 85008
PH. 602-957-078

Motorola MC14410CP CMOS tone Generator uses 1 MHz Crystal to produce standard dual frequency telephone dialing signal. Directly compatible with our 12 key chomeric pads.

MC14410CP	Price $9.28	
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1 MHZ Crystal	4.95	ALL (4) $19.95
Printed Circuit Board (From HAM RADIO Sept. 1975)	2.95	

GEL-CELL
No. GC-1215
12 volts at 1.5 Amp Hr.
$19.95 each or
2 for $34.95

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2E26	4.00	6146A	4.50
3B28	4.00	6146B/8298A	5.75
4X150A	15.00	7984	4.95
4X150G	18.00	8072	32.00
4CX250B	24.00	8156	3.95
4X250F	24.00	8908	9.95
DX415	25.00	8950	5.50
572B/T160L	25.00	6LQ6/6JE6C	3.95
811A	7.95	6LB6	3.95
931A	11.95	6LF6/6MH6	3.95
4652/8042	6.95	12JB6A	3.95
5849	32.00	4-400A	27.95

Fairchild VHF Prescaler Chips

11C01FC	high speed dual 5-4 input or/non	$15.40
11C05DC	1 GHZ counter divide by 4	74.35
11C05DM	1 GHZ counter divide by 4	110.50
11C06DC	UHF prescaler 750 MHZ D type flip/flop	12.30
11C24DC	dual TTL VCM	2.60
11C44DC	Phase Freq. Detector	2.60
11C58DC	ECL VCM	4.53
11C70DC	600 MHZ flip/flop with reset	12.30
11C83DC	1 GHZ 248/256 prescaler	29.20
11C90DC	650 MHZ prescaler	16.00
11C90DM	same as above except Mill Version	24.00
11C91DC	650 MHZ prescaler	16.00
11C91DM	same as above except Mill Version	24.00
95H90DC	350 MHZ prescaler	9.50
95H90DM	same as above except Mill Version	16.50
95H91DC	350 MHZ prescaler	9.50
95H91DM	same as above except Mill Version	16.50

RF Transistors

2N2857	1.80	2N5591	10.35
2N2947	17.25	2N5635	4.95
2N2948	15.50	2N5636	11.95
2N2949	3.90	2N5637	20.70
2N2950	5.00	2N5643	20.70
2N3287	4.30	2N5764	21.70
2N3300	1.05	2N5841	11.00
2N3302	1.05	2N5849/MM1622	19.50
2N3307	10.50	2N5862	50.00
2N3309	3.90	2N5942	49.50
2N3375/MM3375	7.00	2N6080	5.45
2N3571	4.10	2N6081	8.60
2N3818	6.00	2M6082	11.25
2N3866	1.09	2N6083	12.95
2N3866 JAN	4.15	2N6084	14.95
2N3866 JANTX	4.85	2N6094	5.75
2N3925	2.70	2N6095	10.35
2N3927	11.50	2N6096	19.35
2N3948	2.00	2N6097	28.00
2N3950	26.25	2N6166	85.00
2N3961	6.60	MM1500	32.20
2N4072	1.70	MM1552	50.00
2N4073	2.00	MM1553	56.50
2N4135	2.00	MM1607	3.00
2N4427	1.24	MM8006/2N5842	8.65
2N4430	20.00	MRF450	16.55
2N4440	8.60	MRF511	8.60
2N4957	6.30	MRF8004	1.90
2N5070	13.80	MMCM918	5.50
2N5090	6.90	MMT74	.94
2N5108	3.90	RCA 40290	2.48
2N5109	1.55	HEP75/S3013	2.95
2N5177/MRF5177	20.00	HEP76/S3014	4.95
2N5179	.68	HEPS3002	11.03
2N5180	.83	HEPS3003	29.88
2N5184		HEPS3005	9.55
2N5216	47.50	HEPS3006	19.90
2N5583	5.60	HEPS3007	24.95
2N5589	4.60	HEPS3008	2.18
2N5590	6.30	HEPS3010	11.34

Jack Schwartz, WA6TRZ, listens to Field Day QRM early Sunday a.m.

Field Day

(*continued from page 2*)

The antennas we used were the 80-, 40- and 20-meter inverted V's, which are 40 feet above the roof of our office building. The mast is topped with a "J" for two-meters. If the situation should ever arise when those antennas would come down: heavy winds, earthquake, etc., we have collapsible verticals in the office which would get us back on the air.

We used the call of Norm Brooks, K6FO, who said, "When we send our score into the League I'll tell them that we were entirely battery-operated. Even my hearing aid is powered by a battery."

Surrounded by other buildings and an elevated freeway but a stone's throw away, our score was less than it has been. But this year we were looking at something different than the score.

We believe that Field Day is a very important exercise. We'd be most happy to print pictures and the story of your particular effort. Please send them in.

Gary Stilwell, W6NJU, veteran of many Field Days.

Pitcairn Generator Fund

(*continued from page 48*)

Bob Cobb, W6CFM
Wally Nelson, WB6BFD
Bob Allphin, K4UEE
Jim Parish, WN4ADK
Leatha Parish, WN4ADL
Judi Parish, WN4ADN
Lee Turner, WA5EZQ
Howard Davis, W3VRT
Ron McClain, WA2EJS
James O'Keefe, K2KAU
Bob Taylor, W5UAW
Russ Krebs, W6HZJ
Barry Norton

[*Ed. note — Anyone else wishing to make a contribution can do so through Mert, W6HS, 2153 Lyans Dr., La Canada, CA 91011.*)

Club growth

(*continued from page 43*)

letter or bulletin and an invitation to visit their next club meeting.

Many clubs have found this to be a great service, and best of all it is FREE. Just send us 12 SASE with the first three numbers of the zip code area or areas that your club covers, and every month you will receive the names of new prospective members.

Private individuals, 5 cents a word. Business firms 10 cents a word. Send to: the MART buy sell trade Worldradio, 2120 28th St., Sacramento, CA 958

Frame, display and protect your QSL's with 20 pocket plastic holders, 4 for $2.00, 7 for $3.00 prepaid & guaranteed. TEPABCO, Box 198W, Gallatin, TN 37066.

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, WA 98362.

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.

WANTED: Telrex, prop-pitch or Rotobrake rotor. Specify condition, price. Contact: Orestes Caballero, WB6OMF, 7717 Cotswald Way, Citrus Heights, CA 95610.

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; 2 60-min cassettes, $10.95. CA+ tax. DANA RADIO, 2704 16th St., Sacramento, CA

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 (160-10 meters; $29.95 postpaid. 90 day guarantee. See large ad this issue. SST Electronics, Box 1, Lawndale, CA 90260. (CA res. add 6% sales tax.)

Picture QSLs of your shack, etc. 250-$10.00, 1000-$19.50. Full color at $38.50 single thousand. Picturecards, Box 5471, Amarillo, TX 79107. (808) 383-8347.

Wanted: An opportunity to quote your ham needs. 37 years a ham dealer. Collins, Drake, Ten-Tec, KLM, Swan, Kenwood, Tempo, Dentron, Regency, Icom, Hy-Gain, and all others. Also $25,000 inventory used gear. Request list. Chuck, W8UCG, Electronic Distributors, Inc., 1960 Peck, Muskegon, MI 49441 (616) 726-3196, Telex-22-3411.

Teletypewriter parts, manuals, supplies, equipment, Toroids, SASE, for list. Typetronics, Box 8873, Ft. Lauderdale, FL 33310, W4NYF. Buy parts, late machines.

Reconditioned Test Equipment. 50 cents for catalog. Walters, 2697 Nickel. San Pablo, CA 94806.

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.

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Wanted — Collins: 32S3, 75S3B receiver. Late model. **Must be** super clean and in mint condition. Contact Gary, K4SUK/6, 5208 Karm Way, Sacramento, CA 95842.

1296 — Looking for APX6 or other transceiver this band. Must be good condition for cash. M. Ferris, 4205 Beulah Drive, La Canada, CA 91011.

Free Catalog! Semiconductors. ICs. Diodes. RF Transistors. Tubes. ect. Send SASE to MHz Electronics, 2543 North 32nd St., Phoenix, AZ 85008. Phone (602) 947-1287.

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Used Mylar Tapes — 1800 feet, ten for $7.50. Usec 8-track 84 minute tapes, ten for $10.00. Postpaid. Fremerman, 4041 Central, Kansas City, MO 64111.

Travel-Pak QSL Kit — Send call and 25 cents; receive your call sample kit in return. SAMCO, Box 203, Wynantskill, NY 12198.

QSLs Catalog 25c. N & S Print. PO Box 11184, Phoenix, Arizona 85061.

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NEW ELECTRONIC PARTS, resistors, capacitors, zeners, diodes, transistors, cabinets and much more. All carry full guarantee. Low prices. Stamp brings catalog. Nu-Data Electronics, Dept. K, 104 N. Emerson St., Mt. Prospect, IL 60056.

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ing to send expired CALLBOOKS to DXers. Write IARS Inc. Friendship and B-H Program. Box 385, Bonita, CA 92002.

Editing a Club Paper? Need some help? Amateur Radio News Service would like to hear from you. For info. write: Doris Dennstaedt, WA3HEN, 303 N. Hammonds Ferry Rd., Linthicum Heights, MD 21090.

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QCWA — Quarter Century Wireless Association brings together the "old timers" of Amateur Radio who have been licensed for at least 25 years. The quarterly newsletter brings information about members throughout the world; QCWA nets and the annual QSO Party provide an opportunity for meeting on-the-air and 92 local chapters have regular meetings, luncheons, etc. to promote fellowship and to keep the old traditions of Amateur Radio alive. For information write QCWA Headquarters, 2012 Rockingham Street, McLean, VA 22101.

Desk Console Cabinet for your equipment. Build your own. Design, drawings and photographs — $4.75. Bill Morris, WA5RSC, PO Box 411, Lubbock, TX 79408.

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For Sale — 450TH, 100TH, 304TL, 3B28, 4-125A. Guaranteed. Best offer. Louis Bove, Box 192, Patagonia, AZ 85624.

USED EQUIPMENT LISTING — We will list your used equipment on our list for the low cost of $3.00 for the first 3 pieces and 75¢ each additional piece. Included will be your name, address, phone number. (Maximum 6 pieces). Listed for up to one year. No other charges. We receive inquiries daily from world wide and Mail Daily. You can take advantage of our advertising. You will be contacted directly by these persons. No middle man. Narwid Electronics, 61 Bellot Road, Ringwood NJ 07456.

FREQUENCY COUNTERS: PALOMAR FC-40, 6-digit LED display, AC or DC operation, good to 40 MHz-$185.00. REGENCY EC-175, 6-digit LED display, AC or DC operation, good to 175 MHz-$400. PS-1 300 MHz prescaler w/preamp; use your 30 MHz counter to 300, MHz; completely wired and tested, 117 VAC-$35. PS-2 prescaler; use you 30 MHz counter to 500 MHz; kit of parts & wiring instructions; requires 5 VDC supplied in most counters-$35.00. All items shpd UPS collect. SASE for brochure. TRANSCOM COMMUNICATIONS, 2073 Grange St., Oregon, Ohio 43618, Phone 419-726-5937.

of equipment: MULTI 11, 23 channel two-meter transceiver with 4 channel scan, LIST $325.00, SPECIAL $294.95; KLM MULTI 2000, LIST $679.00 SPECIAL $604.94. Solid State Modules EUROPA "B" Ten Meter to Two Meter SSB-CW-AM-FSK-FM TRANSVERTER, LIST $299.95, SPECIAL ????; Low Noise and Miniture Pre-amps. Send for "SPECIAL" price list and spec sheets to: SOLID STATE MODULES, DEPT. WRN, 94-1084 Lumi Street, Waipahu, Hawaii 96797.

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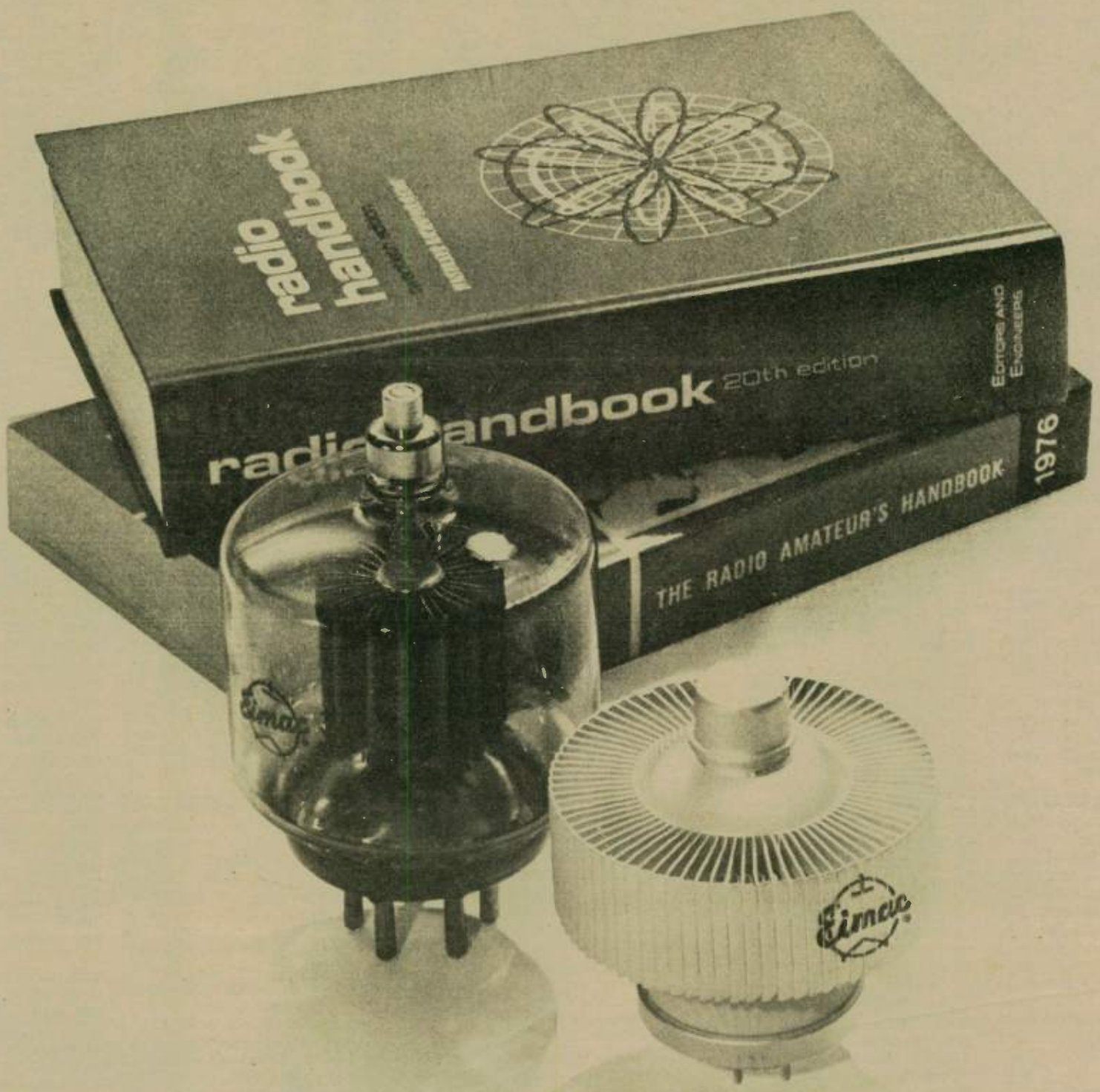

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For tube information, contact Varian, EIMAC Division, 301 Industrial Way, San Carlos, California 94070. Or contact any of the more than 30 Varian Electron Device Group Sales Offices throughout the world.

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