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The Worldradio News

Vol. V, No. 1 Adventure in Amateur Radio July 1975 50¢

Repeater automatic control rules adopted

The Commission has amended its rules to permit the automatic control of repeater stations in the Amateur Radio Service.

Amateur repeater stations receive and automatically retransmit the signals of amateur stations, but under present rules all amateur stations, including repeaters, are required to have a control operator at an authorized control point when such stations are in operation.

The FCC noted that in many areas the demand for repeater capability necessitated a 24-hour a day operational schedule. However, it pointed out, the number of persons available to serve as duty control operators for repeater systems on an around-the-clock basis was limited, and where operators could not be found repeater stations had to be shut down sometimes for extended periods.

To relieve this situation, the Commission said, amateur licensees have been developing techniques for use of repeater stations that are automatically controlled and do not require a control operator to be on duty.

On July 17, 1974, the Commission issued a rulemaking notice to consider possible amendments to its rules to allow for automatic control of these repeater stations and certain auxiliary link stations used in conjunction with repeaters.

The new rules permit automatic repeater operation with the following options for monitoring and control:

—control operators must employ devices and procedures that would reasonably assure compliance with technical and operational standards for amateur radio stations;

—all transmissions of an automatically controlled repeater station must either be monitored in real-time, or be recorded so they can be reproduced and reviewed within a reasonable period of time by the station control operator for improper operation;

—procedures must be implemented for discontinuing operations in the event of malfunction or improprieties;

(*please turn to page 11*)

Bill Yost, WA6PIU, and Judy Yost, WA6RAN, operate during the Field Day exercise as K6FQ/6.

Amateurs test emergency ability

In times of emergency the public has come to depend on the Amateur Radio Operators for help.

On 28 and 29 June over 12,000 licensed amateurs participated in the annual test of their emergency preparedness.

Sponsored by the American Radio Relay League, the event, known as Field Day, provides amateurs with the opportunity to improve and refine their role of aiding the Red Cross, civil defense authorities, police and other life-saving organizations in times of disaster.

This was the 39th annual test which sees amateurs, far away from commercial power and telephones, pitch tents, raise portable antennas and operate their radios from gasoline driven electric generators.

For 27 hours they perfect the operating skills so necessary when normal communication channels are disrupted or unavailable.

In recognition of the work done by Amateur Radio New York Governor Hugh Carey proclaimed the week in which Field Day came as "Amateur Radio Week".

Field Day is a real emergency preparedness exercise. During the aftermath of the Nicaragua earthquake the only messages coming from the devastated area were via amateurs using generators for their power.

The amateurs most active in maintaining their skills are those who have been through "the real thing". And a few years ago groups on Field Day had to pull out of the test to operate for real during a major flood in the eastern states.

Over a thousand groups participated this year in an exercise that assures that no community (with active amateurs) would be cut-off from the outside world should a disaster occur.

Field Day is valuable practice.

DOC GMELIN W6ZRJ
001584 0576
10635 WILLOWBROOK WAY
CUPERTINO CA 95014

MARTS SEANET worldwide contest 1975

Aims — (1) to publicize the holding of the 5th SEANET Convention in the Malaysian capital city of Kuala Lumpur 7-9 November 1975; (2) to contribute to Amateur Radio activity in the world; (3) to make possible the extension of Amateur Radio brotherhood in the contacts of rare DX stations.

Date — 30-31 August 1975, the Independence Day of the host nation of the 5th SEANET Convention 1975.

Time — from 0001 GMT 30 August to 2359 GMT 31 August 1975.

Modes — phone or CW (crossmodes not permitted).

Bands — 160 thru 10 metres.

Entry classifications — single band - single operator; multiband - single operator; and multiband - multi operators.

Power — as stipulated in the regulations governing the license issued to the stations participating in the contest.

Contest call — (1) for phone, "CQ SEATEST"; (2) for CW, "CQ SEA".

Reporting — five or six digits made up of the RS(T) report plus three figures starting with 001 and increased with one for each contact.

Scoring — Contacts between stations in own country will not be counted. Contacts for contestants outside SEANET area will be counted as follows: 5 points for each contact with 9M2, 9M6,

(*please turn to page 30*)

Ed Stokes, WB6KOK, Assembly Office of Research, Telecommunications Consultant; Terry Goggin, Assemblyman, 66th District [San Bernardino]; Gary Stilwell, W6NJU, Assistant Director Pacific Div. ARRL.

Resolution

By the Honorable Terry Goggin
Sixty-sixth Assembly District

RELATIVE TO AMATEUR RADIO WEEK

WHEREAS, The 40,000 amateur radio operators of California provide, at their own expense communication systems ready for instant duty in emergencies and disasters; and

WHEREAS, California's radio amateurs promote international goodwill through free and informal communication with other amateurs throughout the world, establishing an important people-to-people relationship; and

WHEREAS, The members of this talented group are constantly working, studying and operating to maintain their life-saving skills; and

WHEREAS, The amateur radio operators of California will participate, on the 28th and 29th of June 1975, in an annual national "Field Day" exercise, testing their abilities to perform their public service in time of need and independent of commercial electrical power; and

WHEREAS, The amateur radio operators of California continue to be a valuable public resource, of great benefit to the citizens of this state; now, therefore, be it

Resolved by the Assembly Rules Committee, That the week of June 23 to 29, 1975, be established as Amateur Radio Week; and be it further

Resolved, That the Chief Clerk of the Assembly transmit a suitably prepared copy of this resolution to the American Radio Relay League.

Resolution No. 225
Approved by the Assembly Rules Committee
By Leon Ralph, Chairman
Subscribed this 6th day of June, 1975

•

QCWA National CW Net
Wednesdays, 8 p.m. EDST
(0000 GMT), 7035 kHz.
W2JBL, NCS. Alt. W9CV/W9RC

Louis Kaeppeli, HB9DD; Pierre Vaney, HB9ADE; Gerard de Buren, HB9AW; Max de Henseler, HB9RS/W2.

Renato Brossa, HE9RMN, ex I1BAG; Gerard de Buren, HB9AW; Max de Henseler, HB9RS/W2.

hear that amateurs on this side of the Atlantic had not forgotten him. He will be glad to hear from them but unfortunately, for the time being, will not be in a position to answer. So let us send him all our best wishes for complete recovery.

I will shortly send you some news about the activity of the newly revived United Nations Amateur Radio Club. Greetings from the 4U1ITU gang in Geneva.

Gerard de Buren, HB9AW

Gerard, HB9AW

Max de Henseler, HB9RS/W2

During a recent vacation I was in Switzerland and again met with the friend of many, Gerard de Buren, HB9AW.

He has been quite ill but is now much better and it was his first reunion with old friends after many years. In Geneva we had a traditional Swiss cheese fondue.

Gerard sends all his very best regards and was delighted to

Our trip to Russia

Thelma Bolvin, WB4AUR

My husband Chuck, K4KQ, and I took a 2-week trip in USSR, stopping at Moscow, Leningrad, Tallin, Riga & Vilnius.

From the beginning the trip was eventful. PAA declined to fly from Amsterdam to Moscow due to heavy fog in Moscow, so our group of 30 transferred to Areoflot. The 3-hour trip took 3¾ hours, as the pilot seemed to be letting down and gear up again, over and over (with landing gear locked down), presumably looking for a hole in the cloud cover. Finally the plane zoomed down for the quickest landing we ever made. The competent pilot (with superior instrument landing equipment) got a round of applause, as sighs of relief were heard. The landing was at Vnukovo, 32 km S.W. of Moscow — an unusual occurrence (Int'l Airport is Sheremetyevo).

Though it was a scheduled tour we were free to walk around every city and talked with quite a few English speaking Russians, even one who is a self proclaimed revolutionary. There were plenty of inexpensive transit vehicles (buses, trolleys, mini-buses & subways). There was no place a foreigner could buy a foreign language world newspaper, though there were many stands with newspapers in Russian.

As amateurs we were looking for antennas, and one spotted in Tallin turned out to be the office of the Estonian Radio Club (& QSL Bureau). Here we met several operators who spoke good English, saw their station (converted shipboard equipment), & received a certificate attesting to our visit. We were the 1st "W" or "K" ops to visit them; in fact, the first Americans some had met. We gave them our QSL cards, signed their visitors' book, which had names and cards from many countries, and gave them some information on radio activities of U.S. amateurs. UR2CW, chief op, phoned his YF, UR2YL to come meet us; unfortunately, she did not speak English. I understand that most learned

(*please turn to page 35*)

Worldradio

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

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SENIOR STAFF

Armond Noble, W6AJY
Norm Brooks, K6FO
Dorothy Schwartz
Jack Schwartz, WA6TRZ
Linda Rutledge
Craig Rutledge, WB6KTR
Bill Yost, WA6PIU
Judy Yost, WA6RAN

A special plaque award presentation was given the Miami Valley FM Association (Dayton, OH) for outstanding communications work at Zenia, OH following the April, 1974 tornado. The award was presented recently by EC Ron Moorefield, W8ILC, to MVFMA president Vernon Kimball, W5ED/8. [*Photo by James Hagedon, Jr., K8YQH.*]

Chemung County (NY) flood warning

H. Mettler Henrich, K2DNN

It was a warm rain, melting the snow. The streams and the Chemung River began to rise. Flash flooding in areas was predicted. Around noon on Monday, 24 February 1975, the Chemung County Civil Defense Director contacted Grace Henrich, WA2TCZ, wife of EC, K2DNN, requesting communications aid. She contacted Louis Lutz, WA2SMM, who went to CD headquarters. Through the 2-meter repeater, WR2ABL, he contacted other areas.

After the EC had arrived home from work, WA2TCZ contacted him and reported the situation. He then checked with WA2SMM at CD headquarters on 2-meters. Following this he went on the air. Bill Thomas, WA2VBY, and Art Lutz, WA2SMQ, answered and were assigned in shifts to CD headquarters until the predicted cresting of the Chemung River at 2:00 a.m. on Tuesday.

At 9:00 p.m. EC, K2DNN, who with XYL, WA2TCZ, was teaching amateur radio classes in a local school, was contacted by the Red Cross, advising him of intended evacuation of families near the village of Chemung, NY and requested communications. The EC then went on the air from the mobile. Romanta Woodford, WA2HFL, and Don Ferguson, K3JST, were assigned to operate mobile at the fire station in Chemung, the evacuation center. WA2TCZ took 2 and 6 -meter equipment and hooked up to the permanent antenna systems at the Red Cross Chapter House. K2DNN went to the CD headquarters to help out there, Kathryn Soper, WA2ZBD, was monitoring 6 and 2 throughout the entire time.

All were released at 12:30, after the river had remained steady for the past 2 hours. Much traffic was passed through WR2ABL, which was utilized throughout the entire operation. A total of 35 families were evacuated.

Utah amateurs alerted and ready in recent earthquake

Dallas L. Barrett, WA7MEL

An earthquake hit in an isolated area near the Utah-Idaho border on 27 March. Within minutes the 2-meter repeaters were a beehive of activity with the EC and Civil Defense offices manned and ready.

Your author was home bound with some of his family from seeing friends and caught the activity on two with his mobile rig. Hearing the traffic and appeals for information I informed them I was the manager of the Utah Code Net (UCN) and would get right on my rig as soon as I arrived home.

Upon arriving home I resumed contact in the house on two and got word through to my members in the quake area to be on standby for an emergency session of UCN if necessary. Also I got word to members in the city to be ready.

Although the damage from the quake was very minor and no serious injuries were reported, all the emergency facilities were on the alert and ready thanks to the quick and unselfish response of the amateurs in the area. Again, amateurs proved their worth and devotion and are worthy of the praise of a job well done.

Note: Utah Code Net (UCN) meets every night at 0130Z (MDT), 0230 (MST), on 3575 kHz.

Joliet repeater helps out in cancer bike-a-thon

Kirby Strickland, WA9CMY

The Will County American Cancer Society sponsored BIKE-A-THON was held on Saturday, 3 May, most of it in a cold, steady rain.

Barry Boothe, W9UCW, net control on WR9AAA, the Joliet 22/82 repeater, answered a steady stream of calls from approximately 25 mobile units deployed at the many checkpoints established along four separate routes scattered throughout the Joliet-Will County area. Each route covered a course of about 40 miles. In spite of the miserable weather a steady stream of soaked, shivering and bedraggled young cyclists passed through each checkpoint.

Cancer Society people were busy validating ride cards, dispersing soda pop, bandaids, and improvising rain slickers for the riders from Hefty trash bags.

Repeater traffic was quite heavy and varied from the usual requests for more pop, food, phone calls for parents to pick up riders too weary and cold to continue, to an ambulance call for aid for parties involved in a collision between bicycles, discovery of a bike stolen from a shop the night before, and a hectic search for a long overdue 14 year old girl cyclist.

In all it was a very gratifying experience to witness the determination and fortitude displayed by all concerned in furthering such a worthy cause. The Gypsy Amateur Radio Club of Joliet is certainly to be commended for a job well done.

"Squelch Tale" Chicago

It's a small world

Polly Vincent, WN6LIY

Betty Amos, WA6IPI, a well-known and much-written-about member of the Mt. Diablo Amateur Radio Club, has done it again!

This time, through the National Traffic System, Betty relayed an important message from a Vietnamese student to an American family in Byron, CA.

Vu Van Huang lived with a Byron family in 1971-1972 as an AFS student and then returned to Saigon. His radio appeal to the Byron family for sponsorship in bringing his family to the USA reached Betty via an Amateur Radio operator in Guam. Within eight minutes Betty relayed the message and an affirmative answer was cabled immediately to Huang and another to authorities in Washington, DC.

Arrangements are being made to receive the family and to offer them aid and assistance if needed. We know the war has caused many to become homeless.

Amateurs are the greatest! So get on the air and perhaps I can tell your story next.

"Carrier", Mt. Diablo ARC

WMRA weathernet

Al Fisher, K8CEB

The West Michigan Repeater Association Weather Net meets every Tuesday night at 21:00 EDT.

The purpose of the net is to tie together more closely the 2-meter FMers in northwestern Michigan. All mobiles and portables in the area are welcome to check in. The net opens each time with a roll call. To get on the roll call you need only check in at least once every four weeks. Miss four in a row and your call will be dropped. Check in again and you are back on!

After the roll call each member has a turn at the mike. He comments on the weather around his particular station and contributes to the general conversation of the evening. Priority is given to emergency reports. Visiting amateurs are encouraged to participate.

How do I get my weather reports? Well, from the check-ins, of course, but mostly from my fabulous network of Air Traffic control radar stations which I'm set up to receive.

An aircraft, in most cases, is supposed to follow guidance by radar. This system also advises the pilot of how high the clouds are, the bottom of the overcast, and the visibility of the surface below the clouds. This type of flying is called Instrument Flight Rules, or simply IFR.

My sources of radar outlets are two at Grand Rapids, one at Flint, one at Traverse City, and to the west of me, one at Green Bay, Wisconsin.

Since our repeater transmits on 146.79 we have a service called Information 79. This service consists of announcements that anyone might have, whether it be bulletins or whatever.

So there you have it, the lowdown on a successful net. Nets via repeaters are great for getting the gang together once a week so everyone can find out what in the world is going on in the coverage area. Begin a net NOW!

Monitor RACES frequencies during storm warnings

The DuPage County (Illinois) Civil Defense RACES nets are usually activated during tornado warnings. Several stations have been showing up on frequency during recent bad weather conditions prepared to handle emergency traffic if the net had been activated. The frequencies are 28.650 MHz and 147.24 MHz

●

The West Virginia School for the Blind is looking for Novice crystals and Novice transmitters for their newly formed radio club.

Any contributions will be greatly appreciated. Twelve Novices are now in the group with several ready for General. Any transmitter not working properly will be accepted and put in working order.

Send your contributions to John G. Freeland, W8GSN, c/o West Virginia School for the Blind, Romney, WV 26757.

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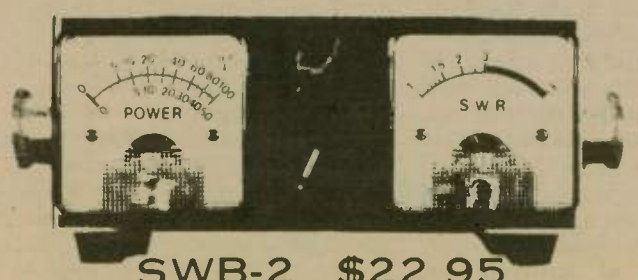

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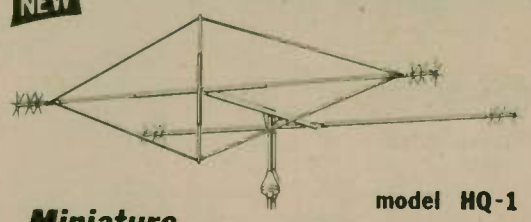

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After some hours of serious discussion a lighter refreshing moment was needed which was provided by the inimitable humor of Jack Troster, W6ISQ.

Basis and Purpose

What is it we can do to get the "Third World" countries to become sympathetic toward Amateur Radio?

Such was the nature of the questions asked at a meeting on 26 June held at the Eimac factory in San Carlos, CA. Gathered were members of the Task Force on "Basis and Purpose" of the Amateur Radio Service and other invited amateurs. Tape recordings were made which were sent to East Coast members of the group.

This all had to do with the upcoming World Administrative Radio Conference in which the countries of the world gather to carve up the radio spectrum.

This group, under the chairmanship of Pete Hoover, W6APW, met in Washington, DC on 8 May with officials of the FCC. The Task Force is charged with the responsibility of justifying the continued existence and expansion of the Amateur Radio Service. They will "furnish the ammunition" for the United States' position at the Conference.

The depth of the problem can be measured when it is noted that at the conference the USA has but one vote, the Soviet Union has four votes, and other countries (as tiny as they may be have one vote each.

The problem is compounded when, in many countries, there is complete lack of relations between the government and the national Amateur Radio Societies.

This meeting of the Task Force was a "brainstorming" session to throw out ideas concerning what direction the Task Force should go.

Discussed was another report from the Stanford Research Institute which would be an upgrading on what has occurred since their last report. Another topic was adding to Part 97.1 something to do with "the degree of public education."

That point was addressed by Bill Eitel, W6UF. He told about attending the OSCAR satellite conference at the Goddard Space Flight Center. (See **Worldradio**, June 1975.; Eitel spoke of the great enthusiasm shown by the 150 educators who attended. He said we have a tool of great importance. The reaction of the students who have participated in the OSCAR demonstrations is that for the first time they feel they are part of something. The co-founder of Eimac said that the Consultant in Science, Maryland State Dept. of Education, Dr. James W. Latham, Jr., is "behind the program."

Eitel said, "We have to get every school, elementary to high school, involved for this would bring in the type of people we want."

Chuck Towns, K6LFH, said, "Let's go international with it." Doug Watson, W6DW, said we must encourage scientific education and the related disciplines.

Ideas were thrown in regarding the ARRL getting the program to the schools. Willard Tiffany, W6GNX, of SRI, spoke of Boy Scouts. Watson spoke of the National Science Foundation presenting a traveling OSCAR exhibit aimed at the high school level.

Ideas flew back and forth fast and furiously, which was the idea of the meeting. Jim Maxwell, Ph. D., K6AQ, spoke of periodic mailings to emerging nations detailing the use of Amateur Radio in other emerging nations. It was brought out that such should stress the emergency capability of the ARS, using the example of how it was used in other countries. "Let's get the International Red Cross in on that," was heard. And, "They should be told how Amateur Radio makes a contribution to their technology base."

The concern with the "Third World" countries is based on their recent actions at conference dealing with other radio services. As one attending this meeting put it, "They are becoming more aware of just how much clout they have."

Discussed was that we best do a "selling job" on the great virtues of Amateur Radio for there are countries, because of MARS which see Amateur Radio tied in with the armed forces and may object to a military use of Amateur Radio.

The fast-paced five hour meeting touched on an exchange of information between Amateur Radio organizations of what affecting government actions were taking place in their respective countries.

Eitel talked about going to the critical areas and bringing students to the United States to study. Towns talked about phone patches to their homes for these students and work with the Sister Cities program. Jack Troster, W6ISQ, mentioned the existing scholarship programs and suggested working with them.

Ray Vincent, W6PUX, presented studies showing that the amateur bands were the most densely populated portions of the spectrum. He also showed that the occupancy next to the amateur bands was negligible and said we should go after expanding the present amateur allocations.

Maxwell questioned to what extent are we following the present "Basis and Purpose". And it was overwhelmingly agreed that Amateur Radio never gets the word out on what it does for the general public.

One problem discussed was that VHFers don't talk to the DXers, who don't talk to the RTTY buffs. It was said "all they have in common is an FCC license."

It was agreed that a house divided against itself cannot stand. The self-criticism was leveled that we are not articulate and are poor communicators, both among ourselves and to outsiders. How we could get the HF population to be concerned about the plight of the Space enthusiasts and vice versa was a topic.

It was agreed that we must get together. The survival of whatever facet of Amateur Radio is your own special interest also depends on the preservation of the other person's avenues. If you ignore the plight of the others, you are next.

As the meeting concluded it was agreed that their task was to convince the U.S. delegates to the Conference that Amateur Radio is not something to be traded away.

As Eitel put it, "This is a big game, and we've got to get a handle on it." •

WA5YRL travels 30,000 miles a year helping handicapped stay on the air

Maury M. Breecher

Phil Rosenstein, WA5YRL, has brought the world within reach for dozens of lonely shut-ins.

The 49-year-old merchant marine officer spends half the year visiting handicapped people in the South and Midwest where — at his own expense — he buys and sets up or replaces and repairs amateur radio equipment in their homes.

"I've been averaging 30,000 miles a year on trips through 10 states to help the handicapped get on the air and stay there," Rosenstein said.

"Many of these amateurs are paralyzed and they operate the radio with a stick held in their teeth. To these people their radio is their life — their link with the outside world and the only joy they have.

"But they can't afford to replace or repair their equipment," added Rosenstein, an amateur radio operator. "The good Lord gave me an active body, so I've tried to do what I can to keep these people on the air."

Rosenstein, who has a workshop in his bachelor apartment in Corpus Christi, TX, has spent $20,000 of his own money in the last five years for handicapped operators.

"Phil is truly the answer to our prayers," said muscular dystrophy victim Jean Fingarson of Little Falls, MN, who is completely paralyzed except for a little movement in her fingers.

"Thanks to Phil I found dozens of new friends on the airwaves and, more importantly, I feel useful again. When we had terrible floods in Minnesota I was swamped with emergency calls from people trying to get messages to their loved ones.

"It was so good to know that my life had some meaning again."

Said Alta Mitchell of Rochester, MN, a board member of Handi-Hams, a network of handicapped amateur radio operators:

"Phil has put handicapped people on the air by buying their equipment, installing it and helping them pass the license exam."

Buddy Boyd, who was paralyzed from the neck down by a diving accident, operates his short wave radio in Conroe, TX with a stick clamped in his teeth.

"I could name at least 30 handicapped radio operators who wouldn't be on the air today if Phil hadn't helped them," said Boyd.

Rheumatoid arthritis victim Wanda Adams of Mayfield, OK, summed up the feelings of her fellow handicapped operators this way:

"No suffering or problem can dim the sunshine Phil brings to all of our lives.

"He's known and dearly loved by the handicapped hams all over the South and Midwest of America."

National Enquirer

Phil Rosenstein was awarded The **Enquirer** Good Samaritan

(*please turn to page 32*)

The view from Navassa

E. Miles Brown, W2PAU

The comments on DXpeditions by Per Mosegard Andersen, 0Z6MI, in **Worldradio** for June 1975 included observations on the KC4NI operations during November 1974. On behalf of the KC4NI crew, an explanation might be in order.

1. Financial considerations:

0Z6MI's reference to " . . .the poor W2s" was an unfortunate choice of adjective. None of the KC4NI group claims economic hardship — the five senior members of the team hold down 8:00 to 5:00 jobs as engineers at the RCA Plant at Moorestown, NJ; WB2BXV (K2KA's son) was a student at Temple University. If sarcasm were intended it is not justified. The individual investment in the Navassa trip was a major item in each of the family budgets. It is true; each member of the KC4NI team is now poorer than he was before that expedition!

Since questions about financing often lead to misunderstandings and to hard feelings, here is the straight dope on the KC4NI trip. Note that we tried to time the operation to coincide with the CQ DX test and a two day holiday weekend. Vacation time was limited. There would be no second chance in 1974, so we required dependable, scheduled transport from our New Jersey base. Initial budgetary costs estimates were a bit shocking, but lured on by promises of adventure and fame and in view of the potential financial support extended to every successful DXpedition by the grateful Amateur Fraternity, none of the group quit.

This was the first large-scale DXpedition by this team, and none of the members was an accredited DX celebrity, so sponsorship in advance was almost impossible to arrange. Virtually 100% of the "front money" came out of the pockets of the team members. Major cost items were:

- Round trip transport of 1200 pounds (545kg) of equipment between NJ and Jamaica.
- Charter of a dependable boat and crew for a week. (This has been a major problem area for many expeditions.)
- The usual costs of travel, housing en route, food, etc. for each of the travellers. (Have you priced a weekend in Jamaica including air fare lately?)

In conformance with 0Z6MI's "POINT A" we solicited advance publicity. We responded 100% to QSLs, even those without SASE. We asked for assistance from manufacturers, amateur groups and individuals. Our objective, to quote "POINT A", was "to provide capital for the next DXpedition." Contributions were received. Some donations came with QSL card requests. Equipment was loaned by individual W2s, which meant we did not have to purchase any major equipment items. The Northern California DX Foundation (on faith alone) provided a donation and also printed our QSL cards. Lloyd Alberga, 6Y5LA, and his Jamaican associates arranged for a loan of camping equipment from the local Boy Scouts, and expedited packing materials to replace items ruined during the storm at sea. All these contributions were helpful and gratifying. But, they didn't come close to covering the expenses of this trip, let alone the next one!

KC4NI's 7,321 QSOs initially cost about $6,000. This works out to about $.80 per QSO! Total contributions amounted to less than 15% of the cost of the expedition, so each team member spent close to $900. That's enough for a significant upgrading of any of our home stations.

This isn't intended as a complaint. I believe that every one of the KC4NI expeditioneers considers that reasonable value was received for the investment in terms of adventure, vacation benefits and notoriety. We made many new friends, saw many new places and in general enjoyed one hell of an experience!

2. Regarding 0Z6MI's "POINT B":

The prime objective was to maximize the number of stations worked during our four day stay on Navassa. Toward this end three independent stations were operating essentially 24-hours per day (except when extreme weather or impossible propagation conditions interfered). Two stations typically were dedicated to rapid operations on high-yield bands. The third was also used for high-rate contacts, but was set up for 80 or 160 meters, when appropriate, to help satisfy the demand for a new country for the low band specialists. The 160-meter gang included some of our most enthusiastic supporters. Ten meters was also exploited when conditions permitted.

Requests for operation on VHF, OSCAR, RTTY and SSTV were received, evaluated, and politely declined, because of the added logistics problems and limited time available.

CW operation and SSB were assigned equal importance. This resulted in almost an equal number of CW and SSB QSOs.

Operating tactics were carefully considered and general agreement reached prior to the trip. Although this topic merits more discussion than space permits here, a few points might be mentioned:

- KC4NI was authorized only the mainland USA privileges; hence, no phone operation outside the US bands.
- Four of the operators held Extra-class licenses, enabling operation in the restricted bands.
- All rigs had split-frequency capability to help spread out the pile-ups.
- Rag chewing was discouraged, except for essential liaison contacts with Jamaican stations (notably 6Y5LA, our chief contact in Jamaica) and a few contacts with family members in NJ for moral support.
- No "arranged" QSOs were permitted, despite many offers by listmakers.
- "Working by call areas" was tried occasionally but was not generally employed.
- When conditions were promising special efforts were made to work weaker signals from non-US areas by calls to specific foreign stations or by directional CQs. When we were alerted to some weak-signal DX activity we took the time to try to make the contact. We wanted to work world-wide DX and did achieve 62 countries.
- Repeat contacts (on a given band) were discouraged. Multiple contacts on various modes or bands were accepted. There were surprisingly few stations abusing this procedure.
- We did not respond to special requests to change bands when things were going well.

We feel that the results justify these operating procedures. Reasonably efficient use of the available time was realized with an overall average of 77 QSOs per hour for the 4-day stay on the island. On the high-yield bands individual station QSO rates were respectable, and often it appeared that we had worked the bands dry to the extent that we were pleading for more contacts.

3. Why weren't there more "DX" contacts?

The problems encountered in working non-stateside stations applied particularly to Europe and Africa. The basic problems were probably due to the topography of Navassa. The island is completely bounded by sheer cliffs 50 to 100 feet high. There is only one practical landing site, where a rope ladder is available, on the west side of the island. Near this landing there is a small plateau, about 50 ft. (15m) above sea level. This "shelf" is hemmed in by steep hills to the east, which rise about 200 ft. (60m) to the flat top of the island. These hills intercept the low-elevation line of sight, from due north around through east, to south — from any viewpoint near the landing area. With an antenna as high as 50 feet above ground the hills cut off any radiation below about ten degrees elevation, and it isn't easy to support an antenna at any reasonable height over that terrain. In other directions over the salty Carribbean Sea low angle radiation is easily achieved through the use of vertically polarized antennas or a horizontal array near the edge of the cliff.

Before we arrived on Navassa the younger team members had volunteered to carry a station (with power generating plant, fuel, antenna erection materials, etc.) up the hills to the top of the island. When we got there, storm-tossed, seasick and behind schedule, and got the equipment and supplies onto dry land, we found the terrain was so rugged that it was not feasible to move the necessary material up the hill. Our volunteers' enthusiasm had melted away. So we set up all three stations near the landing point. This was disappointing, but in view of the circumstances it was a necessary tactical decision.

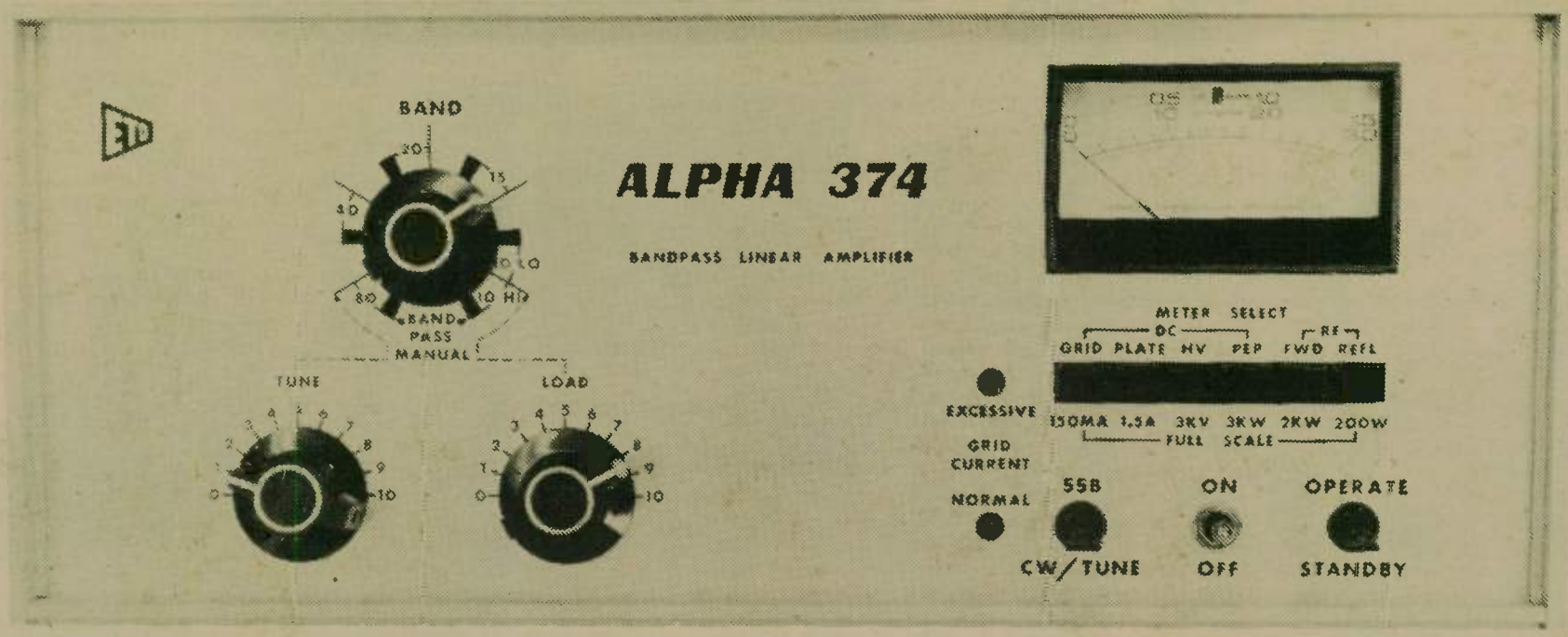
Future visitors to Navassa who want to optimize coverage into Europe might consider:

- Landing by rubber raft on exposed northeast tip of the island with appropriate cliff-scaling equipment — truly a formidable challenge.
- Back-packing equipment from the landing site up to the top of the steep, pot-holed, rocky hill, through the brush and cactus. This represents a portage of almost 1km from the landing. At the top of the hill there is a more-or-less level but lumpy, rocky surface stretching out about 1km in the direction of Europe, so a relatively high antenna would be desirable even at this point. An alternative to a high antenna is to keep moving until the eastern edge of the island is reached. There, a simple antenna would work well, looking out over the sea. The U.S. Coast Guard prohibits use of their lighthouse as an antenna support.
- Landing on the desired spot by helicopter. KC4NI explored this possibility.
- Or forget Navassa and go to a sand-bar country instead where terrain blockage is not a problem.

4. A few observations on the propagation conditions encountered from 25 to 29 November 1974:

- Mid-latitude propagation was about normal. 20 and 15 meters were the pay-off bands during daylight hours. Ten meters surprised us with a few good F2 openings extending out past KH6 land.
- Frequent electrical storms with visible lightning provided high noise levels on the lower bands. Despite this, coverage of the "lower 49"

(*please turn to page 35*)



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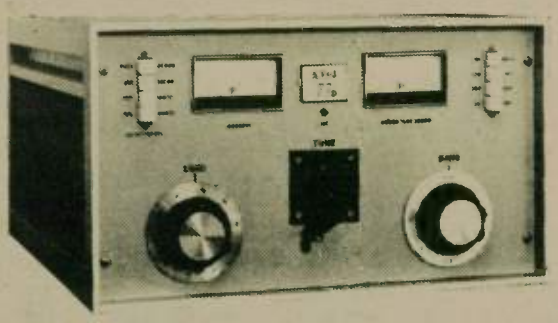

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CW tent at K6FO/6

Worldradio goes on Field Day

Practicing what it preaches, **Worldradio** went on Field Day.

This was the fourth year that the staff, as a group, went out together. It's a lot of fun to see folks who usually are behind their desks now tripping over wires, trying to start the generator, being awakened in the middle of the night to take over their shift, forget what they are cooking, struggling with antennas, etc.

Since this year the CW contacts counted twice as much as a phone contact, Craig Rutledge, WB6KTR, had the idea for an intra-club competition. It would be the "young squirts" against the "old fogeys".

The kids would be on phone and the oldsters would be on CW. The battle lines were drawn. On the side of impetuous youth were Craig Rutledge, WB6KTR; Jack Schwartz, WA6TRZ, Bill Yost, WA6PIU, and Judy Yost, WA6RAN. On the team of wisdom and experience were Norm Brooks, K6FO; Gary Stilwell, W6NJU, and Armond Noble, W6AJY.

Since CW contacts were worth double the points, this year was the year of the keyer.

Linda Rutledge and Craig Rutledge, WB6KTR, at the phone tent.

We ran in the 200 watt DC or less category, two transmitters, and did not set up ahead of 1800 UTC but rather went through what is called "The Chinese Fire Drill".

When the smoke of battle had lifted, when the dupes (ugh) had been pulled out it was found the victory went to the ancient ones, 1416 points to 1322. Tops on the winning team was **Worldradio** DX editor Gary Stilwell, W6NJU, who was also world high in the **CQ** CW DX Contest from YJ8GS.

Thanks to all who gave a contact to K6FO/6 which operated from the East Bay section. We were at Clear Lake in Lake County, and like all the other groups, in their post-mortem, we say "we'll do better next year."

As with most other clubs, Field Day is a real highlight for the **Worldradio** Staff ARC. We have sometimes been known to start planning for it a whole two or three days in advance. Eventually, hopefully, deadlines, late breaking news, etc., won't be getting in the way of getting ready for Field Day. Someday we've got to get organized, hihi.

Look for this motley collection again during the California QSO party, Sweepstakes, and again next year during Field Day.

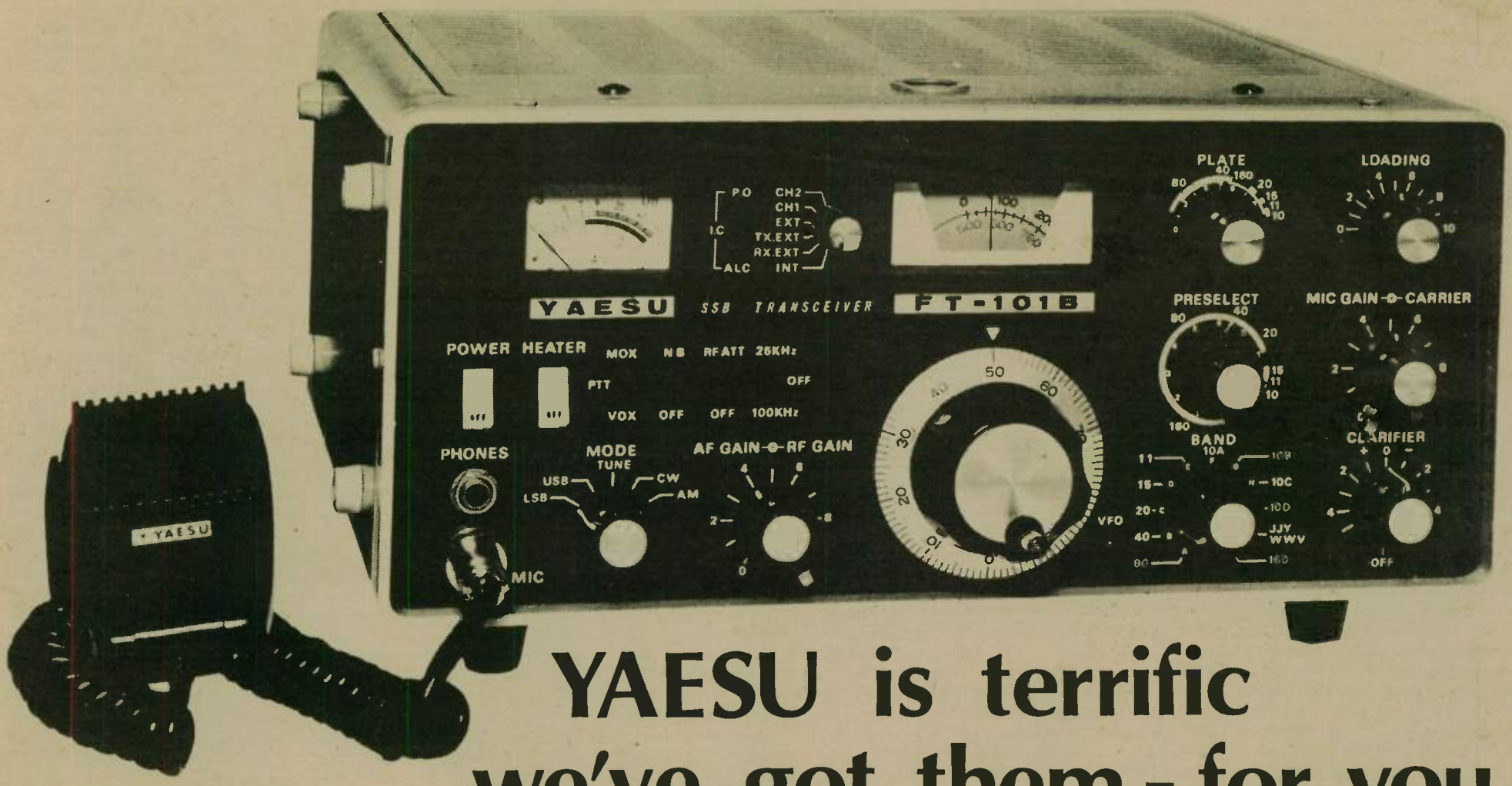
Gary Stilwell, W6NJU

Norm Brooks, K6FO

Being groomed as future Field Day participants were Cory Rutledge and Glenn Stilwell.

Weather alerts to be broadcast on repeaters.

Ron Moorefield, W8ILC, AREC Emergency Coordinator, has been developing a plan for rapid dissemination of emergency news. Any severe weather moving into the Dayton, OH area will be referred to him or his assistants via a hot line or from the 146.70 Cincinnati repeater. The information will then be broadcast on the four Dayton repeaters.



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Newcomers to FM

Howard Evans, W6IDS

Two meter FM operation, since its inception, has proven to be one of the most reliable and interesting modes of communication for the amateur and has done much to enhance our capability.

To the newcomer, however, the type of operation is quite strange and at times can cause quite a bit of embarrassment while he (or she) is getting his or her FM legs. This is especially so when the newcomer to FM is migrating from the SSB ranks on HF, because "low band" habits are brought up with him and in most cases cause degradation of good FM operation.

When I made the move to 2-Meter FM I encountered a great deal of trouble in my attempts to learn what was right and wrong. My first encounter with FM was approximately four years ago and it lasted about two days, after which I returned the rig to the dealer in a fit of anger. I had committed a transgression by unknowingly calling "CQ" on the repeater. I had made the mistake of not listening first, for a while, to see how things went before I first hit that big mike key. Unfortunately, the wrong people heard me and it did not take them very long to cut me to the quick. To say the least, I quickly became burned off of FM and it was not until just a little over a year ago that I, again, came up on 2-Meters and gave it a try.

I had had the opportunity of speaking with an amateur who knew how I felt and he attempted to change my way of thinking. I must say I don't believe anyone could have done more damage to FM verbally than I. I was out to save everyone from the flakes of VHF.

Fortunately, my friend prevailed, and I must admit that when I realized the true situation and why certain things had happened, I was a little ashamed. I decided to try again and am here now attempting to help some inexperienced newcomers over the same pitfalls I experienced and make their new venture into FM a pleasureable one and one to remember.

Operating on FM is really not difficult at all, if one can keep in mind that the communication requirements for this mode are not the same as are required for HF SSB. For instance, I would recommend strongly that after one has purchased a new FM transceiver, a period of time be used for just listening to the various repeaters and simplex freqs. in order to get an idea of just what is happening and why.

It will be quickly noticed that the operation is somewhat "Strange" and, at times, may seem quite terse and direct. Well, actually, this is really not as bad as it might seem to a new operator. The problem is that on HF SSB operation can run much looser and not quite as strict, since you have any number of frequencies to choose from and there is no requirement to share anything. On FM though, whenever a station goes on the air, he does not have an unlimited section of frequencies with which to operate. The selection is limited and must be shared with hundreds of other individuals.

This means that when a station is on the air, for example, he will never find the need to call "CQ". Unlike the HF bands, there is no one tuning around looking for a contact. If you are on a repeater or simplex frequency and you wish to talk with anyone, the simple way to establish a contact is to just key the transmitter and say, "This is W6IDS, monitoring." If there is someone wishing to talk to you they'll answer without hesitation. If not, look for a silent receiver. There is no need to call CQ, and the newcomer will wonder why he can't raise anyone or why he may sometimes encounter some pretty dry comments because of it.

After a contact has been established, it must be remembered that one of the most boring things that a station can do is to "monologue". That is why a newcomer may think that the conversations he hears for the first time are short and sweet. Such is not the case. After a while it will seem that the reason for such "short transmissions" is that all the unneeded superlatives, repetitious words and unnecessary repeats of previous thoughts are eliminated. This really is good. There are many, many other persons probably listening too and to hear a station repeat back what the other fellow said, ("OK on your wife's hang nail," or, "OK on your car not running," or "OK on the weather, etc. etc."), can really get quite dull. This makes the QSO last much longer than is really needed and takes up valuable time, which someone else might sorely need. The key to the whole thing is not to repeat. Conditions are almost perfect on FM so there is no danger of someone missing what you said, unless it involves a strange word or phrase.

After a while the new operator will see that there is really nothing cold about the way the QSOs are handled. Only the unnecessary frills, which add nothing, are removed and enable one to say more and become much more proficient in communicating the important thoughts.

The practice of not monopolizing a channel is especially important when a new operator decides to try his hand on the repeater. This is a whole new ball game and rightly so. The basic fact of 2-Meters is its limited range (in most cases). To remove this problem the repeater operation was born. This has made 2-Meters one of the most reliable means for communications by extending the range of the most simple hand-held rig to the most expensive base-stations.

There is a problem though. The repeater, too, must be shared by a lot of other people. It receives your signal on your transmit frequency and rebroadcasts it on another. That's why you have two crystals in your rig when you set up for repeater operation. One is for the input to the repeater and one is for the output. Since the repeater is not tunable it must be shared by many people at one time. A station cannot monopolize the channel. There is a danger of not letting someone else in, who may have emergency traffic, and if you keep transmissions short (don't cut yourself short by any means) everyone will have a chance at communicating.

Repeater operation for the first time is STRANGE. One must get used to the fact that if he talks too long a little item, called the timer, will shut you and the machine down. This may seem a bit much, but when you think about it it is quite necessary. By having the machine shut itself down and the long-winded station with it, someone else, who may desperately need the machine, will be able to key it up and get on, after which the original station may pick it up again and carry on, hopefully, remembering that timer. Even so some more experienced stations get caught from time to time, so there is no reason for embarrassment when it happens to you. While operating on the repeater it would be wise to remember that when you are engaged in a QSO and you wish the other fellow to say something, let the machine drop out for a few seconds. This enables someone else to break the machine and make a quick call to someone of his choice and move off the machine, or to say hello to you or pass emergency traffic. If that little dead space was not added in a QSO no-one would normally be able to break you and the machine would be totally worthless to anyone but you and your contact. Besides, it's just the courteous thing to do.

Since most repeaters are monitored all the time by SOMEONE, there is, again, no need to call CQ. Just key your transmit-

(*please turn to page 33*)

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If you find the contents of interest, you are most cordially invited to subscribe.

It's our hope you'll join in with the spirit of friendship and good will that exists amongst our readers.

Norm Brooks, K6FO

Repeaters

continued from page 1

--repeaters that are used only by persons specifically authorized by the control operator (closed-repeaters) will not require monitoring.

In order to operate a repeater station or an auxiliary link station as part of a repeater system by automatic control, the Commission said the stations must first be licensed in the conventional manner for either local control or remote control, then a licensee may use any or all of the various options permitted to monitor and control the operations.

The action which amends Part 97 becomes effective July 28.

Action by the Commission June 11, 1975, by Report and Order. Commissioners Wiley (Chairman), Lee, Reid, Hooks, Quello, Washburn and Robinson.

International Hosting Club

The following announcement was received from W5QPX/YN4IM:

At the moment an International Hosting Club is being formed and we need chaps in "W" land to take care of DXers who will be travelling in the USA. We already have signed up members in five states and Germany, with Italy, Switzerland, England and Canada pending.

For more info please write G.L.Baker, W5QPX/YN4IM, 101 Rita Blanca Trail, Amarillo, TX 79108.

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National ARRL

Northern Virginia Amateur Radio Council is sponsoring the National ARRL Convention, 12, 13, 14 Sept. 1975 at Reston Virginia, Sheraton Inn, International Conference Center, near Dulles Airport, Virginia. Many outstanding new programs are set-up to make this the "best ever National Convention." For full details write: Registration Chairman, Box 682, McLean, VA 22101.

Info from Boulder

You may want to get on the mailing list for the weekly Radio Telecommunications Forecasts. This is a free service and you may subscribe by writing to: U.S. Department of Commerce, Office of Telecommunications, Telecommunications Center, Boulder, Colorado, 80302. They are mailed weekly via Air Mail and seem to be well worth receiving.

NCDXC DXer

FM

(continued from page 14)

less power, or the renewability of a Technician (C) license, you should be MORE concerned about doing something about the future of amateur radio. Citizens Band applications are pouring into the FCC — 193,000 new applications in March alone, according to Ham Radio Report. Commercial land mobile services, police and fire departments, medical emergency services and others all want more room in the VHF and UHF spectrum. A petition was recently filed asking the FCC to make room for another commercial VHF television channel by taking over part of the amateur 6-meter band. Meantime we are losing amateurs every month. We simply cannot afford to let ourselves grow weaker while the competition grows stronger.

continued next month

LATE FLASH.

A telephone call from the FCC on 11 June to **Worldradio** told that effective immediately all amateur license applications should be sent to this address: FCC, PO Box 1020, Gettysburg, PA 17325. They said it is hoped this will help speed things up for them. They have been overwhelmed with applications for the various services now reaching a quarter-million a month. For readers engaged in other services the other addresses are Aircraft, Box 1030; Ship, Box 1040; Restricted Radiotelephone, Box 1050.

Also mentioned was a bit of clarification on the automatic control of repeaters: The tape recordings made of repeated operation do not have to be reviewed as a normal matter of course. Only need for listening to them is if the FCC asks to hear them, or if an amateur requests to hear a portion.

The American Radio Relay League

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

continued from last month

While the American Radio Relay League was first organized for the purpose of relaying traffic, it soon became involved with other aspects of Amateur Radio. This was due to the fact that Amateur Radio, since it first started, has continued to grow both technically and operationally.

The League became involved with technical matters very early since in order to operate an amateur station one must first have one, and of course in the early days this meant building your own equipment.

An example of the technical service provided in the early days is the first edition of the **ARRL Handbook,** which became known as "Handy's Handy Handbook" for a number of years since Communications Manager Handy was the first editor. The **Handbook** started in the 1920s and has continued for more than 50 editions.

Of course issues of **QST** from the beginning included technical and "how to" articles and tips especially on how to build better and better equipment.

Since these early days Headquarters involvement in technical areas has grown until today it is a separate and relatively large department at Newington, CT.

Present Technical Editor and Technical Director is Doug DeMaw, W1CER, who assumed this position upon the retirement of George Grammer, W1DF, in 1970.

DeMaw is in charge of editing all technical articles for **QST,** manages the technical staff and is head of the ARRL laboratory.

The laboratory at Headquarters is well equipped with the latest in test equipment and facilities for both construction of radio equipment and for testing and design work.

Associate Technical Editor is Gerald Hall, K1PLP. Gerry is expert in several technical areas of Amateur Radio, including teletype and digital electronics.

Assistant Technical Editors are Robert Myers, W1FBY; Thomas McMullen, W1SL; Tony Dorbeck, W1YNC; Lew McCoy, W1ICP; Jay Rusgrove, WA1LNQ; and the newest Technical Assistant is Charles Watts, WA6GVC.

The Technical Staff works in many areas of new design in Amateur Radio and writes the various technical articles for **QST.** In addition to the articles written by the staff, many radio amateurs write technical articles and contribute them to the League for publication in **QST.** These, together with those written by the staff, make up the technical section of the magazine.

While the League doesn't pay for the articles that are contributed the number far exceeds the space available. Equipment that is described in these articles is tested by the Headquarters staff to make sure that the equipment amateurs construct as a result of reading an article will function properly if built according to the article.

In addition to designing and building new equipment the staff does some work in the area of testing new commercial amateur radio equipment. Results of these tests are printed in the "Recent Equipment" column in **QST.**

The League is not in a position to recommend any particular commercial equipment over other gear, nor can they determine which equipment will be better than other gear, since such judgments are often related to a personal preference.

What one individual amateur considers desirable features in gear may not be desirable features in the eyes of another amateur. No one can predict what will happen to a particular piece of equipment after it is used for a number of months or years, nor is it possible to accurately predict equipment life.

For this reason the "Recent Equipment" column is designed to acquaint members with the technical features of current amateur gear. Testing is done to determine if the equipment performs up to the manufacturer's claimed specifications and not to any particular technical standard.

The Technical Department is in charge of the editing of the other League technical publications including **The ARRL Handbook, The Antenna Manual, Understanding Amateur Radio, Single Side-band for the Radio Amateur, The Mobile Manual for the Radio Amateur, FM and Repeaters for the Radio Amateur, A Course in Radio Fundamentals, Hints and Kinks for the Radio Amateur,** and the latest League technical publication, **Specialized Communications Techniques for the Radio Amateur.**

The new publication includes information on teletype, amateur television, slow-scan TV, facsimile, space communications and advanced techniques.

Under study are publications in other technical areas and the staff is always working to update the various technical publications. Of course the **Handbook** is updated and published in a new edition each year.

Another function of the Technical Department is the ARRL Technical Information Service. Radio amateurs are invited to write to the information service for help and suggestions in various technical problems in Amateur Radio. All requests for information will receive replies, often with a reference to specific articles in **QST** or pages in the **Handbook.**

Often such a reply upsets the amateur who made the request since the reference might be to a **QST** that is 10 or 15 or more years old. Since the individual who made the request for information may not have the issue or local access to it, he is at a loss as to what to do.

Fortunately many back issues of **QST** are still available from Headquarters at $1 per copy or Headquarters will provide copies of any article in **QST** at 25c per page. Also available are microfilms of issues of **QST** (going all the way back to 1915) from University Microfilms, Ann Arbor, MI 48106. Write directly to them for prices and details.

Another type of letter often received by Headquarters indicates that the writer has, let's say, a couple of spare 6146s and a 6C4 and a few other parts, and would the technical staff please design an amateur transmitter using these components?

Of course the writer would like the transmitter to be single sideband and cover at least 160 through 10 meters and, if possible, cover 2-meter FM as well.

Headquarters would like to help everyone, but such a request would involve a good many days of work on someone's part, designing, constructing and debugging the equipment, even if the design is possible in the first place.

While Headquarters tries to provide as "speedy" a technical service as possible, it does take time to research a problem and staff members have many other jobs to perform. An attempt is made to answer each question in a few days or a week at the most. At times this is difficult since staff members are sometimes sick or on vacation or traveling on League business.

If you write to Headquarters with a technical problem you should observe a few "rules".

Before writing make sure that you have searched your **QST** files and other League publications as the answer may be in the publications you already have. Use the annual **QST** index in each December issue for the research.

Use a typewriter if possible in making your request, otherwise write or print clearly on one side of each sheet of paper. Circuit diagrams should be on a separate sheet.

Please ask a reasonable number of questions with a limit of three per letter. Put your name and address on each sheet and staple or paper clip all sheets together.

Do include a self-addressed, stamped business-size envelope with your request.

Please be sure to share with the technical department whatever experience you have already had with the problem in question, as this will avoid covering ground that you have already been over.

Please don't ask for advice or information on articles published in other magazines and don't write requesting custom designs for amateur gear. And please do not ask for comparisons between commercial products or ask for advice on repairing in-warranty commercial equipment.

Address all technical questions to: Technical Information Service, American Radio Relay League, 225 Main Street, Newington, CT 06111.

One comment that League Directors sometimes receive from members is about the amount of space devoted in **QST** to various areas of interest in Amateur Radio, especially relative to the space devoted to technical articles. One often hears the comment that **QST** should be devoted to the technical aspects of Amateur Radio only.

While **QST** is a technical publication, it is also the journal of the American Radio Relay League, and while some members feel they are just subscribing to a technical magazine, in reality, they are members of the League and receive **QST** as part of their membership. The $9 that one pays is dues in the **ARRL** and not a subscription to just a magazine.

As the journal of the ARRL **QST** must cover all interest areas of Amateur Radio plus the operations of the League as a membership organization. For this reason space must be devoted to all areas and to the necessary information on the operations and activities of the League itself.

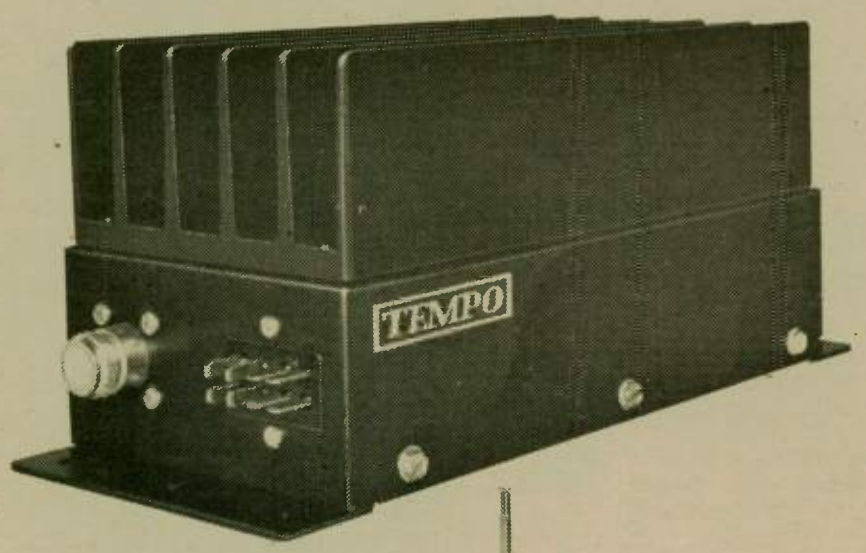
Of course space is also allotted on the basis of numbers of members interested in areas to some extent, although there are also certain understood obligations to support areas of public service as a justification for our existence as amateurs.

The Headquarters staff and the Board of Directors are constantly discussing the allocation of space in **QST** and trying to find ways to include those areas that interest the membership to the greatest extent.

As in any organization like ours the state of Amateur Radio and the League are constantly changing. For instance, one no longers sees articles about spark transmitters. The League is also changing and members can expect that they will have some influence in this change through their elected League officials.

(*please turn to page 38*)

PUT MORE REACH IN YOUR FM WITH A TEMPO RF POWER AMPLIFIER FROM HENRY RADIO



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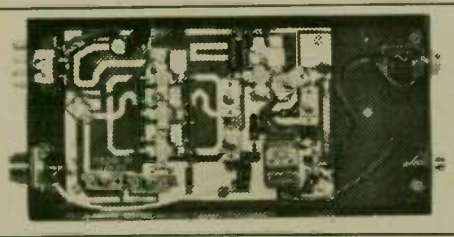

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FM Forum

Dayton Hamvention 1975

Talk by R.B. Shreve, W8GRG

Shortly after my appointment to the VHF Repeater Advisory Committee in January, the group arranging this forum asked me if I would talk about the VRAC and ARRL activities as they relate to amateurs who are particularly interested in FM. I'm sure they could have found any number of people who know more about VRAC and League activities than I do. I still feel I am a long way from being an expert on most of the problems we are facing — but at the same time the more I look at the problems, and the more people I talk to, the more certain I am there are relatively few experts in the field, and no one who can claim to know all the answers.

So what I am going to do today is tell you some of the things VRAC and the League are working on, suggest some possible answers — which do not necessarily represent the opinions of the entire organization, or even a majority — and if I stimulate enough reaction maybe you'll let me, as your representative on VRAC, and Dick Egbert (W8ETU), your League Director, know what YOU want.

One of the matters of great concern to VRAC is unnecessarily restrictive interpretation of FCC regulations. A good example is the rules governing operation of remotely controlled base stations. As far as I know, there are not very many of these stations in operation in this part of the country. For those of you as unfamiliar with the concept as I was, let's start with a simple set-up: a VHF receiver and transmitter one of you might install in a favorable location away from your home QTH to get around someone's objection to your putting an antenna on the roof of the apartment house or erecting a tower in the backyard.

As long as you are the only operator of the station, and as long as you operate it from your fixed control point, you'll have no problem whether you control it by wire or a radio link. It's when you want to operate it from a hand-held or vehicle mobile that you begin to have difficulty with the rules. Somehow, somebody arrived at the interpretation that a radio control link is an auxiliary link station, which requires a special license and which cannot be operated portable or mobile. To make it worse, they applied the repeater rule that says the control transmitter must be used only for control and cannot operate on the repeater input frequency.

Applying these rules written for repeaters to all remotes seems a little silly when you consider how long radio-controlled remote stations were in existence before anyone thought of separate licenses for auxiliary link stations. Before we jump to any conclusions, however, let's look at the other side of the question. Consider a mountain-top remote operated as a club station, with a large number of club members who use the station to talk to each other and to others outside the club. What distinguishes such a station from a repeater? More important, what is to keep a club from setting up a repeater with its input on two meters and its output on six, ten, or twenty meters, and calling it a remote?

In their capabilities the two systems are very similar. There are two-meter repeaters all through New England that will let two low-power stations carry on a conversation over amazing distances. I sat on top of Cadillac Mountain in Maine and talked to a mobile in Connecticut through a repeater in New Hampshire. A remote base on top of a mountain in California will let its operator talk easily to a mobile in Arizona or a friend in Nevada. With the right Touch Tone codes a visitor to Disneyland, south of Los Angeles, can get a San Francisco friend on autopatch or get a report on flying weather in Oregon.

The important difference, which should be taken into consideration when making the rules, is that a repeater operates on a recognized, published frequency, and is there for anyone in range to use to talk to anyone else. In contrast, a remote is used only by its control operators to talk to other stations of their choice, and, like any base station, can use any mode or frequency for which the operator is licensed. It is only when two stations use the remote's up and down links to talk to each other that its operation resembles a repeater.

Many of the remotes on the West Coast are far more advanced in their netting and interlocking capabilities than anything I know of around here. Their potential as a public service facility that can be tailored to the needs of the moment is practically unlimited—it was demonstrated at the time of the big Los Angeles earthquake a few years ago. And I don't need to remind you how well the emergency capabilities of our repeaters were demonstrated at Xenia.

As I put these notes together, I was tempted to say, "I think everyone will agree that this kind of FM — portables and mobiles working through repeaters and remotes — provides the finest emergency communications resource we amateurs have ever had." My experience has been, however, that it is seldom that everyone will agree on anything. I even have friends who will argue over whether to check for a blown fuse with an ohmmeter or by putting a finger in the socket! So I am going to sum up my comments on regulation of repeaters and remotes by saying that two meter FM, remotes, repeaters, mobiles and portables, has repeatedly demonstrated its value in emergencies. My personal attitude toward FCC regulations and their interpretation — and I think this applies to most of the VRAC members and League officials I have met — is that we should try for rules that will allow amateurs the greatest possible latitude in setting up and operating systems with immediate or potential public service value. If the FCC doesn't want a remote used as a repeater, let them say so, and leave it to the control operators to decide how to carry out the instruction. The more we can persuade the authorities to restrict rule-making to the definition of objectives, and leave the details of how we do it up to us, the better.

One subject which is very much in the forefront of League and VRAC thinking, and on which there is a wide range of opinion, is Docket 20282 — the proposal to restructure the system of amateur licenses. Most of you have undoubtedly taken part in club programs and other discussions pointed toward preparing and filing comments with the FCC. Some of you have probably filed comments of your own, or plan to do so. Many, however, if you are like others with whom I have talked, haven't done anything yet, even though you have some pretty strong feelings about what the proposed Communicator Class licenses and loss of Technician privileges will do to FM as we know it. It is to you who have not yet done anything to make yourselves heard that I want to address this part of my talk.

I am not going to plead for or against the docket or any of its provisions. If your opinions are typical of others to which I have been exposed, you are particularly upset by the proposals reducing Technician privileges and making Technician (C) licenses non-renewable. You are also seriously disturbed by the potential impact of an influx of untrained, undisciplined newcomers on the VHF bands. I agree we should be concerned; I CANNOT agree with those who say there is nothing we can do about it — who go around saying the whole deal is a rip-off by a bunch of avaricious equipment manufacturers out to make a million or two at our expense. Look around this building — do the people who took the trouble to come here, set up exhibits, and donate prizes to make this Hamvention a success look like they are indifferent or negative on the future of Amateur Radio?

I repeat, you should be concerned about the proposals in 20282; but, however you feel about no-code licenses, more or

(*please turn to page 11*)

Mackay Radio transmitting station near St. John, Indiana, 1933. Used for domestic point to point radio telegraph service. [Photo by Lewis Coe]

Copperweld and Kilowatts

Lewis B. Coe, W9CNY

The time was November 1933 and the ink was scarcely dry on the 2nd telegraph license clutched in my hand as I approached the Mackay Radio transmitting station near St. John, Indiana. The view that I beheld was enough to quicken the pulse of any true radio amateur — a real antenna farm, 90 acres, thickly dotted with stately 90 foot wooden poles, supporting a veritable cobweb of beautiful directional arrays. The transmitter house, strategically placed in the center of all those sky wires, bristled with panels, relay racks, switchboards and all the other auxiliary gear needed for a complement of short wave transmitters ranging to 10KW in power. Add a small lake that furnished passable duck hunting in season and you have a fair picture of the place that was to be my second home for several years.

St. John was part of the newly established domestic point to point radio network operated by Mackay Radio. A similar network was also operated by RCA. These circuits utilized high speed Morse operation, with transmitting and receiving sites remotely located from the city operating centers. Conventional telegraph and telephone wire lines linked the transmitters and receivers to the downtown control center. The operating frequencies were in the 4 to 15 MHz range, or 4 to 15 mc, as we quaintly called it at the time. Users of the radio circuits were mostly business firms who filed and received their traffic through the established offices of Postal Telegraph for Mackay and Western Union for RCA.

I was soon to learn that there was a vast difference between commercial operation and my former experience as a happy-go-lucky amateur. Fortunately, in those days, it was not too difficult for an amateur of some experience to make the transition to commercial equipment. For one thing, commercial apparatus was not too unlike the gear constructed by the more advanced amateurs. The main differences, aside from power, were in the use of more low level multiplier and buffer amplifiers together with temperature controlled oscillator ovens to obtain the required frequency stability.

Antennas used for transmission were mostly of the long wire type and were constructed by telegraph linemen using materials and construction practices that were on a rather heroic scale compared to the usual amateur installation. The conductors were No. 6 copperweld and they were held up by ½" steel wire rope, kept tight by 1000 pound concrete weights — and that's tight man! Transmission lines were of the open wire, non-resonant type, constructed of No. 6 copperweld supported by glass insulators on 12 inch spacing. The slide rule fans among you can quickly determine that this came out to 600 ohms surge impedance. The antennas were operated on different frequencies by the expedient of attaching tuning stubs for the various channels at carefully selected points along the transmission line. SWR was measured by a simple but clever device known as a "trolley meter." It consisted of an inductive pickup loop that could be tuned to resonance, plus an RF indicating meter, all mounted on a little carriage fitted with grooved wheels that rode on the No. 6 line wire. In practice, one turned on the transmitter with key down at low power level, then went out and towed the meter up and down the line by means of a long string.

The ratio of maximum to minimum readings on the meter was your old SWR, sure enough! Although staring up at that meter for 3 or 4 hours was likely to give the operator some sore neck muscles, it also gave an insight into the principles of SWR that would not easily be forgotten. Incidentally, any SWR under 2/1 was considered usable and even today with coax line the experts say this isn't a bad rule.

This was a CW man's CW station and if you couldn't cut it on code it was really a pretty bad scene. All communication with the control center was by Morse sounder, using "continental" code instead of the normal landline code, and this was further confused by some operators who sort of used a mixture of the two codes. This latter was not surprising in view of the fact that some of the erstwhile radio operators were "converted" Morse telegraphers.

The advent of World War II spelled the end of domestic point (*please turn to page 38*)

Building and operating Heathkit's SB-104

Mort Waters, W2NZ

The very first time I saw a picture of Heathkit's latest marvel, the photogenic SB-104, I fell in love. I just couldn't wait to get my hands on it. When the kit finally arrived, I pounced on it like a man dying of thirst would on a long cold glass of water.

There are two manuals, one concerned entirely with assembly, the other with alignment, operation, installation, maintenance and trouble shooting. Both are well done, no news to anyone who's ever built a Heathkit, I'm sure.

Construction

According to the advertising, I expected to find 15 printed circuits, but there were 18 pieces of board by actual count. Two of these, however, are tiny little things that become part of the final amplifier module and a third is the extender board used in alignment and maintenance.

This part of the assembly work is no different than in any other kit. It's merely that there are a lot of boards and a lot of parts. It just takes a little longer. Keeping accurate records I found I had spent 44 hours by the time I'd finished the last one.

What to watch out for

Toroidal coils and transformers are used throughout the 104. As each is called for by the manual, take it from its envelope (on which the part number appears), put it in the board where it belongs, and solder it right then and there. Then and only then, discard the envelope. The reason for this care is that, once separated from its envelope, there is no easy, sure way to identify the toroid.

The most visible feature of the 104 is its digital frequency readout and the built-in counter that makes it work. The counter requires 19 ICs on one board and six on another. Each has its own socket with very closely spaced pins. Special care in soldering is a must. Do it with a fine-tipped iron to avoid bridges. Later, examine the pins — it's a good idea to check every board — with a strong magnifying glass under bright light.

In another area there is a small sub-assembly — a DC to DC converter — that supplies 180 volts for the readout devices. Double check the way you install it in order not to have its input and output terminals reversed.

Although I didn't realize it until much later I had committed an error of sorts when building the VFO, or to be more precise, its drive mechanism. It seemed to be too hard to turn and I could feel backlash. Recalling how it had gone together, I removed the entire assembly. There are two ball drives in series that turn the variable capacitor. They are attached to the VFO panel by screws that pass through ears on the drives. In my unit the slots into which these screws were supposed to fit were a bit undersized, preventing the hardware from aligning itself. Filing the slots just a bit wider allowed the hardware to seat properly and made the action of the dial very light and smooth, and backlash-free.

Assembling the chassis was easy. The bulk of the work is laying in two harnesses. One caution to keep in mind is the proper selection of the color-coded wire called for.

Approximately halfway through chassis assembly you are supposed to attach the rear panel. Prior to this, though, a number of wires will have been soldered to it. Maneuvering the panel into place with these encumbrances can be a bit awkward. Also, the space provided for these wires is confined. Try to fold them in neatly rather than let them be mashed in. A couple of dry runs here will reduce the possibility of causing a short circuit. With Heath's usual foresight their manual then gives you a series of tests to perform to see if in fact you did create a short. Somehow I expected the meter to show infinite resistance in these tests and was disturbed when two of them — at "Auxiliary Audio" and "Patch" — showed 10K ohms. However, a look at the schematic made me rest easy. This value was correct.

When you finally begin to work on the front panel you know there can't be much left to do. A little later you are instructed to place your call letters on the panel window and experience your first real thrill of ownership when you hold it up to a light and see them there. A lovely moment!

Shortly afterward comes that most welcome part of the manual: "Proceed to Tests and Adjustments." You're done. Chassis work required 31 hours. It was a pleasure to put it together because of the clean layout. As claimed by Heath, it is easier than their older transceivers.

Testing, alignment and trouble shooting

If there were no wiring errors, alignment will be smooth and easy. The procedure is clear and given concisely and won't take more than a couple of hours. It can be done with a VTVM and the S-meter, but I found that in aligning the receiver front end it was easier to use a signal generator and a sensitive audio voltmeter at the speaker output. Even if I had followed the other method I would have encountered a peculiar problem that may never happen to anyone else, but it should be borne in mind anyway — just in case. When working on the front end 3.5 and 7 MHz segments I could detect no peaking of the output meter no matter how I adjusted the trimmers. I found later that broadband noise from a defective fluorescent lamp in the room was overriding the signal generator. As soon as I turned off the lamp the rest of the alignment went smoothly.

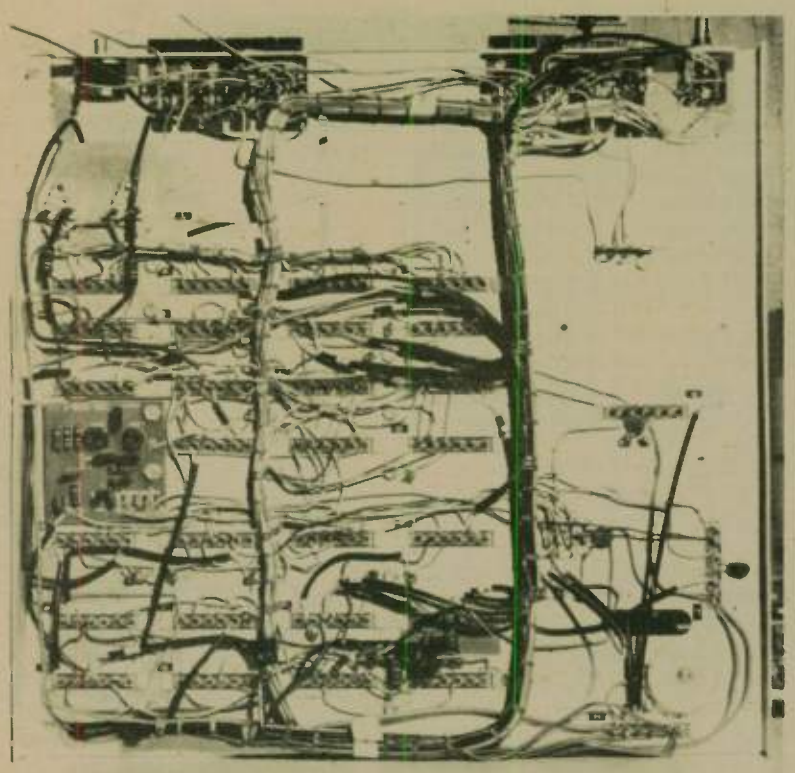
If during alignment and testing a problem is revealed, you will receive a lot of assistance from the manual. There is a detailed procedure to follow which will quickly lead you to the faulty area. You'll need a VTVM that can read small voltages, but a digital voltmeter will be better. I have one of the latter, Heathkit's naturally, which was instrumental in clearing up a problem that will be mentioned later.

Operating the SB-104

There is an enormous amount of interest in this transceiver. Every time I put it on the air the questions come thick and fast. How good is the receiver? How long did it take to build? Were there any problems? Are the results worth the work?

The first question is the most frequently asked one and is the result of the published sensitivity specifications. Perhaps a better way to ask the question would be, "How does the 104 compare with a receiver known to be hot?" I have a "hot" receiver — the Heathkit all solid state SB-303, whose rated sensitivity is .25 microvolts against the SB-104's "less than 1 microvolt". I have spent a lot of hours comparing the two, not in the laboratory but on the air, where it counts. Here's what I found. On 28 MHz (and to a lesser extent on 21) a signal that is marginal on the 303 will be a shade worse on the 104. In rare cases, if it's only partly readable on the 303, it may be unreadable on the 104. On all other bands the difference, if there is one, is not detectable by ear.

But that's not the entire story. It is in the presence of a strong



Fairly well along in construction, the underside of the chassis shows two major wiring harnesses with most connections made. Rows of terminals you see are the undersides of strips into which various circuit boards are plugged.

signal that the 104 comes into its own and is clearly superior to the 303. The 104 seems impossible to overload. As a result there is little or no degradation of its ability to discriminate between signals even under contest conditions. In many cases I was able to copy a signal on the 104 that was completely unreadable on the 303. Heath's engineers deserve high praise for the design of the 104's front end.

The reports I get on SSB are always good or better. "Outstanding audio quality"; "exceptionally clean"; "very punchy but not distorted"; "tunes very sharp, you disappear as soon as I move off frequency" — these are typical comments. In the CW mode I've been told that keying is "crisp"; "clean";"perfect note"; "no clix" and so on.

To truly appreciate the fine quality of the SB-104, however, you have to operate it yourself. In no other way can you learn how easy it is to switch from band to band and be ready to transmit in an instant. All controls, even vox gain and delay, are conveniently at hand on the front panel. Push buttons (a bit too small for my taste) select the desired mode. Tuning is as smooth as butter, as already stated, and lastly the digital readout is a delight. Tune to 15,000.0 kHz and there's WWV. 7335.0 and you're zero beat on CHU. Transmit on 21369.2 and you know that's where you are. No fumbling, no interpolating, no zeroing a calibrator from band to band — those big red numbers are always telling it like it is.

Finally, for whatever it's worth, I think the SB-104 is the best looking piece of equipment I've ever seen. Even my XYL says it's pretty.

To sum up, my answer to was it worth the effort is YES.

What about those rumors?

You may have heard some yarns about the problems people were having getting their 104s built and working. In my opinion anyone who cannot build the 104 cannot read English. If you do what the manual instructs you'll be okay. Getting it working properly is not always that simple, however.

Let me digress for a moment. Some time ago, after having successfully built dozens of Heathkits with only an occasional minor problem, I decided to try the big digital color TV, the GR-2000. When I got into it I was awed by the quantities of parts. It seemed wise to pretest every component I could to avoid trouble later. I added a few hours to the building time by doing so and was rewarded — if that's the right word — by finding one shorted mica capacitor. How long it would have taken to spot it after building is problematical, but I concluded that I had wasted time in testing. Thus influenced, the number of components in the 104 didn't phase me at all and I just went ahead merrily. Had I thought it through I would have pretested them because, when considering this kit's complexity, it should have been apparent that finding defective parts in the circuit might be ticklish.

A leaky switching diode in one of the heterodyne oscillators prevented the stage from working the way it should. It was here that the digital voltmeter was invaluable because the voltage at the test point should have been .2 or higher, but was only .09. An analog voltmeter would have been very difficult to read at these levels.

Another diode was shorted and caused several transistors to self-destruct.

A potted toroid had a broken lead, hidden inside by the potting material.

Because of my experience I urge prospective builders to pretest as many components as possible. Resistors, of course, are simple to check for proper values within tolerance. Small capacitors can be tested with an ohmmeter if you lack a capacitance bridge. Look for a tiny flick of the meter when the probe is first touched to the capacitor. In the case of larger values — .01 and greater — you can actually see the charging process on the meter.

Most transistors can be tested in a crude but effective fashion with a VTVM set on a high resistance scale. Measure forward and back resistances from base to collector and emitter. In one direction resistance should approach infinity. In the other (with VTVM leads reversed) resistance should be less than half scale. The foregoing applies to standard NPN or PNP types. Reading from unijunction transistors can be misleading so don't bother. Never test mosfets this way or you will surely destroy them. There are a few 40673 mosfets in the 104. It shouldn't be necessary to mention that ICs cannot be tested in this fashion either.

Check each of the 131 diodes in the kit. In a quantity this large you can almost expect to find one or two that are defective or just misbanded.

In view of my own experience I suggest testing each of the potted toroids for continuity, as well.

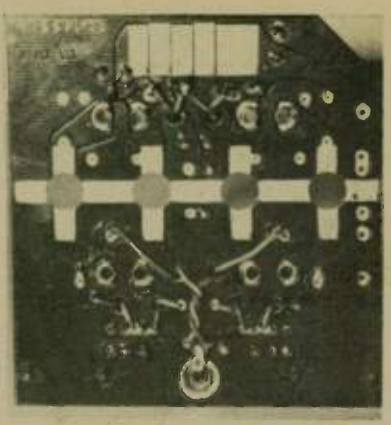
Despite the parts problems I encountered, I cannot really hold Heath responsible beyond replacing them. They must be caught between the proverbial devil and the deep blue sea. No doubt they could force their suppliers to maintain higher standards but only at the expense of increasing the cost of the parts. This would surely raise the SB-104's cost sky high. Under these circumstances I would much rather that the SB-104 be within my budget and give me a little brain exercise than have it priced out of my reach. On a crass dollars and cents basis, weighing potential cost against my trouble shooting time, I'm way ahead.

Accessories

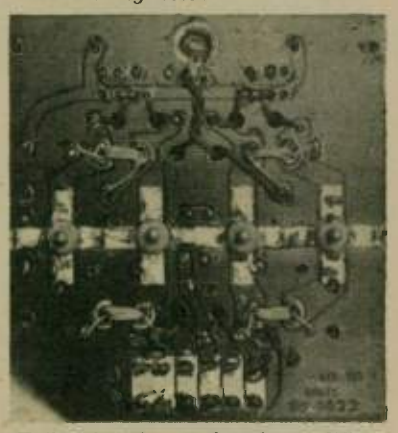
While I did not install the 104 in my car, I was nevertheless able to test the effectiveness of the noise blanker in such an installation by having my neighbor's son park his old car in the driveway with the engine running at a distance of only a few feet from the shack. The racket was horrible until I switched on the blanker, when it immediately disappeared. I consider it an unqualified success for mobile use.

The matching power supply (HP-1144) is a brute. The transformer alone weighs 24 lbs. The only heat apparent in the power supply is generated by the pass transistors which are mounted on a generously sized heat sink. Voltage regulation is excellent. Monitoring the supply with a digital voltmeter that reads to .1 volt, there was no change when going from receiving to full load transmitting.

Having the SB-644 remote VFO makes split frequency operating a real pleasure. With it you have a choice of transceiving on either external or internal VFO or using either one for transmitting and receiving, selecting your choice at the touch of a button. A matching legend on the VFO panel lights to indicate which option you have selected. Within the VFO there is provision for two crystals as well, for net operation or however desired. These are also selectable by push buttons.



Foil side of board with some toroids already wound and end soldered. Power transistors fit four round holes. Transistor ears are soldered to large lands surrounding holes.



Foil side of completed amplifier. Transistor studs are bolted through machined aluminum plate to massive rear panel heat sink, after plate is coated with silicon grease.

You are always aware of your frequency regardless of which VFO is in use or the mode of operation. The digital readout switches automatically to indicate where you are receiving or where you are transmitting.

In the not too distant future I hope to obtain the other available accessories. At present these are a matching monitor 'scope and a station control console. No doubt they are as good in their own way as the SB-104 is. Perhaps I'll be writing about them before long.

7400N TTL

SN7400N	.16	SN7451N	.27	SN74151N	1.25
SN7401N	.16	SN7453N	.27	SN74153N	1.35
SN7402N	.21	SN7454N	.41	SN74154N	1.25
SN7403N	.16	SN7459A	.25	SN74155N	1.21
SN7404N	.21	SN7460N	.22	SN74156N	1.30
SN7405N	.24	SN7470N	.45	SN74157N	1.30
SN7406N	.45	SN7472N	.39	SN74160N	1.75
SN7407N	.45	SN7473N	.45	SN74161N	1.45
SN7408N	.25	SN7474N	.45	SN74163N	1.65
SN7409N	.25	SN7475N	.80	SN74164N	1.65
SN7410N	.20	SN7476N	.47	SN74165N	1.65
SN7411N	.30	SN7480N	.50	SN74166N	1.70
SN7412N	.42	SN7482N	1.75	SN74167N	5.50
SN7413N	.85	SN7483N	1.15	SN74170N	3.00
SN7414N	.70	SN7485N	1.12	SN74172N	18.00
SN7416N	.43	SN7486N	.45	SN74173N	1.70
SN7417N	.43	SN7488N	3.50	SN74174N	1.95
SN7418N	.25	SN7489N	3.00	SN74175N	1.95
SN7420N	.21	SN7490N	.59	SN74176N	.90
SN7421N	.39	SN7491N	1.20	SN74177N	.90
SN7423N	.37	SN7492N	.82	SN74180N	1.05
SN7425N	.43	SN7493N	.82	SN74181N	3.55
SN7426N	.31	SN7494N	.91	SN74182N	.95
SN7427N	.37	SN7495N	.91	SN74184N	2.30
SN7429N	.42	SN7496N	.91	SN74185N	2.20
SN7430N	.26	SN74100N	1.25	SN74187N	6.00
SN7432N	.31	SN74107N	.49	SN74190N	1.50
SN7437N	.47	SN74121N	.55	SN74191N	1.50
SN7438N	.40	SN74122N	.49	SN74192N	1.50
SN7439A	.25	SN74123N	1.05	SN74193N	1.40
SN7440N	.21	SN74125N	.60	SN74194N	1.45
SN7441N	1.10	SN74126N	.81	SN74195N	1.00
SN7442N	1.08	SN74132N	3.00	SN74196N	1.25
SN7443N	1.05	SN74141N	1.15	SN74197N	1.00
SN7444N	1.10	SN74142N	6.50	SN74198N	2.25
SN7445N	1.10	SN74143N	7.00	SN74199N	2.25
SN7446N	1.15	SN74144N	7.00	SN74200N	7.00
SN7447N	.89	SN74145N	1.15	SN74251N	2.50
SN7448N	.99	SN74148N	2.50	SN74284N	6.00
SN7450N	.26	SN74150N	1.10	SN74285N	6.00

20% Discount for 100 Combined 7400's

CMOS

CD4000	.29	CD4030	.65	74C10N	.65
CD4001	.29	CD4035	1.85	74C20N	.65
CD4002	.29	CD4040	2.45	74C42N	2.15
CD4006	2.50	CD4042	1.90	74C73N	1.50
CD4007	.29	CD4044	1.50	74C74	1.15
CD4009	.59	CD4046	2.51	74C90N	3.00
CD4010	.59	CD4047	2.75	74C95N	2.00
CD4011	.29	CD4049	.79	74C107N	1.25
CD4012	.29	CD4050	.79	74C151	2.90
CD4013	.53	CD4051	2.98	74C154	3.00
CD4016	.69	CD4053	2.98	74C157	2.15
CD4017	1.35	CD4060	3.25	74C160	3.25
CD4019	.69	CD4066	1.75	74C161	3.25
CD4020	1.69	CD4069	.45	74C163	3.00
CD4022	1.25	CD4071	.45	74C164	3.25
CD4023	.29	CD4081	.45	74C173	2.60
CD4024	1.50	74C00N	.39	74C193	2.75
CD4025	.34	74C02N	.55	74C195	2.75
CD4027	.85	74C04N	.75	80C97	1.50
CD4028	1.65				
CD4029	2.90				

LINEAR

LM100H	15.00	LM373N	3.25	LM1310N	2.95
LM106H	2.50	LM377N	4.00	LM1351N	1.65
LM171H	3.75	LM380N	1.39	LM1414N	1.75
LM212H	7.00	LM380CN	1.05	LM1458C	.65
LM300H	.80	LM381N	1.79	LM1496N	.95
LM301H	3/1.00	LM382N	1.79	LM1556V	1.85
LM301CN	3/1.00	LM393N	1.05	LM2111N	1.95
LM302H	.75	NE501K	8.00	LM3065N	.69
LM304H	1.00	NE510A	6.00	LM3900N	.55
LM305H	.95	NE531H	3.00	LM3905N	.60
LM307CN	.35	NE536T	6.00	LM5556N	1.85
LM308H	1.00	NE540L	6.00	MC5558V	1.00
LM308CN	1.00	NE550N	.79	LM7525N	.90
LM309H	1.10	NE553	2.50	LM7528N	2.20
LM309K	1.25	NE555V	.75	LM7534N	2.20
LM310CN	1.15	NE565H	1.25	LM7535N	1.25
LM311H	.90	NE565N	1.95	80388	4.95
LM311N	.90	NE566CN	1.95	LM75450	.49
LM318CN	1.50	NE567H	1.25	75451CN	.39
LM319N	1.30	NE567V	1.95	75452CN	.39
LM319D	9.00	LM703CN	.45	75453CN	.39
LM320K-5	1.35	LM709H	.29	75454CN	.39
LM320K-5.2	1.35	LM709N	.29	75491CN	.79
LM320K-12	1.35	LM710N	.79	75492CN	.89
LM320K-15	1.35	LM711N	.39	75494CN	.89
LM323K-5	14.00	LM723N	.55	RCA LINEAR	
LM324N	1.80	LM723H	.55	CA3013	1.70
LM339N	1.70	LM733N	1.00	CA3023	2.15
LM340K-5	1.95	LM739N	1.29	CA3035	2.25
LM340K-12	1.95	LM741CH	3/1.00	CA3039	1.35
LM340K-15	1.95	LM741CN	3/1.00	CA3046	1.15
LM340K-24	1.95	LM741-14N	.39	CA3059	2.46
LM340T-5	1.75	LM747H	.79	CA3060	2.80
LM340T-6	1.75	LM747N	.79	CA3080	.85
LM340T-12	1.75	LM748H	.39	CA3083	1.60
LM340T-15	1.75	LM748N	.39	CA3086	.59
LM340T-24	1.75	LM1303N	.90	CA3089	3.25
LM350N	1.00	LM1304N	1.19	CA3091	8.25
LM351CN	.65	LM1305N	1.40	CA3123	1.85
LM370N	1.15	LM1307N	.85	CA3600	1.75
LM370H	1.15				

MICROPROCESSOR COMPONENTS

8008	CPU	$29.95	8111	1024 RAM	$12.95
8080	CPU	149.95	1702A	2K PROM	29.95
7489	64B RAM	2.95	5203Q	2K PROM	19.95
8599	Tri-State 7489	3.50	8223	PROM	3.00
1101	256B RAM	2.25	2401	2K SR	9.95
2102	1K RAM	4.95	2533	1K SSR	11.85
8101	1024 RAM	11.95	AY-5-1013	UART	7.95
7010	1K NMOS RAM		Retains data w/o Power		29.95
2107	4K RAM	450NS	Access time-22 pin DIP		19.95
Vector	General Purpose Logic CARD			Board	14.95

*Very High Noise Immunity * Holds 12 ea. 14 pin DIPS
*44 pin Edge Connection

THE KILOBYTE RAM CARD Per Kit 69.95
*Complete 1Kx8 Memory * High Noise Immunity Components
*Single 5v supply *500NS Access Time &Kit includes sockets, ICS & Board

FREE $12.00 Value With each $75. order of Microprocessor components, get a one year subscription to BYTE the magazine for computer PHREAKS FREE FREE FREE

8000 SERIES

8091	.59	8223	3.00	8552	2.49
8092	.59	8230	2.59	8554	2.49
8095	1.39	8263	7.00	8810	.79
8121	.89	8267	4.00	8820	2.00
8123	1.59	8280	.75	8826	3.00
8130	2.19	8281	.85	8830	2.59
8200	2.59	8288	1.15	8831	2.59
8210	3.49	8520	1.29	8836	.49
8214	1.69	8551	1.65	8864	2.00
8220	1.69			8880	1.35

DIGITAL COUNTER UNIT

*Digit Latches
*On Board Oscillator
4 Each – Man7 Displays
* ÷ 10000 Counter
*Complete with Board

$29.95 Kit

DIGITAL VOLTMETER KIT

0-2 Volt, Auto Polarity 3½ digits (MAN7)
DVM MOS - LSI Design
Size: 2½" x 2¼" x 1½"

$39.95

TTL Logic Probe Kit

Detects TTL levels, pulses, with man 3 readout

$9.95 per kit

DVM Chip Set Siliconix

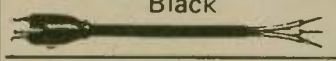
LD110 Digital A/D Processor 16.00
LD111 Analog A/D Processor 13.00
$28.00 Set

DM8890N

Complete Horiz./Vert. Divider Chain for T.V. Type, Appl. **1.95 Each**

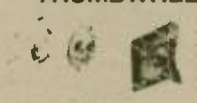
4' POWER SUPPLY CORDS . . . .

Black



.59¢ ea.

THUMBWHEEL SWITCHES

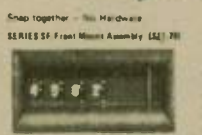


THUMBWHEEL SWITCH ONLY
SF = Front Mount SR = Rear Mount

Part No.	Description	Price
SF 12	Single Pole 10 Position	$2.50
SR 12	Decimal	3.00
SF 21	10 Position BCD	2.50
SR 21		3.00

Snap together — No Hardware

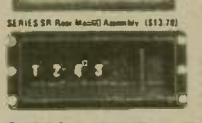
SERIES SF Front Mount Assembly ($11.70)



ACCESSORIES

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

SERIES SR Rear Mount Assembly ($13.70)



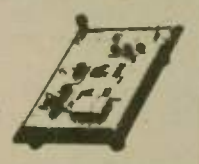
ACCESSORIES

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

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

NEW PROTO BOARD-100

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



COMPLETE KIT... $19.95

POCKET CALCULATOR KIT

5 function plus constant – addressable memory with individual recall – 8 digit display plus overflow – battery saver – uses standard or rechargeable batteries – all necessary parts in ready to assemble form – instructions included. 3" x 5¼" . . . . . $17.50 each
OPTIONS –
115VAC Transformer . . . . . 4.95 each
6 each "N" Alkaline Batteries . . . 2.50 lot

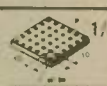
.394" DIAM. TRIMMER

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

Model TR11

RESISTANCES (OHMS)	1–9	10–24
STD 100Ω 1 MEGΩ	.35	.30

1/16 VECTOR BOARD



P.Pattern
0.1" Hole Spacing

MATERIAL	STOCK NO.	LONG	WIDE	PRICES 1	PRICES 20
[illegible]	[illegible]	4.50	6.50	1.72	1.54
[illegible]	[illegible]	4.50	17.00	3.86	3.32
[illegible]	[illegible]	4.50	6.50	2.07	1.86
[illegible]	[illegible]	4.00	8.50	2.58	2.31
[illegible]	[illegible]	4.50	11.00	5.04	4.53
[illegible]	[illegible]	4.50	17.00	9.33	8.39
[illegible]	[illegible]	4.50	17.00	6.80	6.12

WALL or T.V. DIGITAL CLOCK

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

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

DISPLAY LEDS

CA	Common Anode	CC	Common Cathode
MAN 1	Com. Ano.	.270	$1.95
MAN 2	5x7 Matrix	.300	4.25
MAN 3	Com. Cath.	.125	.95
MAN 4	Com. Cath.	.187	1.95
MAN 7	Com. Ano.	.30	1.50
DL33	Com. Cath.	.125	1.95
DL747	Com. Ano.	.625	2.50

DISCRETE LEDS

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

IC SOLDERTAIL – LOW PROFILE (TIN) SOCKETS

	1-24	25-49	50-100		1-24	25-49	50-100
8 pin	$.19	.18	.17	24 pin	$.68	62	56
14 pin	.23	.22	21	28 pin	89	81	73
16 pin	.27	26	24	36 pin	1.10	.99	.90
18 pin	46	41	37	40 pin	1.25	1.13	.93
22 pin	65	59	53				

SOLDERTAIL STANDARD (TIN)

14 pin	$.30	28	26	28 pin	$.99	90	81
16 pin	33	31	29	36 pin	1.39	1.26	1.15
18 pin	42	39	37	40 pin	1.59	1.45	1.30
24 pin	59	54	49				

SOLDERTAIL STANDARD (GOLD)

8 pin	$.30	27	24	24 pin	$.70	63	.57
14 pin	35	32	29	28 pin	1.10	1.00	.90
16 pin	.38	35	.32	36 pin	1.55	1.40	1.26
18 pin	52	47	43	40 pin	1.75	1.59	1.45

WIRE WRAP SOCKETS (GOLD) LEVEL #3

10 pin	$.45	41	37	24 pin	$1.05	95	.85
14 pin	.46	42	38	28 pin	1.40	1.25	1.10
16 pin	55	50	45	36 pin	1.59	1.45	1.30
18 pin	75	68	62	40 pin	1.75	1.55	1.40

50 PCS. RESISTOR ASSORTMENTS $1.75 PER ASST.

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

PRIME INTEGRATED CIRCUIT ASSORTMENTS

ASST 8	3 ea	SN7400	7401	7402	7403	7404	SSI TTL	$5.95 ASST
		SN7410	7430	7438	7440	7472		
ASST 9	2 ea	SN7447	7490	7491	74100	74121	MSI TTL	$9.95 ASST
		SN74145	74175	74180	74191	74193		
ASST 10	2 ea	CD4001	4002	4011	4012	4013	CMOS	$9.95 ASST
		CD4016	4017	4019	4023	4030		
ASST 11	2 ea	LM301T	301N	302T	307T	309K	LINEAR	$10.95 ASST
		LM311T	565T	567T	741T	741N		

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

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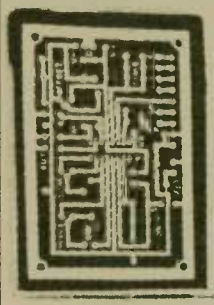
IC'S EXAR KITS

FUNCTION GENERATOR KIT



XR-2206K
FUNCTION GENERATOR KIT

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

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

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

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

Special Requested Items

RC4194	Dual Track V Reg	$5.95		N8T97	$3.00	2533	$11.85
RC4195	* 15v Track Reg	3.25		4024P	2.25	8263	5.95
MC1741	High Slew Op Amp	4.00		2513	11.00	8267	2.75
MC4044P		4.50		2518	7.00	8288	1.15
CA3130	Super CMOS Op Amp	1.49		2524	3.50	8826	3.00
40410	3w PNP	1.75		2525	6.00	8839	1.35
40673	3w NPN	1.75		2527	5.00	7497	5.00

DIODES

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

TRANSISTORS

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

CAPACITOR CORNER

50 VOLT CERAMIC DISC CAPACITORS

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

100 VOLT MYLAR FILM CAPACITORS

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

±20% DIPPED TANTALUMS (SOLID) CAPACITORS

.1	35V	28	23	17	1.5	35V	30	.26	.21
.15	35V	28	23	.17	2.2	25V	31	.27	.22
.22	35V	28	23	17	3.3	25V	31	.27	22
.33	35V	28	23	17	4.7	25V	32	.28	23
.47	35V	.28	23	17	6.8	25V	36	.31	25
.68	35V	28	23	17	10	25V	40	.35	.29
1.0	35V	.28	23	17	15	25V	63	.50	40

MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

Axial Lead					Radial Lead				
47	50	15	.13	10	47	25	.15	13	10
1	50	16	.14	.11	47	50	.16	14	11
3.3	50	.15	.13	.10	1	16	15	13	10
4.7	25	16	.14	.12	1	25	16	14	11
10	25	15	.13	.10	1	50	16	14	11
10	50	18	14	12	4.7	16	15	13	10
22	25	17	15	12	4.7	25	15	13	10
22	50	24	20	18	4.7	50	16	14	11
47	25	19	17	15	10	16	14	12	09
47	50	25	.21	.19	10	25	15	13	10
100	25	.24	.20	.18	10	50	16	14	12
100	50	35	30	.28	47	50	24	21	19
220	25	32	.28	25	100	16	19	15	14
220	50	45	41	38	100	25	24	20	18
470	25	33	29	.27	100	50	35	30	28
1000	16	55	50	45	220	16	23	17	16
2200	16	70	62	.55	470	25	31	28	26

EDITORIAL

Armond Noble, W6AJY
Editor, Worldradio News

Of all the items discussed at the recent ARRL Board meeting, the one with possibly the greatest long term impact and significance on the Amateur Radio Service was motion 31.

Introduced by Roanoke Division Director Phil Wicker, W4ACY, the motion asked the Membership Affairs Committee to study and report to the Board on the practicality of strengthening organizational ties with and among the League's membership through establishment of a system of ARRL Chapters.

For a couple of years now I have been bending the ear of League staff, officers, and anyone else that would listen about the great importance of such a move.

(See **Worldradio** editorials December, 1974 and March, 1975.)

We have all heard "In union there is strength" and "United we stand, divided we fall". It should be evident that those sayings have become well known because of their truth.

For some time now we have been doing research into other organizations so as to have something concrete to offer to the readers of this newspaper. Why should we get more organized? Try this "Association, particularly in a modern democratic society, is the one way through which to: Communicate among people with like purpose, solve problems insurmountable to the individual and insure the ability to muster a voice in the destiny of those concerned with that purpose."

The above was from the Golf Course Superintendents Association of America. In previous articles we have discussed the avenues of approach used by Rotary International and other service organizations.

First, it should be quite obvious that any organization (whether it be service, fraternal, professional, farm, labor, veterans or political) that wants to get something done is organized on the local chapter basis. That is where the strength of an organization is.

We want to see a strong and effective ARRL. It should have the resources to perform the many vital functions ahead of us in the next few years. It should have more members and we believe one way is for more amateurs to feel they are a "member" of something.

We suggest the following:
With membership in the national body comes membership in the local chapter. Since the Post Office has already divided up the country rather nicely we could, for a start, use their boundry lines.

The first three numbers of the Zip Code such as "958" would define an "Area". That way, by your zip, you would immediately know which "Area" you were in. All zip codes starting with 9581 or 9582 or 9583 etc., would be a "District" and the amateurs residing within the 95818 zone would be in a "Group". The zone bounded by 95 would be a "Region".

This is not to be interpreted as being the only organization; such would not take the place of DX, FM, Contest, or other special interest clubs. But such would be the central core of an organized Amateur Radio. The Chapter idea would prevent the present circumstance where most amateurs have never met their SCM or SEC.

Premise: We would like to see more unity among the amateurs who live the closest to each other; thus, the "Group" concept of the amateurs living within the coverage area of the small post office substations. In case of a local emergency you will be more dependent on the amateurs who live within a few blocks of you than your buddy who lives across town.

Everyone living within their small zone should know who has an emergency available gasoline powered generator, etc. Amateurs living within the smallest zone would elect a "Group Leader" to coordinate activities and also to represent them at council meetings.

A certain number of groups will make up "District" and a certain number of "Districts" would make up an "Area" and a certain number of "Areas" would fit into a "Region".

Conventions could be on a "Region" level, and we could "convene" for a purpose. At such conventions delegates from the different sectors and areas could vote on the positions they wanted their Directors to take at Board meetings, etc.

Also, at such "conventions" the amateurs who have made real contributions to their chapters should be so recognized and honored before their peers.

The population densities of the different zones would establish whether the "chapters" would be "area" or "sector" in nature.

To give us a greater sense of "belonging" to something, a list of all "chapters" and their meeting places and times would be in a book so that we, the amateur travelling on business, in a strange town, might be able to attend the meeting of the radio organization in that town and partake of the fellowship offered. This is done by a great many organizations.

Speaking of meeting places: For many clubs the meeting place is a catch-as-catch-can thing and every year or so they drift to a new location. Such does not give a sense of permanency and tradition. An untapped source of a continuous meeting place is the local community college, many of which already have an Amateur Radio station. Some few clubs are now meeting at the local high school.

Such would give a little more prestige to the local club if it were to meet regularly at an educational establishment. Some have suggested Red Cross Chapters be the permanent locations of the radio clubs. So much there depends on the attitudes of the local staff that it renders such an idea less useful than one would ideally hope for.

Along with all of this it is imperative that there be a listing in the local telephone books for Amateur Radio.

Such a listing would be useful for new amateurs moving into the area to find out the time of meetings, to visit other amateurs to facilitate visitors from other countries who want to meet U.S. amateurs, and, most important of all, to enable government agencies to contact amateurs when they need us.

Putting aside for a moment the direct benefits that amateurs would gain, we must think of our status in the local community. the nation, and the world.

On 25 April of this year the International President of Sertoma was invited to the White House by President Gerald Ford. Sertoma has a membership of 31,658. Also invited was the Sertoma Executive Director. Somehow they have a little more "clout" in this world than Harry and Dick.

Sertoma is an interesting organization. In ten years they have doubled their membership. They are organized into 857 local clubs. In their magazine, every issue, they recognize the clubs that have been members for five years, 10 years, 15, 20 25, and the most we've seen has been 55 years. Gives kind of a sense of tradition and longevity. How many amateurs know how old their club is; how many care?

Looking over the issues of Sertoma's magazine is truly inspiring. For example, the 26

(*please turn to page 32*)

Southwestern Division CONVENTION

OCTOBER 24-26, 1975

Holiday Inn
VENTURA, CALIFORNIA

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R-V SPACES NEAR THE BEACH

BY THE SEA & ON THE BEACH

- ▶ HOSPITALITY ROOM
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- ▶ TALK IN STATIONS
- ▶ BANQUET
- ▶ BREAKFASTS
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A.R.R.L. SOUTHWESTERN DIVISION CONVENTION
OCTOBER 24 - 26 • VENTURA, CALIFORNIA
HAMCON, INC. REGISTRATION
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VENTURA, CA. 93003

NAME (HANDLE– FOR BADGE) _____ CALL _____

_____ _____

Badges Will Be Made From Above Information – PLEASE PRINT

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CITY _____

STATE _____ ZIP _____

NO.		ADVANCE	DOOR
___	REGISTRATION PACKAGE Tech Sessions, Exhibit, Banquet	12.50	14.00
___	BANQUET ONLY (No Door Prizes)	9.00	9.50
___	REGISTRATION W/O BANQUET Tech Sessions and Exhibits	5.00	6.00
___	LADIES LUNCHEON/FASHION SHOW Not included in Registration Package	5.00	Not Available
___	RECREATIONAL VEHICLE SPACE	4.50 Nite	4.50 Nite

*REQUESTS FOR CANCELLATION MUST BE RECEIVED BY 17 OCTOBER, 1975.

CHECK / M. O. FOR $_____ ENCLOSED. MAKE PAYABLE TO HAMCON, INC.
ADVANCE REGISTRATION CLOSES 10 OCTOBER, 1975.

▶ HELP US PLAN A CONVENTION THAT YOU WILL ENJOY ◀

PROVIDE INFORMATION BELOW

I WOULD LIKE TO ATTEND A BREAKFAST SUNDAY MORNING
- ☐ QCWA
- ☐ MARS
- ☐ TRAFFIC
- ☐ WCARS
- ☐ RTTY
- ☐ QRP
- ☐ DX
- ☐ LADIES
- ☐ FM

I WOULD ENJOY THE FOLLOWING ACTIVITY
- ☐ FCC EXAM
- ☐ TX HUNT
- ☐ SWAP TABLE
- ☐ CW CONTEST
- ☐ HOME BREW CONTEST

PLEASE SEND ADDITIONAL INFORMATION ON
- ☐ HEADQUARTERS HOTEL
  Single $18
  Double $24
  Suite $40
- ☐ OTHER HOTELS
  $8.00 and up
- ☐ RV SPACE
- ☐ HAM OF THE YEAR AWARD
- ☐ ANTENNA CONTEST

COMMUNICATIONS ANTENNAS FOR HF & VHF AMATEUR BANDS

Hy-Gain

Hy-Gain

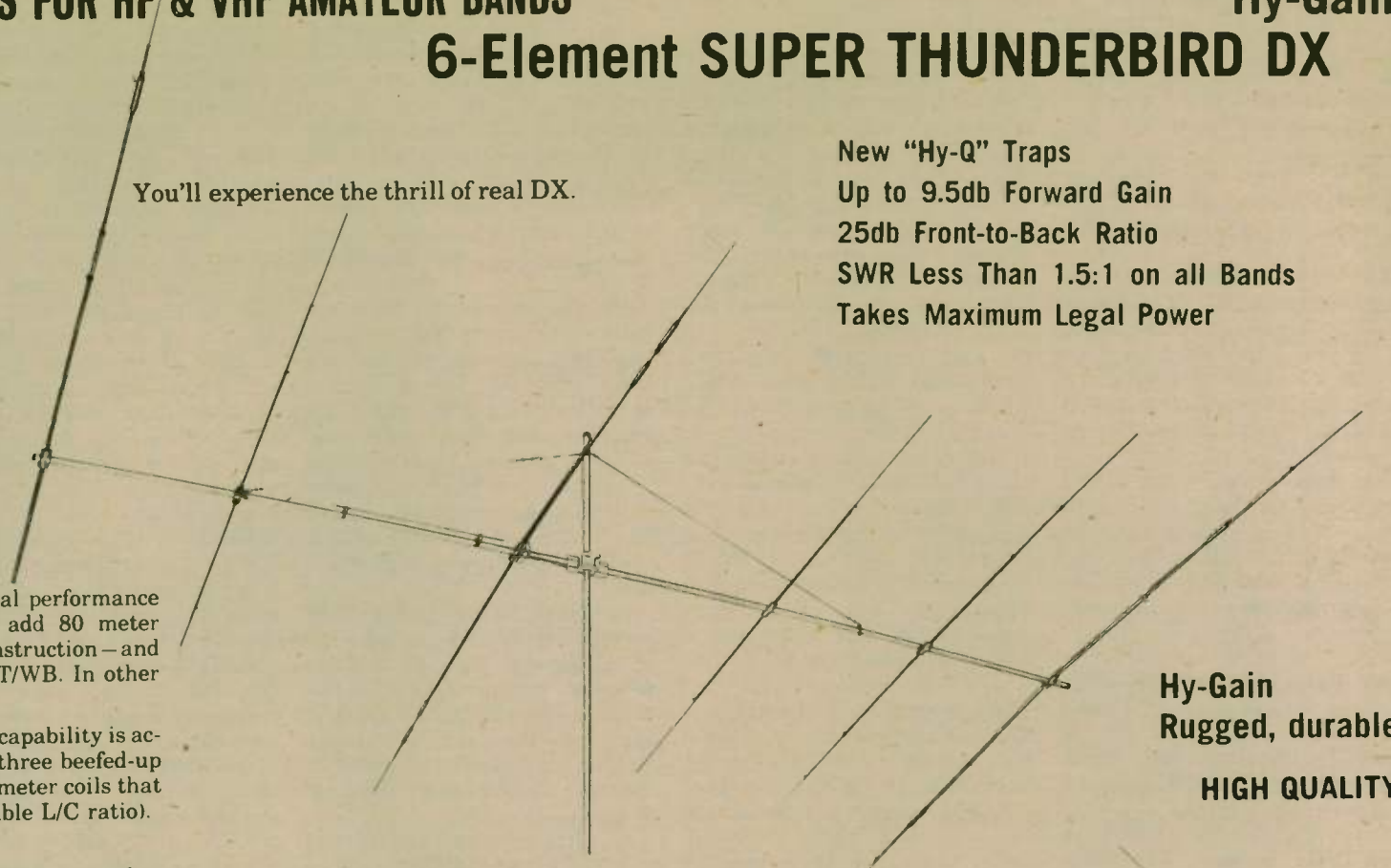
6-Element SUPER THUNDERBIRD DX

INTEGRATED RELIABILITY IN
ANTENNA DESIGN,
DEVELOPMENT,
PRODUCTION

Outstanding
Performance

You'll experience the thrill of real DX.

New "Hy-Q" Traps
Up to 9.5db Forward Gain
25db Front-to-Back Ratio
SWR Less Than 1.5:1 on all Bands
Takes Maximum Legal Power



for 80 through 10 Meters

Take the wide band, omni-directional performance of Hy-Gain's famous 14AVQ/WB, add 80 meter capability plus extra-heavy duty construction—and you have the unrivalled new 18AVT/WB. In other words, you have quite an antenna.

- Automatic switching, five band capability is accomplished through the use of three beefed-up Hy-Q traps (featuring large diameter coils that develop an exceptionally favorable L/C ratio).
- Top loading coil.
- Across-the-band performance with just one furnished setting for each band (10 through 40).
- True 1/4 wave resonance on all bands.
- SWR of 2:1 or less at band edges.
- Radiation pattern has an outstandingly low angle whether roof top or ground mounted.

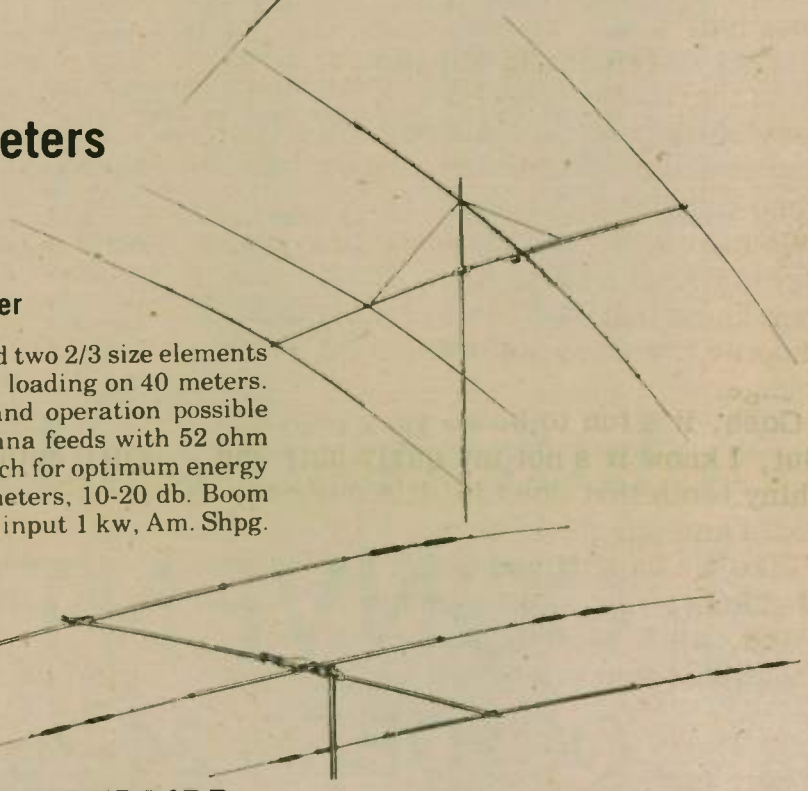
Hy-Gain
Rugged, durable

HIGH QUALITY

ANTENNA
for 20 and 40 Meters

8.1 db Gain on 20 Meters
4.9 db Gain on 40 Meters
Takes Maximum Legal Power

Uses three full-sized elements on 20 meters and two 2/3 size elements in conjunction with Hy-Gain's perfected linear loading on 40 meters. Unique linear decoupling stubs make two band operation possible without inductance and capacity traps. Antenna feeds with 52 ohm coax and is equipped with balun and Beta Match for optimum energy transfer. F/B Ratio: 20 meters, 20-30 db; 40 meters, 10-20 db. Boom length 24 ft., longest element 43 ft. Maximum input 1 kw, Am. Shpg. wt. 64 lbs.

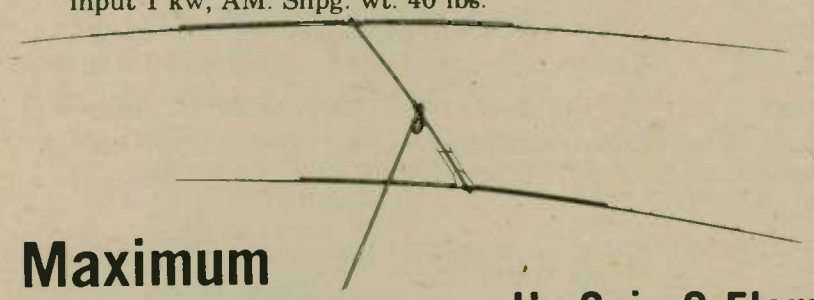


Incomparable
Hy-Gain
the world's most popular

DX on 40 Meters?

It's yours with Hy-Gain's Model 402BA

Work signals on 40 meters that you never knew existed. The Model 402BA attenuates unwanted signals off the side and back at 12 to 25 db while amplifying signals for 4.9 db minimum forward gain. Unique linear loading stub delivers maximum performance without lossey center coils. Easily stacks with tribander or 20 meter beam; requires only 10' separation. 52 ohm feed. Beta Matched. 16 ft. boom, 43 ft. elements. Maximum power input 1 kw, AM. Shpg. wt. 40 lbs.



3-Element THUNDERBIRD

New "Hy-Q" Traps Up to 8db Forward Gain 25db Front-to-Back Ratio

Delivers outstanding performance on 10, 15 and 20 meters. Separate and matched "Hy-Q" Traps for each band. Feeds with 52 ohm coax. Hy-Gain Beta Match presents tapered impedance which provides most efficient 3 band matching and provides DC ground to eliminate precipitation static resulting in maximum F/B ratio, SWR less than 2:1 at resonance on all bands. Mechanically superior construction features taper swaged slotted tubing allowing easy adjustment and permitting larger diameter where it counts. Has heavy tiltable boom to mast clamp. Shpg. Wt. 35.9 lbs. Order No. 388

Maximum Performance Beams

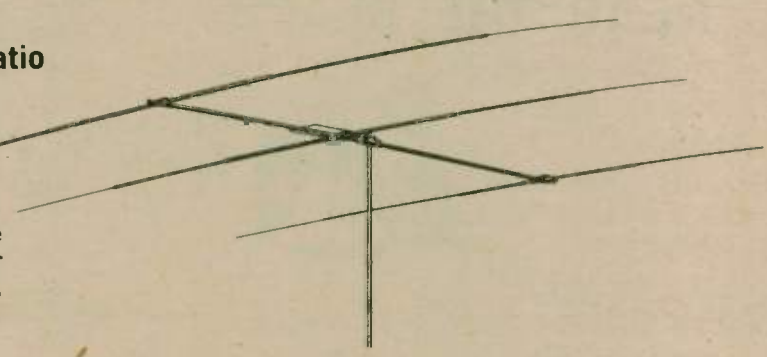
COMPLETE WITH ALL HARDWARE

Hy-Gain

Hy-Gain 3-Element 20 Meter Beam

8.5db Forward Gain 25db Front-to-Back Ratio

A full sized 20 meter mono-bander with 1¼" to 7/16" dia. elements full spaced on a 2" dia. 16' boom. Mechanically superior construction features taper swaged slotted tubing—allows easy adjustment and re-adjustment—tiltable boom-to-mast clamp. Longest element is 35'. Feeds with 52 ohm coax...factory pre-tuned with Hy-Gain's exclusive Beta Match. Wind load at 80 MPH, 78.3 lbs. Maximum power input, 1 kw, AM. Mast diameters from 1¼" to 2½". Shpg. Wt., 30.0 lbs. Surface area – 3.06 sq. ft. Order No. 226



Get Hy-Gain at M-TRON

Dear OMs and YLs:

Letters, we get letters, so we'd like to use this space to thank you for them.

It makes us happy when you thank us for getting your order to you so quickly. We're pleased to be of service to you. One guy called us the best radio store in Pennsylvania.

One we really got a kick out of was a fellow in New York who said he liked to order from us to save paying state tax in New York for as he put it, "they just give it to some welfare bum".

Oh, thanks, Rhode Island, thanks, New Hampshire, Maine and Vermont.

Thanks for connecting with us Connecticut, and guys in DC have found out we"re OK. Maryland and Delaware too. Our compass points to West Virginia and South Carolina. We see customers in Tennessee, Alabama and Mississippi. Guys in Kentucky think were just ducky. Were "in" in Indiana, Wisconsin and Iowa too.

Lots of friends in Minnesota, good folks there. Dakotas N&S, know our service is best. Kansas and Nebraska, Louisiana and Arkansas all say "aha" when they hear our name.

Colorado, Wyoming, Idaho, Arizona, Nevada, and New Mexico, in the west they know that M-TRON is a straight shooter and does not speak with forked tounge.

Gosh, it's fun to be so very popular. But, I know it's not my curly hair and shiny teeth that does it. It's our cash deals and our package deals.

Like we say, if you didn't buy it at M-TRON, you paid too much.

And, when you're out here on your vacation, stop in and see us

USED SPECIALS

Swan 350 xcvr w/ ac supply $279.95
Drake T4XB quality signal $339
Drake R4B hear 'em $339
Hallicrafter SX-100 w/ speaker $99.95
Allied AX=190 receiver $169.95
Lafayette HA-600A receiver $119.00
Heath DX-60 tops fer Novice $69.95
Galaxy GT-550 w/remote vfo, spkr, ps, was $495 now yours for $449
Drake 2NT xmtr $92.50
Drake 2NT w/Ten Tec 200 vfo, top buy for Novice special at $129
National NCX-3 xcvr, rugged at $149
SBE SB-33 neat package $179
Hallicrafters HT-44 w/ac ps $225
Heath HP-13 dc ps $49.95
Collins dc ps $49.95
Linear Systems dc mobile ps 500 $75
Linear Systems dc mobile ps 400 $65

Here's your reward for reading this far down in our ad. CDR rotators, CD-44, regular $109.95 now $89.95. And, The biggie, turn anything, Ham II, regular $159.95, at M-TRON $129.95.

RIGS RIGS RIGS RIGS

We've got the best. The entire Drake line is in stock. Go quality. You know Drake is used by military and commercial communications all over the world, so its got to be good.

Also, we have the best sounding hand-held 2-meter rig, the Drake TR-22C.

On 29 July the price of the Drake SPR4 programmable receiver is going up to $599. We have a couple left, get them now at $579 (first come first served)

ATLAS

What can we say about the Atlas that hasn't allready been said by thousands of satisfied users. Change satisfied to happy, estatic, excited. Find out why there is an Atlas "cult".

TEN-TEC

The rigs for the CW hotshots. We have the superb Triton I and Triton II . (See Worldradio Page 20, January 1975) We have their keyers, vfo, tuners, etc.

AND NOW

The new, improved famous Argonaut. Improved dial, offsett tuning, built in SWR meter, run it from a lantern battery. Ideal for campers, backpackers, QRP enthusiasts. Ten-Tec 509 at $329

Ten-Tec now has a special ammeter to observe battery drain while running their solid state gear, $14

VIRTUE SHOULD BE REWARDED

In these days of plastic and tinfoil junk, planned obsolecence and everything being recalled...our hat goes off to Bill Nye, W7DZ.

He reached into the past to bring out quality. The name of E.F. Johnson always stood for the best in ruggedly built rigs and components.

Bill got the rights to again manufacture the great "Matchbox". Then when you said "Matchbox" you were only speaking of THE Matchbox.

Under the Wm. F. Nye Co. banner the "Matchbox" has come back!

The 500W PEP model is $199 and the 2KW model is $320.

Load your antennas right.

UTC-GMT-ZULU-24 hour clocks 12 inch dial classy $24.50

KLM KLM KLM KLM KLM KLM

If you spend any time on the bands you are hearing the name KLM more and more. It's a company headed up by three real VHF enthusiasts and it shows in their products.

Amplifiers: 2M

2W in and 12W out $44.95
10W in and 70W out $129.95
10W in and 140W out $189.95

Antennas: 2M

7L $23.95 9L $34.49 11L $38.79
Baluns (specify VHF or UHF) $13.95
14L on 450 $21.55

BE HEARD FAR AND WIDE

Now, with your big beams and high power amplifiers getting you out all over you will want to sound good. And, when it comes to FM and the good sound all we can say is ICOM. Call on us for the IC-230, IC-22A and IC-30A. Don't settle for less than ICOM.

MOBILE

With vacation time here, enjoy your trip more by checking into the local repeaters as you pass through. Make new friends. Mobile-wise we have to say LARSEN. 5/8 wave either mag mount or gutter clamp $35. Highly recommended. A real performer.

MAKE YOUR OWN SUNSPOTS

With solar activity at a decline you need all the help you can get and help is here in the name of the Magnum 6 speech processer. We have them for all rigs, specify.

CW:Curtis keyers: EK-430 $124.95 and IK-440 $224.95. Also KE keyers, baluns and antennas. We have NPC 4 and 8 amp regulated power supplies. Don't forget Ringo and Ringo Ranger

Many other goodies not listed: inquire

We accept Master Charge, Bankamericard and have bank terms. Hours: Mon.-Fri. 10 a.m. to 5 p.m.-Sat.-10-4. DX ops-we ship all continents.

M-TRON

2811 Telegraph Ave. - Oakland, CA 94609

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

DX DIGEST

Gary Stilwell, W6NJU

It was a long day at Folsom Lake water skiing. This was our third day of skiing and boating over the long 4th weekend with Jerry Hagen, WA6GLD, and family. Certainly good to see old friends. But we had to rush to get back to town where we had scheduled an evening with **Worldradio News** Publisher, Armond Noble, W6AJY, and his wife, Helen. Well, as you could expect, the evening was filled with lots of talk on Amateur Radio and DX. Armond was quick to bring up Mt. Athos and then reminded me that it was that time again — publish in three days and we need a column. So, with Mt. Athos to head the news we'll get with it.

Mt. Athos

SV1GA and group seem to be ready to leave Athens on 19 July and be on the air on 20 July. Operation is planned for one week and hopefully ol sol will look with favor on those in the West.

Burma

Robin Maule, 9V1RR, will be in Burma and has made application to operate. If all goes well he may be heard around 7 July. Plans are to be active from 1200Z to 1500Z.

Canton/Phoenix

Mike Berkwit, KH6GKD, will be operating from Canton/Phoenix starting 9 July and he will be there through 24 July in connection with the forthcoming Apollo/Soyuz space mission. From Phoenix he will sign VR1PE and from Canton, KH6GKD/KB6. Planned operating frequencies are:

3810	listening on own frequency when possible
7090	listening 7200 and up as announced
14.205	transceive — will split to 14.195 if QRM develops and will advise listening frequency
21.280	transceive
28.600	transceive

Mike also plans to operate or listen below 3800 for those DX stations which are unable to make it up into the American phone band. qsl to Mike's home QTH, Mike Berkwit, 92-574 Akaula Street, Ewa Beach, HI 96706.

St. Martin/Anguilla

Doc Evans, W2BBK, will be on St. Martin signing PJ8AA from 6-20 August and will go to Anguilla to sign VP2ES sometime during that period. Frequencies and times to watch are:

3805 or 3530	From 0200Z
7030	2000Z to 0200Z
14.280 or 21.355	1400Z to 1800Z

Palmyra

KH6EVM/KP6 continues to operate from Palmyra. He is on a construction project and indications are that he will be around for a number of months yet.

Rodriguez

Operation by 3B8DL has been delayed due to transportation problems. Current plans call for an early July operation. Keep watching.

Indian Ocean

FR7BE is on Reunion, FR7AI is on Europa, FR7ZQ is on Glorioso, FR7ZL is on Tromelin and FR7ZU is on Juan de Nova. Only FR7BE appears to be very active.

San Marino

M1D has been regular in his habits around 14.240 or 14.300 from 0930Z. Also M1C is often found on forty or eighty after 2100Z.

Here and There

ZK1MA and ZK1CY QSLs to to W6KNH.

OE5CA/YK hopes to be active through September. Watch 21295 and 14295. QSL to OE5REB.

Bob Lusk, YJ8BL, has ended his assignment in New Hebride's and has headed back home to New Zealand. Bob will be signing ZL1BBF from Titarangi. Logs for all YJ8BL through June are now at hand at W6NJU.

Fred Carter, 3D2CC, has left Fiji and is headed for Queensland, Australia. QSL's for Fred go to VE6AKV.

DXCC

Those DXCC fees previously announced to be effective 1 June 1975 have been superseded by a total schedule of ARRL operating award fees and will take place now on 15 July 1975.

Effective 1 July 1975 AC3 (Sikkim) and Blenheim Reef became deletions on the ARRL Countries List. The deletion of Sikkim was made in view of Sikkim having become a part of India. Contacts made with Sikkim on or after 1 May 1975 will be credited towards India. The deletion of Blenheim Reef was made in view of recent information indicating Blenheim comes under the administrative jurisdiction of the British India Ocean Territory. Contacts made with Blenheim Reef July 1, 1975 or after will be credited towards Chagos.

The special plaque for attaining Number 1 spot in the DXCC Honor Roll is now available at a cost of $25. You must submit the month and year your listing appeared in QST showing your call in the top position with your application.

Congratulations to those CW brethern who have now obtained the new CW DXCC Award. In order they are: No. 1, Jesse Bieberman, W3KT; No. 2, George Hitz, W1DAL; No. 3, Alan Emerald, K6GA; No. 4, Robert Locher, W9KNI; No. 5, Otto Miller, W6PT; No. 6, Austin Regal, K4YFQ and No. 7, Edward Meade, K1AGB. Quite an accomplishment fellows.

Don't forget to let the DX Advisory Committee know your thoughts on eliminating the no cross mode provision of the Five Band DXCC Award.

New Award

The Northern California DX Club has announced that it will offer a special "California Bi-Centennial Award" during 1976. This Award will be available to all licensed amateurs outside of the contiguous 48 States of the U.S.A. The Award will be offered upon receipt of proof of contact with seventy-six (76) California stations plus thirteen (13) contacts with Northern California DX Club member stations, a total of 89 QSOs. Contacts for this Award may also be used for credit towards the NCDXC's "California Award". Full details of rules and procedures for the "California Bi-Centennial Award" will be announced later. Jim Ruys, W6UZX, will be the Award Manager.

DX meetings

If you like DX meetings and conventions there appears to be one coming up for you:

24-26 October will be the Southwestern Division Convention at the Holiday Inn (by the sea and on the beach) in Ventura, California. The Southern California DX Club will be sponsoring a DX Breakfast on the 26th. Contact Hamcon, P.O. Box 5131, Ventura CA 93003 for further information. (See ad on page 19.)

The New England DX Meeting will be held at the Holiday Inn at Waltham, MA on Saturday, 4 October. Tony Berg, W1VAH, is the Chairman.

The National Capitol DX Association will provide plenty of DX at the ARRL National Convention which will be held in Reston, Virginia, 12-14 September. Contact Registration Chairman, Box 682, McLean, VA 22101.

The Fifth SEANET Convention will be held in Kuala Lumpur, 7-9 November. To commemorate the SEANET Convention MARTS will sponsor a contest on 30-31 August which also marks the Independence Day of the host nation for this year's convention, Malaysia. The contest will run the full two days with a number of

tegories. Full details on the ntest can be obtained from M2FK who is the same person whom the logs will go.

X Club doings

New officers of the San Diego X Club are Al Olsen, K6PO, resident; Glenn Means, W6AQ, ice-President; and John Bender, V6ABT, Secretary. Dick Shanks, V6BZE, continues to be the man give your meeting information. good group down there and a al pleasure to attend their June eeting by your editor.

New officers of the Northern alifornia DX Club are Bill ohnson, W6MUR, President; rman Meyer, K6QX, Vice-resident; Dave Palmer, W6PHF, ecretary; and Howard Hale, V6SC, Treasurer.

Where did your QSL card go?

The following is reprinted from he Southern California DX Club ulletin courtesy of Dick Norton, V6DGH.

Dick made a trip to the W6 QSL ureau and, in addition to elieving the Bureau of several SLs addressed for W6DGH, took ome some cards with similar cells ith the provision that, "If they on't belong to me I'll return hem."

The following were found to be natching entries in the W6DGH ontest logs!

Number	Call	Mode
15	W6DJH	Phone
5	WB6DGH	Phone
2	WA6DGH	CW
1	WB6DGR	Phone
27	W6DGS	CW
8	WA6DGH	Phone
1	W6DGR	CW
1	W6DGX	
1	K6DGH	

Total number of cards matched with log: 61.

Many of the cards were quite old and were obviously in the Bureau for many years. Were all similar calls really for W6DGH? No. Seems WB6DJH and WA6DGX were actually responsible for the cards addressed to them. The large number of errors was disappointing to Dick, since all kinds of efforts are made to insure accurate call transmission, such as never signing without phonetics on phone. Also, "You have my call wrong," is specifically stated whenever they come back to W6DJH or W6GDH, which unfortunately happens once each 10 or 20 QSOs.

Dick's experience in checking contest logs the last three years for **CQ** Magazine has revealed that there are vast differences in operator skills and diligence when it comes to logging call signs. However, one might think those planning on sending QSLs would be at the top of the accuracy list.

The point to be made is that people operating parts of a Bureau might benefit by thinking of simple logging errors that might be made on stations working large amounts of DX, especially contesters. Then if it can be verified that the suspected call owner will check to see if the cards are his, send them on a trial basis. Discretion is advised. It's somewhat unfair to send similar call cards to someone who won't check them and consequently preventing their eventual delivery to the station worked.

QSL information

This is for W6AJY (and any others) who asked us to find it: QSL VP5B to WB4EYX. (Ed note: Thanks, Gary. How 'bout 5U7BA?)

We'll wrap up the ITU calls that were not included in June.

KE1	W1DAL	KG4	WA4HPF
KZ1	W1MIJ	KG4	W4IGO
KD2	WB2YQH	WW4	W4KM
KS2	W2AJR	KI5	K5PFL
KW2	WA2TZN	KJ5	W5TMN
WC2	WB2EQE	KX6	KB6AGP
WZ2	WB2HDK	KD7	W7ZC
KA3	WA3NDL	KY7	WA7GWU
KX3	WA2HCW	KT9	WB9OMZ
KZ3	W3FU	KWØ	WØCKC
WX3	K3BNS		

CQ DX Editor retires

Due to military and educational commitments Jerry Hagen, WA6GLD, will be leaving **CQ** Magazine as DX Editor and Awards Manager. The Editorship will return to John Attaway, K4IIF.

Jerry has been DX Editor the past 1½ years and has handled the WPX program for 5 years. Before that Jerry was Editor of the Southern California DX Club Bulletin for 4 years. That's a long string of involvement. Best wishes to Jerry and congratulations on jobs well done.

International Goodwill?

We've heard a lot lately about the upcoming ITU Conference in 1979. In an effort to enhance international goodwill the FCC the past two years has issued special ITU prefixs during the May ITU week. Over 100 special calls have been issued in each of the previous two years. Each participant is asked to submit a report of his operations to the FCC. It appears that many participants are hard put to report any goodwill accomplishments or benefits from his operation other than to run up so many QSOs — supposedly a measure of the benefits.

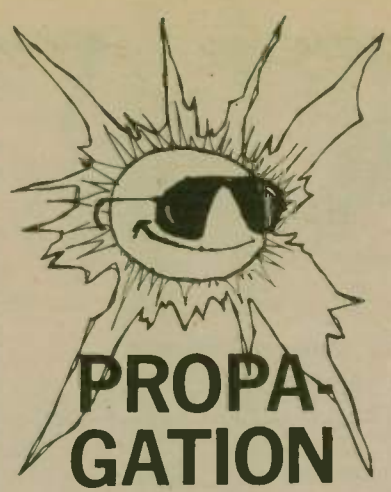
Many participants in the past have failed to even submit a report to the FCC. This year appears no different with several reports still outstanding. No wonder the FCC may question the benefit of such a project.

But even more disturbing, especially in the goodwill department are those stations active in ITU week who work a great number of foreign amateurs and then fail to QSL. Last year someone on the East Coast accepted the QSL chores for several ITU stations and now a year later has failed to confirm a great many of the contacts. Even an ARRL staffer who was very active has failed to send out QSL cards. What ever happened to the old quote, "the final courtesy of a QSO is to QSL?" In a time when many think we must put our best foot forward to make friends and enhance our international image it appears a small number can undo the good the majority is trying to accomplish.

Many thanks for information and input go to the *Geoff Watts Newsheet*, *West Coast DX Bulletin*, *QSL Managers Directory* and the *Southern California DX Club*.

•

Nevada Amateur Radio Association will host the annual "Sierra" Hamfest, August 9th, at the California Building, Idlewild Park, Reno, Nevada. Pre-registration, $10. For information contact NARA, P.O. Box 2534, Reno, Nevada.



August 1975

Maximum Usable Frequency from Burbank, CA

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

AUGUST 1975

UT	AFRI	ASIA	EURO	SOAM	SPAC
01	8.3	17.8	10.0	16.7	20.6
02	7.0	18.4	9.6	16.6	20.5
03	7.6	18.0	9.8	15.4	20.5
04	11.4	17.9	10.6	13.9	20.6
05	11.1	18.0	11.5	13.1	19.9
06	9.7	16.2	11.8	12.2	18.2
07	8.2	14.0	10.8	10.4	16.1
08	7.7	14.3	9.9	9.1	14.6
09	7.1	13.3	9.2	10.4	13.4
10	7.2	12.1	9.0	11.9	12.4
11	7.9	10.9	9.9	11.3	12.0
12	9.3	10.1	11.1	12.1	12.3
13	11.1	10.4	13.1	14.6	11.4
14	12.7	12.1	15.3	16.7	12.2
15	13.6	12.4	16.7	17.1	13.0
16	12.9	11.5	16.5	16.7	12.8
17	13.1	11.3	16.3	17.1	11.6
18	13.4	12.0	16.6	18.8	10.4
19	13.5	13.5	17.0	20.7	10.9
20	14.1	15.6	17.0	22.1	13.6
21	12.7	17.6	15.9	23.0	16.6
22	10.7	18.6	14.2	21.7	18.6
23	10.0	18.4	11.8	18.9	19.7
24	9.3	17.9	10.8	17.0	20.4

REPEATERS

Florida Repeater Council develops major new policies

Howard Kelley, K4DSN

Reducing Florida repeater spacings from a mandatory 150 miles to 100 miles separation and establishing guidelines for base stations usage of repeaters were among several new policies agreed on by delegates to the Florida Repeater Council. The work was the result of four Task Force Committees assigned to work out solutions to areas of major concern and controversy within the Council. The entire Council voted on the Committee work when it met in Jacksonville in late March.

Repeater Spacing: For more than a year this issue has been a point of controversy. Florida originally used a 75 mile spacing rule for the assignment of new co-channel repeaters. However, in 1974 FRC delegates voted to double the separation requirements. And, this has been a point of contention ever since.

Now the FRC separation rule sets a minimum assigned spacing of 100 miles, but instructs the Frequency Coordinator to attempt to provide greater separations if possible. Established repeaters with high user activity may ask the Frequency Coordinator and or repeater council for additional mileage protection whenever a new repeater assignment is considered.

Base station use of repeaters: The FRC recognizes that repeaters are essentially mobile relay devices and, secondarily, available for use by base stations. Experience has shown that mobiles (with the exception of aeronautical mobiles) seldom cause interference problems between co-channel repeaters. Most co-channel interference is the result of higher powered base stations.

For this reason FRC delegates voted recommended guidelines for base station use of repeaters which the delegates are hopeful will be adopted by individual repeater operators.

The policy agreed on this. . . "Repeaters shall be open to land mobiles and to base stations that restrict their field strength to approximate that of a land mobile station. Base stations who are unable to access a repeater under this criterion may access a repeater if adequate steps are taken to prevent accessing other co-channel repeaters."

Additionally, repeater operators are being asked to voluntarily endorse a policy regarding aeronautical mobile use of repeaters. The FRC passed the following policy guidelines: "Aeronautical mobiles are restricted from using a repeater except for emergencies or as a calling channel."

Tertiary channels: At the March meeting, FRC delegates agreed to support the ARRL Band Plan in regards to 15 kHz split-split frequency assignments. After considering the Mount Wilson invert-plan, the members voted to reject it.

The Tertiary Channel Task Force Committee recommended and received approval for a 50 mile separation rule between adjacent channel assignments.

Arbitration: A committee assigned to recommend a method to handle the arbitration between parties in an interference controversy received approval of a major new plan. Essentially, a two stage system was developed. In the first stage, the Frequency Coordinator will appoint an investigation committee to look into the matter and recommend a solution. If the recommendation isn't agreeable, then a five-member Negotiating Committee will hold an open hearing at an FRC meeting to determine the facts and recommend a solution.

The FRC Frequency Coordinator has been instructed by the membership to withdraw all frequency recommendations that are more than a year old that have not been activated or received licenses.

The Council will meet again in June at the Orlando Hamfest.

•

Plans continue for direct amateur to sheriff link

The Illinois Repeater Council and the Cook County Sheriff's Police are studying the possibility of a direct link between the two-meter FM band and the Sheriff's Police.

The IRC Sub-Committee's approach is to set up the County on a simplex channel, with a single tone squelch on their receiver. A mobile needing assistance anywhere in the county could QSY to this frequency, "whistle open" the county receiver, and call the police. The police dispatcher would then, hopefully, be able to speak back to the amateur, using a special authorization obtained from the Federal Communications Commission for the Sheriff's Police.

The IRC wants to know your reaction to this proposal. Would you use it? What frequency do you recommend? The following suggestions for a frequency have been made:

146.46	147.48
146.55	147.54
147.42	147.57

All interested amateurs please respond as soon as possible:

Rich Casey, WA9LRI
IRC Emergency Communications Sub-Committee
2120 S. Goebbert, Apt. 203
Arlington Heights, IL 60005
day--540-2403
evenings--593-7774

•

North Carolina

Asheville	WR4ALC	146.04	146.64	C
Asheville	WR4AKR	146.16	146.76	C
Asheville	WR4AGF	146.22	146.82	C
Aurora	WR4ABQ	146.34	146.94	C
Beulaville	WR4ADS	146.34	146.94	C
Burlington	WR4AIF	146.07	146.67	C
Burlington	WR4AKY	147.78	147.18	P
Charlotte	WR4AEU	146.34	146.94	CA
Charlotte	WR4ALO	146.46	147.06	C
Charlotte	WR4ABT	146.22	146.82	C
Charlotte	WR4ABK	147.78	147.18	U
Durham	WR4AGC	146.22	146.82	CA
Durham	WR4AJY	146.34	146.94	A
Durham	WR4AJV	147.75	147.15	C
Elizabeth City	WR4ADN	146.46	147.06	CA
Fairview	WR4AJX	147.24	147.90	
Fayetteville	WR4ADK	146.31	146.91	C
Forest City	WR4AHA	146.07	146.67	C
Franklin	WR4ALD	147.84	147.24	CU
Greensboro	WR4	146.16	146.76	CO
Greensboro	*WR4ABL	147.72	147.12	
Greenville	WR4AMB	147.69	147.09	C
Grifton	WR4ABP	146.16	146.76	C
High Point	WR4ADT	146.40	147.00	
High Point	WR4AFV	146.19	146.79	C
Jacksonville	WR4AJG	146.40	147.00	CU
Lake Toxaway	WR4AGH	147.81	147.21	P
Laurinburg	WR4AIB	146.07	146.67	C
Lenoir	WR4ACM	146.25	146.85	C
Lexington	WR4ABX	146.31	146.91	CA
Manteo	WR4AKB	146.34	146.94	C
Morganton	WR4	147.75	147.15	U
Mt. Airy	WR4ACJ	146.37	146.97	C
Murfreesboro	WR4AFB	146.31	146.91	CA
Raleigh	WR4ACF	146.04	146.64	C
Raleigh	K4ITL	146.28	146.88	CA
Reidsville	WR4ADE	146.25	146.85	C
Roaring Gap	WR4AGS	146.22	146.82	C
Salisbury	WR4AAA	146.13	146.73	CA
Seven Springs	WR4AEF	146.25	146.85	C
Shelby	WR4ABF	146.28	146.88	C
Smithfield	WR4ALY	146.43	147.03	CU
Wilmington	WR4AHL	146.22	146.82	C
Winston Salem	WR4ACA	146.04	146.64	CA
Asheville	WR4ALC	52.01	53.99	CU
Lenoir	WR4	52.78	52.525	P
Salis/Mocksvle	WR4	52.76	52.525	P
Asheville	WR4AKR	222.34	223.94	C
Durham	WR4AGC	222.34	223.94	C
Asheville	WR4AKR	449.90	444.90	CU
Charlotte	WR4AEI	450 Private		
Charlotte	WR4	449.10	444.10	P
Durham	WR4AGC	449.10	444.10	CA

C CVRA Member U Under Construction
A Autopatch P Proposed
T Tone Access O Off air temporarily
* Temporary Call

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MM

(*continued from page 28*)

Generally large size carrots of pure silicon are formed under exacting conditions. From here they are doped accordingly and eventually find their way into cell arrays, that is, the ones that don't break or develop imperfections. More recently Tyco laboratories has developed a technique for making ribbon-like slabs of Si in a much faster time. Such a process promises to bring the price down substantially.

The greatest development to handle the efficiency problem has come from Varian which claims to have a cell which can produce 10 watts from a diameter of ⅓ inch! While I don't have all the details on this development the possibilities are outstanding. With just a few square inches of deck space you could almost propel your boat with electricity. If these cells come across according to the claim you are going to be hearing more MM calls on the air. Imagine the possibilities (rag-chews and contests) as you surge along under full sail bound for Pango-Pango. As the tune "You Are My Sunshine" dwells in the background, I close another discussion.

I appreciate the letters in support of emergency frequency designation. Hopefully our service will have its own 2182 before the campaign is over. Keep the sea stories coming.

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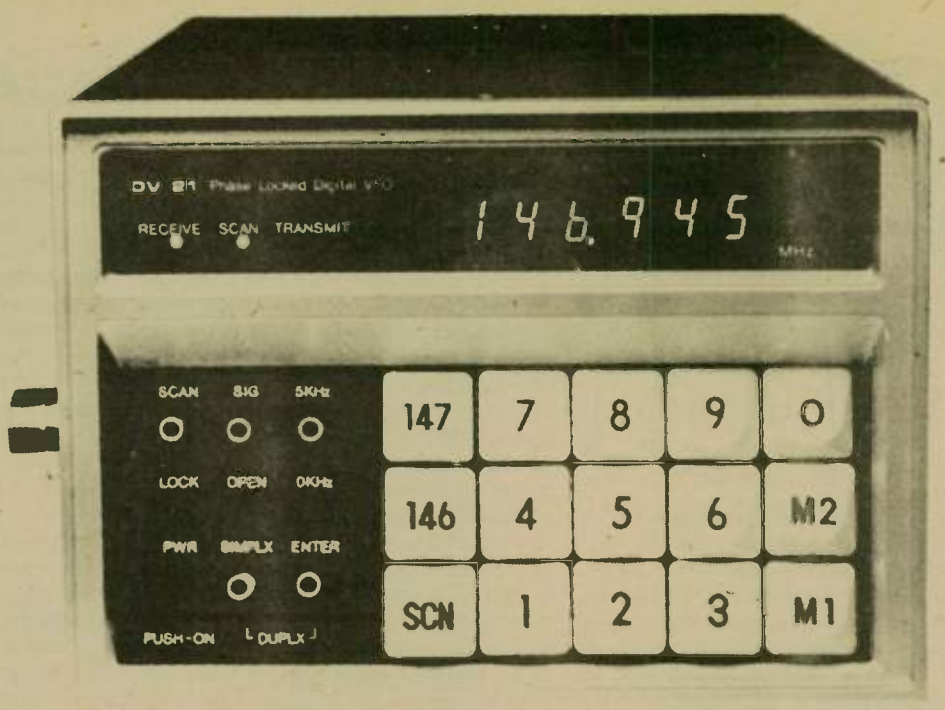
(Phase Locked Digital VFO)



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617 Washingtonia
San Marcos, CA 92069

TELEVISION

Dave Ingram, K4TWJ

Greetings and salutations!

As you probably heard, our good friend Bill DeWitt, W2DD, recently moved to **CQ Magazine**. So, with your assistance, and barring unforseen circumstances, I plan to continue the SSTV column here in **Worldradio**.

As you may know, I previously wrote the SSTV column for **73 Magazine** and I have just finished an extensive book, "Slow Scan TV for Amateurs", which should be released this winter by Tab Publishing Company. Speaking from a totally unbiased standpoint, I can truthfully say there are some revolutionary innovations forthcoming which should prove SSTV the most exciting mode of communication today. This column is not intended to be a one-sided affair so let me hear from you regarding your SSTV activity, and don't forget to include a photo or two. If you are interested in co-authoring this column with me, that might be arranged also.

It's really happening. Yes, technical innovations in SSTV are surpassing all previous expectations. Here in 1975, the 50th Anniversary of Television, Slow Scan is booming with advancements that would make our technical minded ancestors stagger with disbelief. We are now able to scan convert on both ends of an SSTV QSO, exchange Color SSTV and view the resultant pictures on an ordinary color TV, exchange 3-D SSTV pictures, title SSTV pictures with SSTV keyboards, and much, much more. One SSTVer even has a small computer interfaced with his SSTV setup.

The basic key to these innovations can be summed up in two words: Digital Electronics. Digitalized systems, with their variable speed clocks and memories, are revolutionizing visual communication. Simply stated, digitalizing means that Slow Scan picture information is converted into 120 lines vertical by 120 lines horizontal, or approximately 14,400 tiny picture elements. These elements can then be "played with" in various and sundry ways: convert scanning rates to anything you like, change them around, slowly store three groups then output all of them simultaneously, even place "no element" or "element" conditions anywhere in a picture. The possibilities of SSTV designs utilizing these techniques is limited only by one's imagination.

Maybe I am beginning to stir your interest so let's retrack briefly and discuss two of the latest of these SSTV innovations.

Color SSTV was initally performed by converting pictures into their three primary equivalents, sequentially transmitting these, then photographing the received pictures using color film to reconstruct the full color picture. Now color SSTV can be displayed on your unmodified home color TV. One method of accomplishing this involves storing the three primary color pictures then simultaneously outputting them to the color set. The other method is a Slow Scan equivalent of the present commercial (Fast Scan) system: a quadature modulated subcarrier containing only color information is transmitted on 500 Hz while the black and white SSTV picture is transmitted on 1500 to 2300 Hz. Not only does this method allow those SSTVers with regular units to receive the black and white picture, but those equipped with color units receive a perfect color picture every eight seconds. If that is not wild enough then visualize storing and viewing the color pictures while incoming (refresh) SSTV contains only the difference between each picture, or the movement. Yes, motion SSTV is also under development!

3-D SSTV is produced by separating two cameras by approximately four inches while using a red filter on one and a green filter on the other. This slightly separates the images in each picture, similar to what you may have seen in the old 3-D comic books. These resulting pictures are transmitted and the receiving station views them through glasses containing a red filter for one eye and a green filter for the other eye. Although I am not an avid reader of the **National Lampoon Magazine**, their July '75 issue included some 3-D pictures and viewing glasses which are ideal for illustrating this technique.

I hope you are not getting a preconceived opinion that SSTV work is all technical. Indeed, the real enjoyment in SSTV is operating — in viewing pictures from around the world and in sharing our lives and interests with others. If your interest is operating rather than building, fine! That's what's necessary to make a new mode acceptable, and I think you will find SSTV more exciting than any other mode of Amateur Radio. If you're not operating SSTV yet and would like more information or assistance in getting started, contact me or any of the SSTV gang that meets each Saturday at 1800 GMT on 14.230 MHz. We'll be "looking" for you.

Worldradio . . . four years old

Worldradio has completed four years of publishing. Our freshman year was rather lean, our sophomore year was sophomoric, our junior year was chaotic and we matured in our senior year.

Now that we have finished our first four years we feel that by the time we get our Masters and Doctorate in publishing we may be putting out a newspaper that the kind of people who subscribe to it deserve.

A few months ago we attended the Burbank Hamfest, again were struck with the warmth of the people who came up to our booth to talk.

It is indeed touching when the mature and responsible come up to our display and in a most articulate way tell us why they like this newspaper.

The letters from other parts of the country (and we plan on getting to more conventions in the East so we can meet the rest of you in person) are a constant source of inspiration.

Especially gratifying are the letters from countries in which English is not their native language. We're very happy with the many friends this paper has in West Germany and the Scandinavian countries.

As we have another anniversary I would like to thank all of you for being so nice. Here, we think of all of you as friends, because you are.

As an objective observer we must say the reason you like this paper is because it displays the endeavors of other good people like yourself.

We are proud, and humbled, by the level of readers. Their achievements have come to them because of their awareness and their ability to relate. We're a bit taken back by the level of business and professional readership of this publication. Once my wife looked at the computer printout of subscribers and said, "What is this, an Amateur Radio paper or the AMA Journal?"

Maybe we had better start "Worldradio University" so all our Ph.D.'s will have a place when they are retired from their present employ.

We at **Worldradio** thank you. We thank you for many things. First, we thank you for helping us pay the bills for producing the newspaper. About half the renewals of subscriptions are for three years. Thank you for your faith and your vote of confidence.

We thank you for buying from our advertisers. It was particularly gratifying when two advertisers wrote in recently to tell us that their ads in **Worldradio** pulled more orders than their ads in another publication. The other one claims seven times the distribution we have and it's the only magazine that refused to accept our advertisement for this newspaper.

Four years. We started out printing 2,000 copies and now we are printing 11,600 and those were pretty scrawny issues at the beginning. Thanks for sharing in the struggle. Just about all of our early friends are still with us.

In the next few months you will see even more improvement in your paper. We are lining up new columns and news sources. The real joy here for us, as opposed to our previous employment in the news media, is the interplay between the paper and its readers, who are its writers. Your enthusiasm gives us a great reward. I thank you for giving me the personal satisfaction of being able to work on your behalf.

Speaking of enthusiasm, we'd like to take this opportunity to introduce the enthusiastic Linda Rutledge. Linda is the wife of Craig Rutledge, WB6KTR, and will soon be heard on the air with her own call. She is the reason there are a lot less typographical errors in the paper and more letters are answered. She's just a little dynamo. And she's responsible for the paper being a bit more gramatically correct. (Considering all the college professors that read this paper we try not to jangle them too much, hihi.)

Right now our small staff is responsible for putting out the equivalent (since our page is three times bigger) of a 120 page magazine. That's because of the commitment they have towards the paper. We're quite lucky to have who we have. We want to add one more staffer and he or she will have to be on his toes to keep up with the gung-ho group we have here.

Yes, we'd like to thank you, most of all for letting us be a part of your spirit. We've learned a great deal from you. We see the "**Worldradio** person" as one of open-mindedness, looking for new ideas and new challenges. Having met or heard from so many of you, and seeing who you are, all we can say is that we are proud to be in your company.

We've always thought of the mission of this paper not just to put things down on paper but to be a spirit, one that would hopefully instruct and inspire. You've done a good job, not only in what you've been doing, but that you have taken the time to send in your stories and pictures.

You make international friendship a reality, you pitch in and assist during an emergency, you help your community in public

(*please turn to page 39*)

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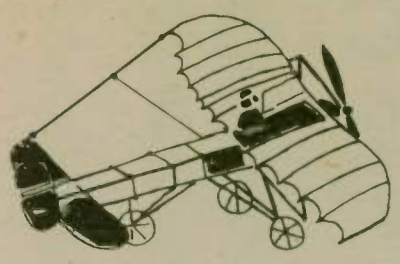
AERONAUTICAL MOBILE

Vern Weiss, WA9VLK



Taking a calculated risk

As Aeronautical Mobile stated a few months ago, the FAA has doubts about the safety of pocket calculators when used aboard air craft.

In fact, so serious are their doubts that they have ruled the use of pocket calculators illegal aboard all commercial and IFR flights.

This prohibition comes under the Federal Aviation Regulation, 91.19, "Electronic Devices." The matter is treated the same as taking one's two-meter rig aboard a scheduled or non-scheduled air carrier or even a plain old instrument flight.

The Administration has found that the calculators emit interference to the low end of the radio spectrum, more specifically the 200 to 400 kHz band. Even this author has performed the experiment of dancing fingers across the keyboard while listening to the aircraft ADF receiver, and there is some needle fluctuation...not much...but some. Here, like we so often do these days, we see a case of people slightly over-reacting to a situation. I am certain that some rather controlled conditions would have to prevail to make the use of a portable calculator a real risk to IFR navigation; but why chance it?

As regular readers no doubt can see, I am quite an SWL nut. I'm into all the dying arts...old ham rigs, biplanes and shortwave listening. It doesn't seem to me that newcomers want to dally-around with SWLing these days as much as they did when I plunged both feet into it in 1962. Hooking a longwire to an 'ol Hallicrafters is great fun...but taking a Heathkit GR-78 up to 10,000 feet is sheer ecstasy.

Periodically I mention various utility service frequencies of aviation interests for those tired of listening to local repeaters over-IDing and hello-goodbye QSOs. If you are really interested in tuning in some juicy stuff, read underneath the plain, brown wrapper.

The plain, brown wrapper.

A new little feature of *Aeronautical Mobile*, "The Plain, Brown Wrapper" is, each month, going to bring to light some product discovery that is so hot... soooo hot...that you should feel guilty about reading this column.

A fellow amateur radio operator, aviation enthusiast and gentleman named Bob Grove has contributed enough to the shortwave listening avocation that he could be titled "'professional SWL". Bob, who holds the call sign WA4PYQ (once W8JHD back in Cleveland), has compiled and published a super aid to SWLs listing thousands and thousands of non-broadcast, non-amateur radio stations, times, and frequencies heard in the shortwave radio spectrum. A good portion of these are aviation-related utility stations. The book, entitled **Confidential Frequency List**, is on a par second only to the Official ITU Frequency lists, and comparing the book's $3.95 price tag to the ITU's $300 plus figure, it's quite a bargain. A lot of work has gone into the compilation of this guide. Its contents include all VOLMET stations, CAP stations, Military stations, Aeronautical Enroute Voice Networks, Weather forecast stations, and Hurricane Hunters, to name just a few.

Now there is a catch, however. The Second Edition (most recent) is out of print. A few...very few...copies are still available from the author for $4.00. Bob is finishing up a Third Edition due to be off the publisher's presses (Gilfer Associates) by late summer. I understand the new edition will be greatly expanded and, truthfully, I cannot see how this could be done! In any case, I have a check waiting to go when it comes out. Again, if you'd like to try to obtain a copy, write Bob at 6601 SW 56th Street, Davie, FL 33314. I hope we'll be hearing lots from WA4PYQ from now on.

Word comes from Richard Bohls, KØAVH, of Kansas City, MO that his homebuilt Evans VP-2 is completed and licensed. Richard, who is Sales Manager for Midland International's Communications Division, plans flying N300RB (get it?...R.B....?) to Oshkosh this year since his 75 hours should be flown-off by then. Hey, Dick, fly'er up to Kankakee and I'll make sure that time is flown off in short order! KØAVH also plans airmobiling to Oshkosh in his merry Evans, probably with the excellent, but unfortunately no-longer-produced, Midland 13-520 handi-talkie. Keep your eyes open for a Fleet Biplane at Oshkosh with a two-meter whip aft the pilot's seat, Richard, and I'll watch for the VP-2 with the crowd around it. Write often.

This author (term used loosely), as he's known to frequently do, was visiting the airport shack of Delbert Koerner, W9NKR, last night. W9NKR has owned and run the Kankakee Airport, a friendly sod field graced with Stearmans, Fokkers and Stinsons, for nearly 50 years. With the sun just beyond the stretches of runway 27, the Koerner hangar came alive with the jabber of his Signal One on 20-meters. As we listened our interest grew for we were hearing the voice of Donald Wade, WB6WEI, an air traffic controller in the L.A. area. He was in contact with an aeronautical mobile over Region 2 on its way to Hawaii. The aeronautical mobile wasn't a Cessna or a Bonanza, but it was a Boeing Seven Hundred and Twenty-Seven. It seems that WB6WEI maintains a TR-4 beneath the control tower cab, and after he had just handed the 727 flight off to enroute control he went on dinner break and continued to work the unidentified amateur flying the airliner until he was ready to let down. The thought of the following hand-off comes to mind: "Ahhh, Flyways 727, contact center on one-niner-eight and after things are in order, please slip up to one-fower-two-niner-zero for enroute ragchew."

This month the mailbag provided a short note from Cleve-

(*please turn to page 38*)

MARITIME MOBILE

Bill Yost, WA6PIU

Power at sea

With the impending inconvenience of energy depletion on land one might wonder how people (especially radio types) make it at sea many miles from commercial power mains.

It is obvious, of course, that the maritime shipping fleets don't hunger for electrical energy. My reference here is to the small boat at sea — the sailor who has created his own small ecosystem within the vast, two dimentional universe of the restless ocean. Here he must rely solely on battery power, kerosene lamps and wind. As an amateur his innovative ingenuity is highly taxed to provide time on the air within his limited energy environment. He must look beyond the 120 ac wall plug and beyond the kw generators. In essence he puts himself in the future — a time of energy destitution. He realizes he must conserve. He looks to the very latest in technology not only to help him conserve energy, but also to generate it. As an end result we find our amateur at sea not as a suffering endurance run specimen, but as one who lives with the satisfaction and contentment of complete independence. His time on the air is limited but the uniqueness of his situation gives that time a special feeling which carries him through his sailing day.

In looking at the small sailboat Amateur Radio installation there will undoubtedly be a substantial battery bank associated with the equipment. Energy storage is a prime requirement. While nicads are definitely superior, the cost for higher capacity requirements is prohibitive. The old lead-acid cell, as unsanitary as they are, continue to be the mainstay of electrical storage. Some recent lead-acid developments have resulted in higher capacity per volume battery and sealed cases requiring no periodic water. The low efficiency, weight, bulk, corrosion, and low life, however, are still part of the lead-acid syndrome.

The greatest innovation in battery charging came with the alternator. Besides eliminating moisture problems with brushes and commutators, the efficiency was greatly enhanced. It was no longer necessary to run the auxiliary engine at high speed to charge the batteries. An ordinary idle speed for a short time gives sufficient charging current. While alternator development was great for the coastal sailor, we still have our man offshore who perhaps can not carry sufficient fuel to maintain his battery charge.

Wind and sun, those terribly neglected power sources, thus become more than warmth and propulsion. Wind generators, rotating propeller shafts, and solar cell arrays are all finding their way aboard.

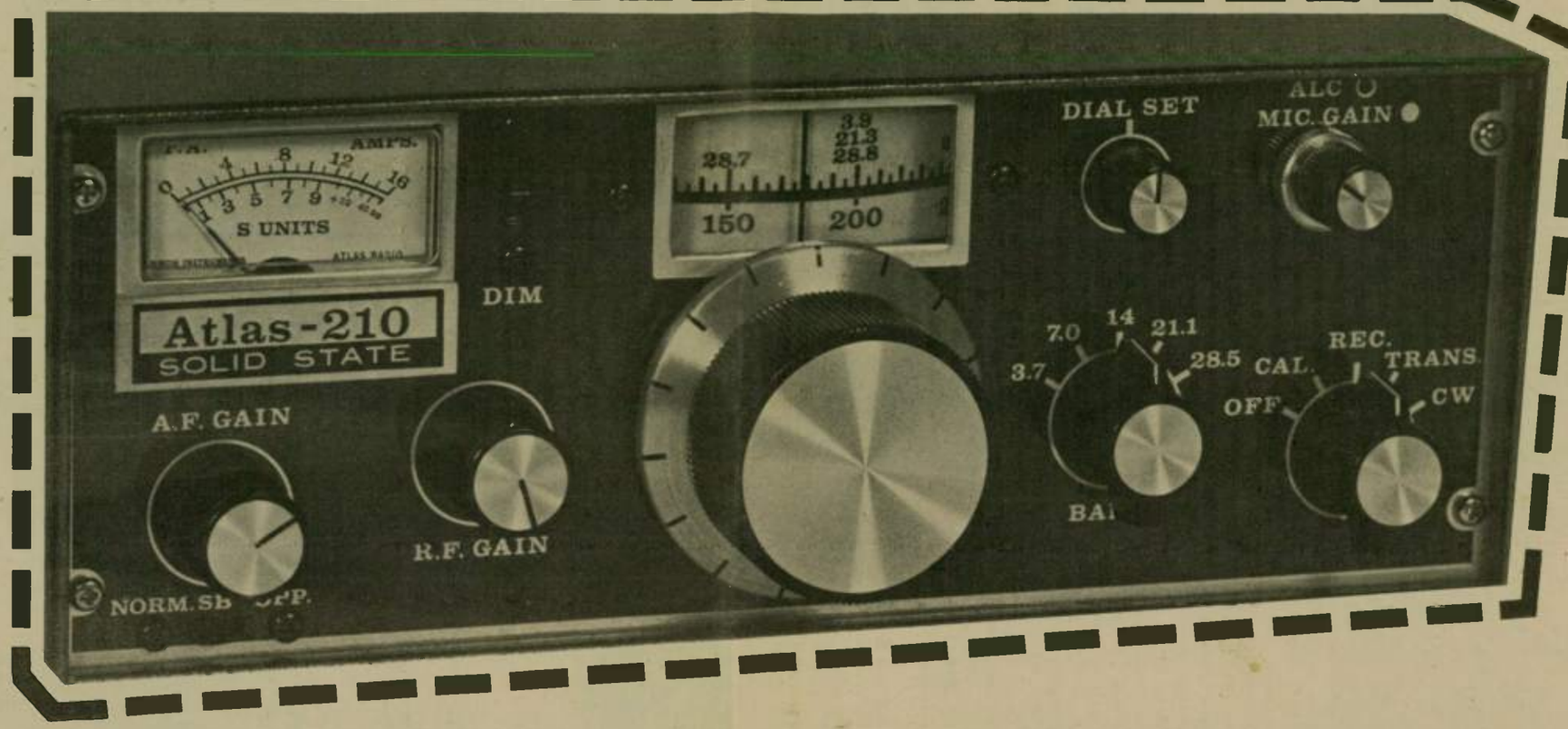
On larger sailing craft the propeller shaft will turn while underway under sail. By disconnecting the shaft from the engine gearbox, power can be coupled to a small alternator. While sufficient speed must be maintained to provide charging current, this method has proved satisfactory for larger boats during tradewind sailing.

Windmill generators, while effective, are fairly awkward on smaller vessels. The rolling motion, the rotating blades, and the maintenance make the operation somewhat "shaky" except when in a harbor. An interesting historical sideline to this approach involved coupling a huge windmill constructed on deck to a propeller shaft. As with man's early attempt to fly, failure came quickly.

The most promising energy conversion is through solar cells. With a recent shift away from the controversial nuclear breeder reactors, Washington has raised solar power research to unprecendented prominence. The benefit to the sailor is obvious. With high efficiency cells molded into his deck and cabin top, completely solid state charging will occur throughout the day. Already great progress has been made. The standard silicon arrays which have been extensively used in satellites are super expensive and grossly inefficient. One unit I saw advertised went for $400, producing only six watts in full sunlight. The greatest expense involves getting large surface wafers.

(*please turn to page 24*)

CAUTION!



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Be ready to spend $599 for the finest solid state 5 Band SSB Transceiver on the market today.

From its new plug-in design that provides quick transfer from mobile mount to AC Console, to its unprecedented selectivity of 9200 cycles wide at 120 db down, the Atlas 210 introduces a new era in state of the art circuit design and performance specs.

The Atlas 210 covers 10 through 80 meters, and the companion 215 covers 15 through 160 meters. Both are rated at a hefty 200 watts PEP input. (120 watts on 10 meters.)

Weighing less than 7 pounds, the Atlas 210/215 is only 9½" wide x 3½" high x 9½" deep. For complete details on the Atlas 210 & 215, see your Atlas dealer.

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contests

SEANET

(*continued from page 1*)

9M8, and VS5 stations. 1 point for each contact with stations from SEANET area other than 9M2, 9M6, 9M8, and VS5 stations. (See end of article for list of SEANET area countries.)

Contacts for contestants in SEANET area will count 1 point within their own areas, and 2 points for contacts outside the SEANET areas.

Multiplier — For contestants in SEANET area, a multiplier of 3 points for each country outside the SEANET area, and 2 points for contacts with each country in the SEANET area stations (as per DXCC country list). For contestants outside the SEANET area, a multiplier of 3 points for each country that checks regularly into SEANET (see end of article for list of regular SEANET area stations).

Total score — The total score will be the sum of points multiplied by the sum of multipliers.

Log & summary sheets — send a SASE or IRCs to Ismail Razak, 9M2FK, 281-C, Jalan Pekeliling, Bukit Glugor, Penang, Malaysia to request a sample. Make out log sheets for different bands separately. All times are in GMT.

Awards — (1) The highest scorer in each country will receive a commemorative certificate of the 5th SEANET Convention 1975. (2) The highest scorer in each regular check-in country (SEANET area) will receive a certificate as well as a commemorative medal. (3) The all highest scorer for outside SEANET area station, and SEANET area station, will receive a certificate, a medal, plus a Malaysian pewter ware mug engraved. (4) Worked All Malaysian Areas Award (WAMA) can be claimed by sending in a separate log sheet covering the required number of contacts as laid down by "Regulations for WAMA award 1975", i.e. (10) ten 9M2, (10) ten 9V1, (1) one 9M6, (1) one 9M8, and (1) one VS5 stations.

Reports — Logs and summary sheets should be submitted to: MARTS SEANET Contest Committee, Ismail Razak "Eshee", 9M2FK, 281-C. Jalan Pekeliling, Bukit Glugor, Penang, Malaysia, postmarked not later than 30 September 1975. After rigorous judging, the results will be announced during the 5th SEANET Convention in Kuala Lumpur, Malaysia on 8 November 1975.

Restrictions — (1) No contacts on crossmode or crossband will be counted. (2) Operators are not allowed to transmit two or more signals at the same time. (3) Only one contact per band with the same station will be permitted. (4) All entries in violation of the contest rules, incorrect statement in the submitted reports, taking points from duplicate contacts, not in the brotherhood of Amateur Radio will be disqualified. (5) The MARTS SEANET contest committee's decision shall be final in all cases of dispute.

SEANET area countries — A4, A51, A6, A7, A9, AC3, AP, BV, CR9, DU, EP, HL/HM, HS, JA etc., JD1, JY, KC6, KG6, KH6, KX6, P29, S21, VK, VQ9, VS5, VS6, VS9K, VS9M/8Q6, VU2, VU (Andaman, Nicobar & Laccadive Is.), XU, XV5, XW8, YB, YJ8, ZL, 3D2, 3B6, 3B8, 4S7, 4W1, 5Z4, 9M2, 9M6, 9M8, 9K2, 9N1, and 9V1.

Four-land QSO Party

Starts — 1800 GMT, Saturday, 6 September. **Ends** — 0200 GMT, Monday, 8 September. **Sixth Annual QSO Party** — sponsored by the Fourth Call District Amateur Radio Association 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.

Exchanges — 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 (including 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 and fourth district counties. Count each state and each county ONCE only.

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

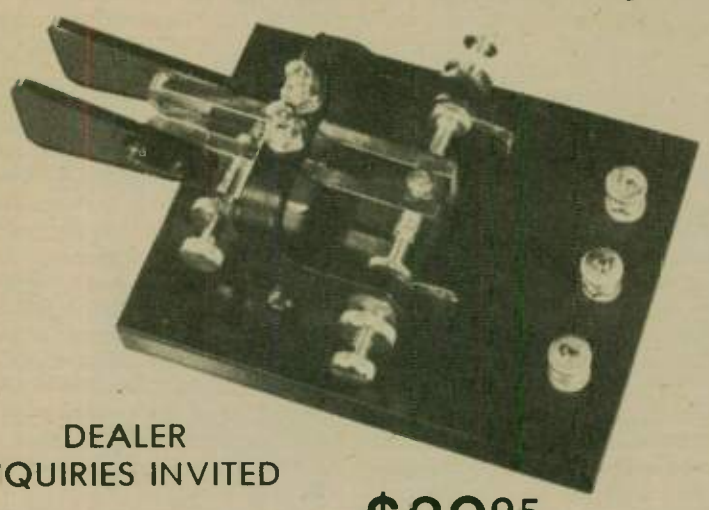
Awards — Certificates to top scorers in each State, VE Province and Country. Second and third place awards when scores warrant. HHTA (High Honor Trophy Award) certificate to high scorer in four-land, high W/K out of four-land, VE, and DX country. Also county awards to fourth call district states and special awards to the Novices, SWLers and B/H (blind/handicapped).

Mailing deadline — Contestants must mail logs with score within thirty (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.)

You have asked for them - now available - the paddle/squeeze key that outweighs them all!

Acclaimed by many - highly accepted by many CW operators!

"The Black Beauty"



DEALER INQUIRIES INVITED

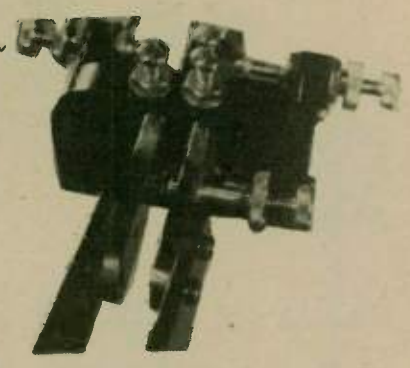
$39.95 PREPAID

Electronics Center, Inc, Dallas, is pleased to announce on a national basis the "Black Beauty" squeeze paddle for the serious minded CW operator as well as the newcomer who is planning to make a move up from the mechanical flopper.

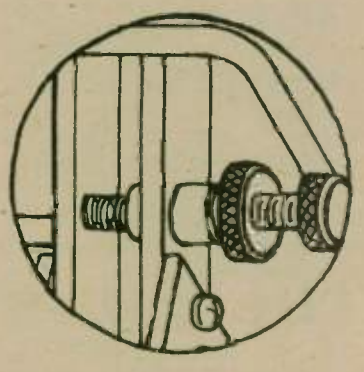
Many months of make-up, testing, remake, and more testing have gone into the development of the "Black Beauty". It is designed to complement any keyer, and will provide many hours of "fatigue free" operating time. It makes sending a pleasure and reopens the door to a facit of operating unknown until this time in your communications life.

The "controlled chamber", constant feather adjustment (see insert) permits precise touch as desired by the critical. Look at the many features:

* selected spring steel for uniform performance
* constant "controlled chamber" for adjustment
* five points of adjustment for the most critical touch
* coin silver 3/16" contacts that align as a precision instrument should!
* satin black finish with bright nickel finished parts.
* 3½ x 4½ x ½", weighs 3.1 pounds



For those who prefer to mount their keys directly to the table, or on a separate board, the "Black Beauty" is offered as an option, without base . . . $34.95 prepaid, Cont. USA.



The "controlled adjustment chamber" is a feature using selected spring steel to give just the right touch for real operating pleasure.

$69.95 PREPAID, CONT. USA

Model 33-A keyer is designed with a keyed master clock using discrete transistors. The logic gives a fixed 3 to 1 dash to dot ratio.
Built-in side tone monitor, tone setting internal---strapping for external side tone on rear panel.
115 vac operation
manual key connection
output relay — contact rating 12va at 0.25 amp or 100 vac
speed adjustable 5-50 wpm
tune in off position

The RG-5 Keyer - a modern keying device with deluxe features.

1) self-completing dots and dashes
2) dot and dash memories
3) iambic operation
4) dot and dash insertion
5) automatic character space (may be switched out)
6) 5-50 wpm speed range
7) tone and volume controls on front panel
8) test position always available when power switch in off position
9) relay output

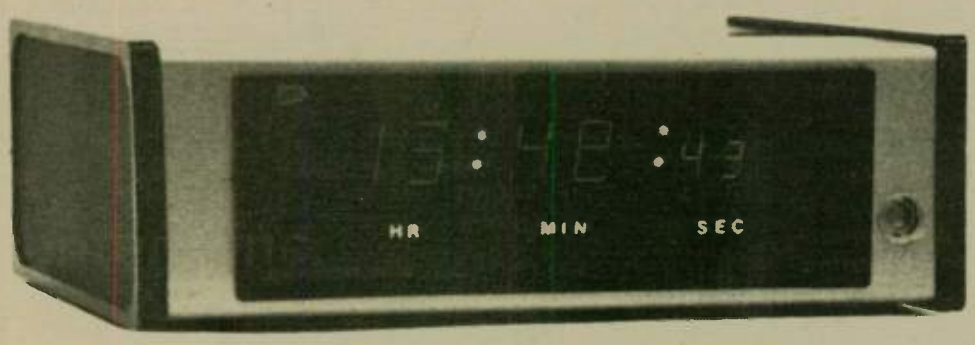
$99.95 PREPAID

SATISFACTION GUARANTEED

A syncronized clock provides uniform starting for constant-width characters. Also the dot-dash decision is made at the end of the space following the bit, allowing maximum leeway in paddle operation.

Contains present bit and next bit memories . . . next-bit memories allow following operation:

1) If the dot memory is on, the keyer will start a dot.
2) If the dash memory is on, the keyer will start a dash.
3) If both are on, the keyer will produce the opposite bit from the one it is sending.
4) If neither is on, the keyer will assume a missing bit and automatically give two additional spaces.



Model - R-24

- 24 hour 6 full digits
- gas discharge display
- all electronic
- automatic dimming circuit
- noise suppression added

$89.00 PREPAID

Gray and black cabinet 6 15/16 x 5 5/8 x 2½ in. high . . . wt. 1 lb. 8 oz. display characters .55 in. high (seconds .33) controls include two push buttons on back, fast and slow set, one toggle switch for hold . . . display automatically dims in low ambient or dark room light to be less distracting and yet easily readable in high ambient light. Noise suppression has been added to reduce interference from fluorescent lights, r. f. fields, etc. Guaranteed for one full year.

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OSCAR AMSAT

How to get on OSCAR

Walt Dixon, W4DWN
AMSAT 1184

How do I get an OSCAR? This is the 64 dollar question we all ask ourselves when we get bitten by the satellite bug.

You should first have experience listening to OSCAR. This involves location of OSCAR in respect to your QTH at all times of the pass and tracking of OSCAR. Yes, you will have to track OSCAR if you are using a directional beam. In the beginning you can put up a 10-meter wire type dipole cut to 29.5 MHz and have it facing East and West and you should not have any trouble in hearing OSCAR with fair signal strength.

But later when you become proficient in copying OSCAR signals you will want an antenna with higher gain to be able to pull in signals consistently. Any good 10-meter Quad or Yagi will do if it has two elements or more and is tuned to 29.5 MHz. For the very best results the receiving antenna should be circularly-polarized. A crossed Yagi will do if it is correctly polarized. The reason for this is that the satellite is slowly turning on its axis and the signal is slowly changing polarity in respect to your QTH.

Sometimes fading is a big problem while other times it is not too bad. From your listening experience you should be able to tell if fading is a problem at your QTH and if you need circular polarization. It is obvious that a sensitive receiver is required to receive OSCAR signals. If your receiver is not the best put a preamp between it and the antenna and signals will improve tremendously. Even with expensive receivers the response at 10-meters is down and it is a good idea to add a preamp when listening for OSCAR. Don't tear down that antenna until you put a preamp on the receiver; it sure helps!

To transmit is another thing. What is required is a two-meter signal SSB-CW or CW only covering the frequencies of 145.85 to 146.0 MHz with anywhere from 20 to 70 watts DC input. The maximum power required is 100 watts effective radiated power from the antenna. Taking 10 watts output from the transmitter and putting it thru a 10 db gain antenna will get you there. So high power is not required, just 100 watts erp.

There are some good three tube circuits in the **ARRL Handbook** for homebrewing. Also the **Handbook** has a circuit for a transverter to convert your present rig from 10 or 20-meters to 2-meters, although you absolutely have to have a separate 10-meter receiver to hear your own signals coming back from OSCAR. Transceivers using transverters alone would not work. Hearing your own signal allows you to locate yourself on OSCAR and to adjust your frequency to compensate for the doppler shift in frequency caused by the speed of the satellite moving towards you and away from you. It can vary as much as 4.5 kHz plus and minus your transmit frequency. It is higher in frequency at the beginning of the pass and lower after it passes your QTH.

Being high gain, your transmitting antenna will also track OSCAR during the pass. It usually is mounted above the 10-meter antenna and both rotated to follow OSCAR. One of the big things about thinking about OSCAR is the fact that OSCAR is in orbit above the earth. That means that the antennas should be tilted above the horizon for the maximum use of the satellite. The further away the satellite is from your QTH the lower the angle of tilt. The transmitting antenna is more sensitive to tilt angle than the receiving antenna. Usually it is fixed at an angle that from experience gives you the best results. Anywhere from 15 to 35 degrees is the norm. Some means of varying the tilt makes for more satisfactory operation though. The use of a 100-watt or more output from the transmitter would simplify things considerably. With high power you can use simple antennas for transmitting, such as a turnstile or vertical, and it would eliminate having to tilt or track with the transmitting antenna.

High power is fairly hard to come by though. There is not much commercial equipment made that can be used on OSCAR. Homebrew from the **Handbook** is the route you must take to high power. To keep line losses low use foam coax and use as short a run of coax as possible as one half or more of your output from the transmitter is lost in the very best coax used. So allow at least 3db loss when figuring how much gain the antenna should be to get 100 watts erp.

Maybe all this sounds a little complicated but by going one step at a time anyone can set up a satellite communications station and get a piece of the action on OSCAR. Drop me a line if you would like more information. I am ok in the Call book. Lots of luck and hope to see you all on OSCAR.

Florida Skip

Satellite nets

In Southern California, the WR6ACJ repeater (146.25 to 146.85 MHz) has been designated as an official medium for exchanging information relating to the amateur space program. It is suggested that those in other areas also adopt 85 simplex and the 25/85 repeater combination for satellite discussions. In those areas where such repeaters already exist, check with the present inhabitants of the channel to see if they would mind having their facility used for such a constructive purpose as satellite talk. If we all standardize on this frequency combination it will be much easier to get in touch with one another when traveling.

In London, on Sunday at 1730-1800Z, R. Isaacs, G8CSI, is net control on 144.28 MHz FM.

Readers are requested to inform AMSAT about any corrections, additions or deletions to the above net schedules.

Bulletins of general interest to those interested in amateur satellites are transmitted regularly on OSCAR 6 reference orbits (first orbit of the Greenwich day) at approximately 10 minutes after ascending node. These bulletins are transmitted on a downlink frequency of approximately 29.490 MHz and can be received over most of eastern North America.

80 Meter Net Changes Time. The 80 meter net has been changed from Monday evening at 9 p.m. (local) to 9 p.m. on **Tuesday** evening. With this change, the net now occurs when both satellites are not available for general communications. If you would like to know more about the amateur satellite program and aren't equipped for 146.28/85, then meet us on 3850 kHz.

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For OSCAR Tracking Data, call:
(Washington) Joe Kasser —
(301) 622-2194
(Baltimore) Gary Tater —
(301) 465-1751
For Information: Write AMSAT, Box 27, Washington, D.C. 20044

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Educational Programs. If you are interested in helping teenagers become interested in science and engineering, AMSAT can help you. A fine article called "Amateur Radio Boosts Education" appeared in the May **QST**. If you missed it this is a good time to go back and pull out this article. The article describes how live demonstrations of satellite communications can be used to spark interest in high school science classes. If you're willing to bring a demonstration of the OSCAR satellites to your local school, AMSAT members can provide you with the help you'll need for a successful demonstration.

Photos now available

8 by 10-inch full-color photographs of AMSAT-OSCAR 7 (artist's conception in space) are now available for $3 U.S. (or 20 IRC's) postpaid from:

Alan L. Bridges, WB4VXP
2881 South Main Street
Kennesaw, Georgia 30144 USA

Please make your check or money order payable to AMSAT.

Official slide collection

AMSAT-OSCAR 7 35mm color slides are now available. These are ideal for amateur radio club shows and telling civilians about the amateur radio space program.

Send $5.40, check or money order to:

Norm Chalfin, K6PGX
P.O. Box 463
Pasadena, CA 91102 USA

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Editorial

(*continued from page 19*)

members of the Pleasantburg Sertoma Club in Greenville, South Carolina all (100%) donated ten dollars to the Sertoma Foundation; so did the members in Mesa, AZ; Sandia, NM; Northwest Austin, TX; etc., etc. They really get behind their club. Why don't we?

We would truly like to see the ARRL turn into a real "membership" organization.

We should be prepared to pay a little more for dues in "our" organization. Compared to the fees in other groups our ARRL dues are tiny.

Congratulations to Director Wicker for proposing the idea of a greater organizational feeling. We pledge our full cooperation and assistance to the implementation of such.

Wicker's motion may turn into Amateur Radio's shining hour. We shall discuss more about the idea next month.

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W5YRL (*continued from page 5*)
Award. The text below accompanied the article printed in the **National Enquirer.**

Good Samaritans are people who sacrifice their time, energy and often their money to help others. We believe they should be recognized so we established The **Enquirer** Good Samaritan Award. If you know someone like Phil Rosenstein of Corpus Christi, TX please write us and give details. If we publish a story about your Good Samaritan, he or she will receive $50 and a Certificate of Recognition. Mail your letter to: Good Samaritan, **National Enquirer,** Lantana, FL 33462.

Newcomers to FM

(*continued from page 10*)

ter and say (if you wish to make a contact), "This is W6IDS, monitoring. If someone wants to talk with you they will. If not, it is known you are monitoring and nothing will be said by anyone. It is the same thing as if you had called CQ on HF SSB and got no response.

One of the most annoying things for a station to do is to key his mike and listen to the repeater come up. If you have nothing to say, don't key that mike. It gets to be quite a bother to keep hearing that constant "kerchunk, kerchunk, kerchunk" during which nothing is being said. If you want to see if you are hitting the machine, get on the air and ask someone, but don't make unidentified transmissions.

Just remember to be courteous. You will find most stations on the air are quite willing to help you and explain things which are confusing to you. Once in a while you will come across that particular kind of station which gets his kicks out of hassling you on your new station and what you are doing wrong. Please don't get angry and hassle him back or think that the FMers are a bunch of creeps who have no compassion for anyone but themselves. Believe me, any station who is going to get on you for a mistake is a minority in a minority group. Again, most stations are very pleasant and friendly and understanding. This situation exists on HF SSB also. The difference is that up on FM, by the nature of the beast, we are a little more closer together and sometimes things can stand out more than usual.

Occasionally a newcomer may hear music, heavy breathing, miscellaneous noise and other types of transmissions which may arouse amusement at first, and then anger. The anger is the result of hearing the noise, etc. for twenty minutes at a stretch. If the newcomer gets the urge to harrass the harrasser — FORGET IT. If you get angry enough to want to say something demeaning or insulting to "get even", you're CONTRIBUTING to the problem, not helping. This is due to the fact that you're giving the offending station recognition, which is what he wants. He wants some kind of REACTION. Don't give him one. If it gets too much — shut off your rig and come back later. Just don't spout off on the air because the offender will try even harder then if you do.

You'll find that other stations insult an offending station but don't give their calls. That not only equalizes them with the offender's level, but it is illegal. Don't try the same tactic. Just go about your own business and make no indication that you even hear the harrassing station.

If you don't say anything about it the offending station won't know if he is being successful or not. If you say something it's the same thing as saying, "I Roger your interference or poor operating."

When you do get on the air and a station makes contact with you, and points out an item which you might have done differently, don't get defensive. The suggestion is most probably being made in good faith and with a helpful mood in mind to make your operation more pleasurable for you. And when you get on the air, please don't be afraid to ask questions. This is the only way in which to learn anything new.

You know, there are some persons who enjoy comparing 2-METER FM with "CB". It is felt, in some circles, that FM operation is too much like CB for them to use it. Perhaps so, in their eyes. However, the amateur service has never had a mode of operation which is so reliable for local communication and mobile work before. The very nature of the modern simplex and repeater capabilities make the operation a natural for good reliable emergency communication work. In fact, after the new operator has gotten used to FM, he will find that he just might be spending more time on FM and less and less time on HF. Don't be surprised, since this has happened to many, many stations. It's good.

To the newcomer to FM, please enjoy your stay. You have a whole new capability opening up for you to enhance your radio operation, many interesting new persons to meet, and a chance at bringing some excitement into your radio life that you might not be able to see in other modes of operation. Before too long you will be helping some other newcomer to FM.

"Squelch Tales", San Diego Repeater Association

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16th Annual New Jersey QSO Party

The Englewood Amateur Radio Association, Inc. invites all amateurs the world over to take part in the 16th Annual New Jersey QSO Party.

RULES:

(1) The time of the contest is from 2000Z Saturday, 16 August to 0700Z Sunday, 17 August and from 1300Z Sunday, 17 August to 0200Z Monday, 18 August.

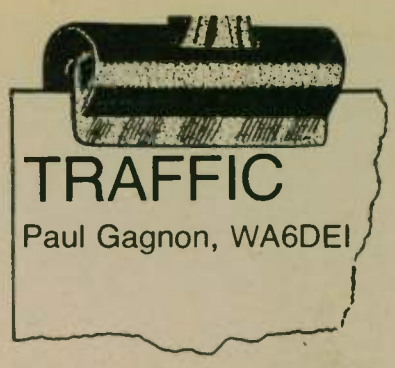
(2) Phone and CW are considered the same contest. A station may be contacted once on each band - phone and CW are considered separate bands. New Jersey stations may work other New Jersey stations.

(3) General call is "CQ New Jersey" or "CQ NJ". New Jersey stations are requested to identify themselves by signing "DE NJ" on CW and "New Jersey calling" on phone. Suggested frequencies are: 1.810, 3.535, 3.735, 3.905, 7.035, 7.135, 7.235, 14.035, 14.280, 21.100, 21.355, 28.100, 28.600, 50-50.5, 144-146. Suggest phone activity on the even hours; 15-meters on the odd hours (1500 to 2100Z); 160-meters at 0500Z.

(4)Exchange consists of QSO number, RST, and QTH (ARRL Section or country). New Jersey stations will send county for their QTH.

(5) Scoring: Out-of-state stations multiply number of complete contacts with New Jersey stations times the number of New Jersey counties worked (maximum of 21). New Jersey stations: W-K-VE-VO QSOs count as 1 point; DX stations count as 3 points. Multiply total number of points times the number of ARRL sections (including NNJ and SNJ - maximum of 75). KP4, KH6, KL7, KZ5, etc. count

(*please turn to page 34*)



How to bug the Net Control Station

It's easy to bug the net control station! Anyone can do it, and it's fun! But in order to do it artistically, it takes talent and practice. Here are some pointers:

a) If you aren't the designated liaison station, check in anyway when the NCS calls for him. If you have break-in, don't be distracted by the sounds of the real liaison station trying to QNI underneath you.

b) If you have no traffic, try to be the first one to check in anyway. That snappy QNI QRU really impresses the troops and the stations with the big loads of traffic won't mind waiting for you.

c) If you do have traffic, try to delay your check-in just long enough so that the NCS has dismissed the station who was representing the area where your traffic was going.

d) When sent up "five" to transmit traffic to W4ABC, tune your receiver up exactly 5.00 kHz, put on your 80 Hz filter, and wait exactly five seconds for him. When you don't hear him, return to the net and say "no ABC".

e) When you return to net frequency, don't just send the last three letters of your call. Break in, send NCS's call and then yours, and list the traffic you just cleared. This way the NCS gets a review of what he already knows.

f) If you're the designated liaison station, check in ten minutes late, just after the NCS has started asking for volunteers.

g) Another fun thing to do is to check in and ask for a QSO with six stations despite the fact that all stations are in your telephone calling area.

h) Monitor the net from across the room so the NCS has to call you three times before you get to the rig.

Diligent application of these principles, week after week, should contribute much to your education. This list is by no means complete and the alert student should always be aware of new techniques that become available. [*Adapted from NCN Bulletin*]

Establishing contact

When two stations are sent off frequency to pass traffic, the receiving station should always call the sending station. Choose a frequency close to the one the NCS specified, but avoid interfering with anyone. The most important thing is that the receiving station have a clear spot in the QRM to get perfect copy. What is clear for the receiver is not necessarily clear for the sender.

QRY

Quite often the NCS will have several stations lined up off frequency to pass traffic to a station. When he sends you up he will tell you who to follow. Don't cut ahead of your turn or you cause all kinds of confusion. It is important for the NCS to establish the proper order also. No sense to have a station with only one waiting behind a station with 12 pieces of traffic.

Hail signs

When checking into a CW net don't send "BK". At the start of the net several other stations are usually trying to QNI at once. If they all use "BK", six stations could be talking at once and the NCS couldn't hear anyone. Use a unique Hail sign when checking in, perhaps the last two letters of your call, or make something up. That way the NCS can pick out one Hail sign and respond to only one station.

New manager RN6

Gene Violino, W6INH, has taken another job in addition to being the SCM of the Los Angeles Section. Gene is now the Manager of the Sixth Region Net which covers Southern California, Northern California, Nevada, and the Pacific Area including MARS. Gene is relieving Don Stansifer, W6LRU, who did a great job for many years.

Novice net

The New England Novice Net meets Monday thru Friday at 2230Z on 3720 kHz. Does your area have a Novice Net? A Novice Net is essential to training new amateurs so that they move up into your regular section nets. It is also an excellent way to get the code speed up. How about taking the initiative and starting one in your area? If you already have one let me know so I can list them.

World-wide traffic news

While talking to one of my TCC sked stations on the East Coast, I mentioned that he should send along some information for this column. He replied that **Worldradio News** was a West Coast paper. See the paradox? If he and others from around the country would send along info for this paper it would more readily reflect its world-wide name.

Awards

Does your net sponsor an award? Do you have any ideas on how an award program for traffic handlers should work? Send along any information you may have.

Who owns the Drake equipment?

There are five amateurs living in five houses in a row, each painted a different color. Each of the operators has a favorite operating mode,uses a different make of commercial equipment, and checks in on different nets.

1. Jack lives in the black house.
2. John's favorite mode is RTTY.
3. The owner of the brown house uses an Atlas rig.
4. Jim operates with Heath equipment.
5. The brown house is to the right of the yellow house.
6. The op who checks into EAN favors FM.
7. The middle house is equipped with Collins gear.
8. The owner of the red house checks into RN5.
9. The one who checks into RN6 lives in the house next to the one who operates CW.
10. Joe lives in the first house on the left.
11. The amateur who checks into RN5 lives in the house next to the house where SSB is the favorite mode.
12. The Swan equipment owner checks into CAN.
13. Jill checks into 3RN.
14. Joe lives next to the green house.

Answer these questions: Who has the Drake equipment? Who likes to operate FAX?

If you can figure this out send me a radiogram with your answers and I'll ARL Seven to let you know.

Florida routing guide

The fourth edition of the Florida Traffic Handler's Routing Guide is now available for Florida amateurs involved in public service communications. The Routing Guide contains a directory of Florida cities and towns, giving their county, zip code, location and telephone delivery information. An entire section is devoted to listing the local telephone calling area for many cities in Florida. Abbreviations, Q signals, message format and procedures, and other useful information is contained in this hand booklet. The Routing Guide is 56 pages packed with information, and is 5½ by 8½ inches in size, making it very handy for reference at the operating position of your station.

Copies of the Routing Guide are available for $1.50 postpaid from Jim Tsevdos, WA4GBC, 2711 Northeast 57 St., Ft. Lauderdale, 33308, or from Florida Skip. Be sure to order your copy today!

ATTENTION CLUBS AND NETS.....

Recently your **Florida Skip** editor was appointed Public Relations Assistant (another non-paying job) in the Southeastern ARRL Division by Director Larry Price, W4DQD. As PRA I would like to send any Florida Club officer, Net Manager, or truly interested amateur a small booklet designed to help get amateur publicity in the newspapers, on radio or TV. The booklet is chucked full of information on the DOs and DONTs on trying to obtain publicity in all news medias.

Most all our **Florida Skip** correspondents have already been sent a copy. All requests should be on club stationery or made by a net manager. (We know who you are.) All other interested amateurs in taking on the project, please drop the Editor a line and if we have enough copies, one will be sent. We also request twenty cents in postage to help pay the Uncle Spuds postal service.

Don't let the CBers outshine us on publicity. Learn what to do, then — DO IT! •

NJ QSO Party

(*continued from page 33*)

as both 3 point DX contacts and as section multipliers.

(6) Certificates will be awarded to the first place station in each N.J. County, ARRL Section, and country. In addition, a second place certificate will be awarded when four or more logs are received. Novice and Technician certificates will also be awarded.

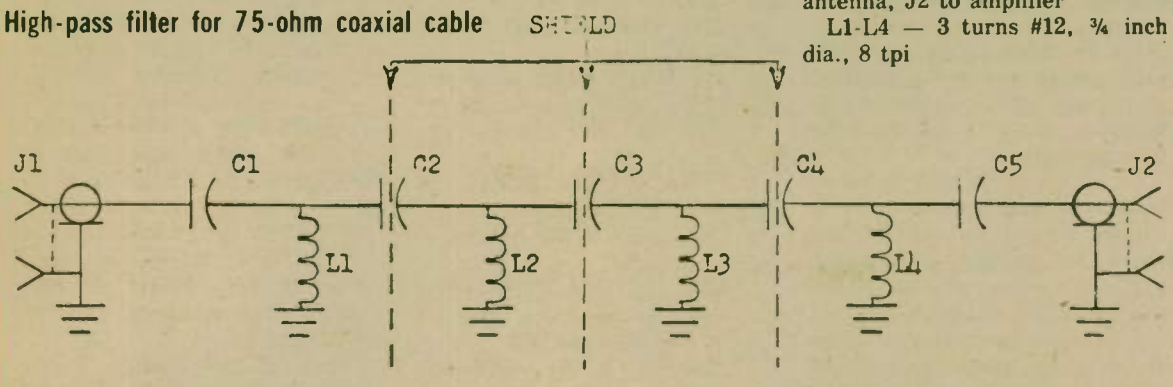
(7) Logs must also show UTC date and time, band, and emission, and be received not later than 13 September 1975. The first contact for each claimed multipler must be indicated and numbered and a check list of contacts and multipliers should be included. Multi-operator stations should be noted and calls of participating operators listed. Logs and comments should be sent to Englewood Amateur Radio Association, Inc., 303 Tenafly Road, Englewood, New Jersey 07631. A size #10 SASE should be included for results.

(8) Stations planning active participation in New Jersey are requested to advise the EARA by 2 August of your intentions so that we may plan for full coverage from all counties. Portable and mobile operation is encouraged. •

INTERFERENCE

Dr. Theodore Cohen, W4UMF

High-pass filter for 75-ohm coaxial cable



C1, C3, C5 — 100 pf, 1 kv ceramic
C2, C4 — 50 pf, 1 kv ceramic
J1, J2 — Type F-61 coaxial connectors; J1 connected to antenna, J2 to amplifier
L1-L4 — 3 turns #12, ¾ inch dia., 8 tpi

In a recent article (A W6 Reflects on His Trip to Europe, **Worldradio News**, April 1975) J.S. Pedersen, WA6BEX, noted that in the United States, "...the FCC will let you continue operating if you cause TVI or BCI if it has been established that the interference problem is at the QTH of the complaining party."

Not so in at least two European countries. In many countries the governments only tolerate amateur operators and are quite harsh in taking action against these operators when they are involved in RFI problems. In Denmark, for example, Pedersen found that "...the radio amateur who causes TVI or BCI to local Danish TV or broadcast stations is, by law, always at fault for causing the interference, regardless of the condition of the receiving equipment." Thus, if an amateur in Denmark *causes* interference he *must* go off the air during those periods when his neighbors wish to use their home-entertainment equipment. Further, the Danish rules state that if an amateur cause RFI, the amateur has an obligation to fix his neighbor's equipment, and to do so at the amateur's expense.

In Germany, the situation is a bit more realistic. Here the rules state that if the amateur's transmitter is "clean", the amateur can only be held responsible for RFI if the owner of the receiving equipment has taken all the steps which are technically and economically feasible in order to secure freedom from interference.

Given that almost all RFI problems stem from design deficiencies in home-entertainment products, it would appear that in Europe, as well as in the United States (and elsewhere, too), the time has come for manufacturers to improve their designs so as to reduce the susceptibility of their equipment to signals from nearby rf sources.

Amateurs and other radio operators, of course, are not the only ones experiencing RFI, or EMI (electromagnetic interference). In a recent article in **Electronic Engineering Times** (21 April 1975) it was noted that "sixty-eight per cent of the engineers responding to a recent questionnaire on EMI control of electronic equipment feel that such control . . should be mandatory." The reason for wanting mandatory regulations apparently lies in the fact that engineers are reluctant to work towards reducing EMI without corporate guidelines. And many companies have no guidelines.

Without EMI control most engineers know that sooner or later their equipment will be jammed by someone else's . . . or maybe some of their own equipment.

Turning again to the amateur's problem, one problem which is increasingly being brought to our attention is that of interference with Master Antenna TV (MATV) systems. Generally these problems result from overloading of the system amplifier, a situation which can usually be corrected by inserting a high-pass filter at the input to the amplifier. Unfortunately, the Drake TV-72-HP filter is no longer available, and so the amateur may be required to build his own filter (at least until the manufacturers of MATV amplifiers start incorporating these filters in their devices).

One such filter has been assembled by Steven Czaikowski, WB4ZTR, and is shown in the accompanying diagram. This unit, based on a design which appears in The Radio Amateur's Handbook (ARRL), corrected Steve's problem, and may correct yours. The filter, of course, should be mounted in a metal chassis, and should be grounded to the cover on the MATV amplifier. It might also be a good idea to make certain that the MATV amplifier is properly adjsted at the time the filter is installed.

Have you shown your support for HR 7052 by writing the Subcommittee on Communications? Only by demonstrating our support for this RFI Bill will it be possible to obtain a hearing on the matter. We need your letters and telegrams now! Write:

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

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Clubs

(*continued from page 36*)

wanted activities I could add my energies to. And I wanted to learn. In short, there are things that can be done in my favorite activity only as part of a group. There are projects, activities, education, entertainment and public service functions possible within a club that I could never initiate as an individual. Group action is to me the essence of a successful club, society or association.

This is why I have set as a personal club goal to stimulate new membership—people who will contribute to the group force as well as take from it.

The San Gabriel Valley is full of active operators, if we can just reach them. I know many of them from the local repeaters. But they do not know about us. Who do you know that we could send our newsletter, or at least the meeting announcement to? Or what local newspaper or high school science teacher do you know who might mention our meetings? As the one who will probably be giving the most attention to the production of **The Loudspeaker**, it is my intention to begin giving, as in this issue, more attention to what is coming at the next meeting. Strong meeting topics are the biggest drawing card for new and continuing strong members. But here too we need your help. I'm sure with a little thinking every member could at least make a suggestion to the executive committee of a speaker or topic you would really like to hear. With the new by-law changes there will be no regular program chairman. The whole board is accepting the responsibility, but please help us!

Or how about simply going to the effort of pinning the meeting announcement up on the advertisement board at your local supermarket? And why not get on your favorite local frequency or repeater and do a little vocal advertising three or four nights before the meeting? The first meeting I ever attended was stimulated that way.

I'm really pleased to be your new president and I know I am going to get a lot of cooperation in making this a really outstanding year.

Also in the same issue was FUNDAMENTAL AIM OF THE CLUB — We entered into an interesting discussion of why we all were part of SGVRC. Entertainment, comradeship, education, public service and social contact seemed to be the main reasons. If you would like to suggest others, we would appreciate knowing what thrust you'd like to see the club take.

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Russia

(*continued from page 2*)

English via Finnish TV, which broadcasts such programs as Bonanza, Ironside, etc. in English with subtitles. Our visit was obviously a big event for the Club—as it was for us, and we thoroughly enjoyed it. Unfortunately, we did not have a camera with us; we had ventured forth on an exploratory walk and this was an unplanned visit.

Next we visited the Riga Club where, again, we were the first American visitors. There were only two who spoke English; one was Yuris, UQ2AN, whom Chuck had contacted from Miami. Yuris explained about our trip from the U.S. and they were stunned, couldn't believe it. Chuck and Yuris enjoyed a long personal conversation.

All in all our trip to the USSR was enlightening, educational and interesting. The 1980 Olympics are being held in the USSR, which will, no doubt, open a lot of doors in Russia.

Floridora News

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Navassa

(*continued from page 6*)

U.S. states was fairly good, and several DX QSOs were made on 80 and 40.

- Apparently absorption in the higher lattitudes deprived us of some coverage. Many KH6s were worked, some JAs, but no KL7s.
- Despite the unfavorable terrain, about 35 European contacts in 13 countries were made on various bands. Conditions apparently favored Southern Europe.

The operators of KC4NI are sorry to hear that there are still "many disappointed operators round about." But we are proud to hear from so many happy operators from all over the world who were able to contend wth our problems and contacted KC4NI.

Hopefully this note will highlight some of the practical considerations involved in conducting a DXpedition. Believe us, you had to be there to appreciate it! We plan to submit for publication some more formal descriptions of our Navassa expedition in the near future.

CLUBS

It is worthwhile for clubs to have stated goals and objectives.

We found the following two of great interest and thought we would pass them along to other clubs.

Kern County Radio Club

Jerry Zulfa, WA6ABH

It is the objective of your board to provide meaningful and productive meetings throughout the year. In formulating our plans we have attempted to remember that your club is for all members. With this thought in mind we have set plans to include activities that all can participate in, and which will bring about the greatest amount of interest. Among those events coming in the near future are: a hidden transmitter hunt, a CW contest, Field Day, a family picnic, our mini-hamfest, and of course we would like to have a Christmas party. In addition to these activities we hope to provide interesting meetings where the true spirit of Amateur Radio can be expressed. We often times have rather energetic discussions, but hopefully everyone leaves a little better informed and with a better understanding of the subject.

As you can see from the above listed activities and objectives, the club is there for you. It can only be successful by your attendance and participation. The many projects planned need people to take charge and make them fun for all. Many times we hear the words that the Club is for all amateurs and can only be good if everyone gets involved. Over the past few months it is obvious to most people that more are becoming involved and the club is bigger and better than ever. It really is the place to be on the first and third Friday of each month.

In conclusion I would like to ask each of you to bring a guest and hopefully a prospective new member to the club meetings. It is our responsibility to promote Amateur Radio and I can't think of a better place to start than with the Kern County Radio Club. It truly is..."Alive in Seventy-five!"

"Splatter," Kern County ARC

North Florida Amateur Radio Society

Being a paid-up member of NOFARS has certain advantages other than the fact you are part of a dynamic, growing club. Some of the benefits and accomplishments:

(1) FREE license classes to members: a continuing Novice program and a license upgrading program all the way thru Advanced class starting August 20th.

(2) Interesting club meetings with various guest lecturers. Recent programs include information on OSCAR, DXpeditions, auctions, troubleshooting, contesting.

(3) Frequent club activities: beach parties, social events, dinners, field day activity.

(4) Surveys of members taken on issues involving amateur radio and opinions filed with FCC, ARRL. Your voice is heard through NOFARS.

(5) Advice on such problems as TVI, antennas, technical matters through various NOFARS committees.

(6) Massive public relations campaign to inform the public of the advantages of amateur radio, shopping center displays, media publicity, speakers at civic clubs.

(7) You help the less fortunate citizens of Jax thru many public service projects. Goodwill Good Turn Day brought many needy workers the raw material to help them EARN a living.

(8) Club competitions in national contests plus special club competitions such as the annual homebrew contest. Valuable prizes are given to the winner.

(9) Door prizes for club members only at meetings.

To put it bluntly, if you are not a member of NOFARS, please become one so that we can fulfill our objectives and programs with your help. You can join in person at the next meeting.

NOFARS "Balanced Modulator"

The following appeared in **The Loudspeaker**, publication of the San Gabriel Valley Radio Club, by President **John Portune, WB6ZCT:**

It is my philosophy that clubs offer unique advantages to any common-interest fraternity. I work for a trade association, The Society of the Plastics Industry, which is actually a type of club on the business level. And the main reason I frequently tell prospective members they should join is not for what the Society will do for them, but what they will be able to accomplish through it.

I joined SGVRC bacause I wanted to meet other amateurs. I (*please turn to page 35*)

Visit your local RADIO STORE

R.M.S. Corp
The Electronics Store
675A Great Road
Littleton, MA 01460

Atkinson & Smith, Inc.
17 Lewis Street
Eatontown, NJ 07724

Highland Amateur Supply Co.
P O Box 568
Boro Hall Station
Jamaica, NY 11424

Arcade Electronics
7048 Columbia Pike
Annandale, VA 22003

Everhart Electronics
116 Sidney Street
Lexington, NC 27292

Electronics 21
21 East Derenne Avenue
Savannah, GA 31405

Hollister Electronic Supply
1747 Pearl Street
Jacksonville, FL 32206

Communications Equipment Co.
1057 W. Hallandale Beach Blvd.
Zayre Shopping Center
Hallandale, FL 33009

J & H Electronics
1615 West Waters Avenue
Tampa, FL 33604

Universal Service
114 N. 3rd Street
Columbus, OH 43215

Purchase Radio Supply
327 E. Hoover Ave.
Ann Arbor, MI 48104

Conley Radio Supply
101 South 31st St.
Billings, MT 59101

Heights Electronics
835 Halsted St.
Chicago Heights, IL 60411

Ham Radio Center, Inc.
8342 Olive Blvd.
St. Louis, MO 63132

Radio, Inc.
1000 South Main Street
Tulsa, OK 74119

Electronics Center, Inc.
2929 N. Haskell
Dallas, TX 75204

Manwill Supply Company
2780 So. Main Street
Salt Lake City, UT 84115

C & A Electronics
2527 East Carson St.
Long Beach, CA 90810

Electronic Emporium Int'l.
Communications-Electronics
7895 Clairemont Mesa Blvd.
San Diego, CA 92111

Webster Radio
2602 East Ashlan
Fresno, CA 93726

Ham Radio Outlet
999 Howard Avenue
Burlingame, CA 94010

M-Tron
2811 Telegraph Avenue
Oakland, CA 94609

Quement Electronics
1000 South Bascom Avenue
San Jose, CA 95128

Sequoia Stero
773 8th Street
Arcata, CA 95521

Selectronics
2204-06 Del Paso Blvd.
Sacramento, CA 95815

Oregon Ham Sales
409 West First Avenue
Albany, OR 97321

Radio Supply Company
6213 13th Avenue South
Seattle, WA 98108

Advanced Electronics
804 Dupont Street
Bellingham, WA 98225

Progress Electronics
852 Commerce Avenue
Longview, WA 98632

Etco Electronics
464 McGill Street
Montreal 125, Quebec
CANADA

GOOD INFORMATION

Ron Reed, W6ODX, normally transmits code practice on Saturdays and Sundays from 8 to 9 a.m. on 7295 kHz, and on major national holidays on 7255 kHz. Speeds range from 10 through 24 words per minute.

He begins monitoring the frequency at about 7:15 a.m., and during the code practice leaves a quiet interval of one minute every five minutes. During these times he will answer any emergency calls and will interrupt the code practice to take care of said emergency.

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Allen Katz, K2UYH, and C. Maas,VE7BBG, are working together to produce a 432 EME Newsletter for those involved.

NOVICE

Dave Collingham, WN6KTF, is doing rather well.

He received his license on 15 April of this year and two months later he had logged 181 contacts, of which 27 were DX. Besides Alaska, Canada, Hawaii and Mexico Dave has HK3. YV5, LU7, CO2, KZ5, LU6, ZP5, FK8 and ZL2, as well as a maritime mobile. His rig is a TS-520 and inverted Vs are up about 60 ft. Dave is 16 years old and will go into his senior year after this vacation.

While Dave has a better rig than most Novices start out with, the real reason for his success is most likely the height of his antenna (and of course operator skill.) This just points out that the single most important element in a station is the height of the antenna. This is true for a couple of reasons. First, the angle of the radiation goes down as the height of the antenna goes up. Every time your signal hits the ionosphere and the ground, as it skips its way around, there is loss. The less bounces you make the stronger your signal is. You'll hear many many amateurs say, after they go up another twenty-feet, "Where did all those stations come from?"

The second reason is you are getting the antenna further away from absorbent objects (lossy) like the ground, sidewalks, pavement, telephone wires, plumbing in your house and the neighbor's house, trees, etc. Such objects are *signal* slurpers.

Even if you can't afford a big tower one solution is the TV pop-up masts. A 40 or 50 foot pole on top of the house will do wonders. For DX the inverted V is a much better antenna than the dipole. This is because it has a lower angle of radiation.

Other advantages of the inverted V are: you only need one support (for the center) rather than two for the dipole, and one can easily prune the ends to get it to the right resonant spot without taking the whole antenna down.

Purists will maintain that with the inverted V you should add a five foot section of plastic or wood to the top so the center of the antenna is not radiating right into the metal of the pole and going down the pole (slurp).

The inverted Vs at the top will act as the top sections of guy wire. Another thing that is super-important is to make sure that antenna support pole is properly guyed. You don't want it to come down and fall across some power lines (that could be your last contact).

It is no exaggeration to say the antenna is the most important part of your station. It is much more important than having the best of the receivers or transmitters it is the only part of the station that helps you on both receive and transmit.

There isn't any point in having a great receiver if the antenna isn't capturing a signal (you can't work 'em if you can't hear 'em), and a lot of power being absorbed by nearby objects isn't going to get you out anywhere.

OK, now that we've helped you get that signal out, let's turn to what you do with it.

If you want to make the most contacts in the least amount of time here are a few hints:

Don't call CQ for five minutes at a stretch. I kid you not, when someone else hears that he just tunes away.

When you are in QSO with a station it is totally unnecessary to send his call two or three times and you call the same amount when returning to him.

It is a bit "liddy" too, when you have received a 599, to ask "hw cpy?" for he has already told you. And we don't need these "ok, here it comes back to you" messages. That is what AR K is for. Plus, when you send his call and then yours the station on the other end is getting the idea that its coming back to him.

Probably the worst of all is the sign-offs: Tnx for fb QSO, 73 cul I'll look for u agn. If u hear me call, really enjoyed it OM, gud luck, best to you and ur family, etc. Some of these almost rival the pledges of undying love as found in Shakespeare.

And what is really bleak is the final-final-final-final. One guy says good-bye, the other says good-bye, then the first adds on another good-bye and the second station comes back with his good-bye, good-bye. Then there may be a little didit, or the dah didit dah dit to which the other adds his didit.

In many instances these sign offs and final-finals last longer than the actual QSO. What a waste of time; not much "communicating" going on during all that drivel.

Just so you don't think that this is just some old fogey picking on Novices, we'll move into some of the poor operating you'll hear even in the bottom 75 or even 25 of the phone bands. (Since you'll be down there someday we might as well talk about it now.)

About the dumbest is the station who goes on and calls CQ and says "this is the United States" and then gives his call. Please know there isn't an amateur in the world who doesn't know that W/K is the US of A. Remember, we have as many amateurs in the US as there are in the rest of the world put together. That's why there are the foreign phone bands, so they can get away from us for a little peace and quiet. The 20-meter band in the rest of the world sounds like wall-to-wall Ws.

Another dumb in the same category as above is the station who comes on with "W6 --- in California." Whoopee!! With "6" making up about 20 percent of the active amateurs into the U.S. it is not too necessary to announce to anyone that W6 is California.

If you are in Vermont, Wyoming, Delaware, North or South Dakota, it is worth announcing, but California???

What it all boils down to is giving our operating habits some thought. Analyze what you are doing and make an attempt to be a real sharp operator.

Speaking of being a real sharp operator, there is a very nice electronic keyer on the market at a reasonable price, $37.95. We used it on Field Day and it's a real honey. It's made by the MFJ Co. Send for their catalog at PO Box 494, Mississippi State, MS 39762.

You can back it down to 5 wpm or so and go on the Novice bands (or faster hopefully). It really makes sending a breeze. You know you can take a keyer to the FCC office to take your CW test for General. Might as well get used to the keyer now; the stations on the other end will appreciate it, that is, after you do a little practicing with it before you put it on the air). It makes just the right length dits and dahs and after, for example, you hit the dah paddle you can hit the dit paddle and the exact right amount of spacing between elements is made. Snazzy is the word for it.

If Martin, K5FLU, could come up with something that would make the right space between words he'd really have something, hihi.

A real part of the Amateur Radio fraternal spirit is sharing your knowledge. So send in news about what DX you worked, what bands, time, etc. What has (*please turn to page 39*)

Blind student, WB2ZEI, wins academic honors

NEW YORK, NY — Armand Bakalian, on the dean's list at Hofstra University and a business major, will be initiated this month into Beta Gamma Sigma, a business society.

Despite having been blind since birth, Armand's strong determination has enabled him to achieve many outstanding accomplishments. He has always attended regular schools and won admiration for his scholastic achievements. As a young boy his hobby was audio and electronics.

Armand was a Star Scout under the guidance of his brother, Scoutmaster Gary Mazlemenian, in Troop 443 sponsored by Armenian Church of the Holy Martyrs in Bayside. He was the first in the Diocese of the Armenian Church to earn the "Ararat Award" — a scout religious achievement cross. This was presented to him by Archbishop Torkom Manoogian in 1970.

At present he is on the engineering staff of radio station WVHC in Hofstra. He also is a licensed amateur radio operator, call letters WB2ZEI. His main interest is broadcast management. He will graduate in January 1976 with a BA in business.

— *Armenian Reporter*

Us Amateur Radio Operators give freely of their time, their skills and their privately owned radio communications equipment to aid others and communicate with relatives and friends in many inaccessible points throughout the world.

Copperweld

(*continued from page 15*)

to point radio circuits using frequencies in the HF range. The primary consideration was security and it was not feasible to apply censorship as was done with international traffic, so the stations were shut down by government order in June, 1942. The facilities were used for a short time by the Signal Corps of the U.S. Army and then closed and dismantled. After the war, increased need for HF channels in the international service, plus the war-time merger of the domestic wire telegraph companies, created drastic changes in the communications picture, and the depression born venture that had been so successful was never resumed.

Now, 40 years later, satellites and microwaves are leading a rebirth of domestic radio point to point. Meanwhile, amateur radio is probably the only service still handling domestic third party traffic in HF frequency bands.

ARRL (*continued from page 12*)

In the next article in this series we will discuss some of the "nitty-gritties" of how **QST** is actually published and sent to the membership. If you have any questions about the operation of the ARRL and Headquarters, write to your SCM, your Director or to the Headquarters Staff. They are there to help you.

continued next month

AIR

(*continued from page 28*)

land's Ron Thomas, W8QYR. He wonders if anyone has information on when the radiotelegraph operator (FCC Element 7, Aircraft Radiotelegraph Endorsement) was last used on domestic or international flights? Can anyone help him? Ron, if there are still any around you'll probably find them all on the ham bands. -HI- Seriously, if you can help him out write to either Ron or myself.

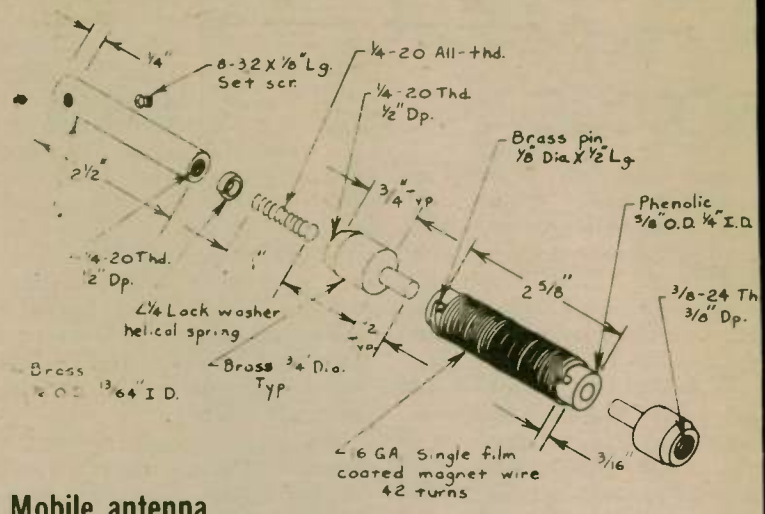
Good 'ol Jim Van Nostrand, WA7IFX, of Jackson Hole, WY has quite a tale to tell. The avid sailplane pilot says he works the jet of one of the major league baseball clubs regularly on 14.330 MHz. WA7IFX has things set up so that the ball club's broadcast engineer, who is an amateur, notifies him when they will be aloft. The engineer then tunes the aircraft Collins transceiver down to 14.330 and they QSO, sometimes over several states at a time. Jim uses an SB-102, sometimes a 220, too.

Now, about his sailplaning. WA7IFX has in the works the installation of a rig in a glider. He's planning to buy a Fournier RB5B motor-driven sailplane since he used to fly 'em in Ohio a few years back. Jim asked if there was much motor-driven gliding going on out here in the Midwest. Are you kidding? There's not very much sailplane activity here. There are two clubs that I know of within 50 miles...Chicago and Joliet, Illinois; otherwise, the sailplanes are primarily all made by Testors and Guillows. Keep in touch, Jim, and let us know how the radio-active gliding works out.

Speaking of Oshkosh: as you know, Wittman Field during the big Oshkosh bash has been known to have up to 150 airplanes on each leg of the pattern at a time. Unfortunately pilots are far too close to the actual nightmare to actually sit back and enjoy the mess going on between pilots and tower. Aircraft Development Company of Wichita, Kansas has produced what has to be the funniest cassette recording of the decade...the actual chatter between the very confused tower and 122 very confused pilots on final...**all at the same time.** This $7.95 may be the last investment in aviation you ever dare make. Let me advise amateurs planning to fly to the festivities this year NOT to listen to the tape until returning home; the EAA needs your money.

So, once more, *Aeronautical Mobile* passes the outer marker. Summer is here and a great time to throw that amateur rig in the airplane, helicopter (OK, OK, Jim) and yes, the sailplane. Let me know what you're doing in the aviation/radio areas these days. Drop me a note at my new address (again?) 533 South, Lincoln Avenue in Kankakee, Illinois 60901. And until next month, SEH-VUN THUH-REE.

ANTENNAS



Mobile antenna

Herb Skidmore, W5RDV

I've been doing a little antenna developing in which you might be interested.

I've developed a whip that will screw onto the Hustler spring and give about 2.2 db increase in radiation efficiency. Of course it is large, i.e. tall, when screwed onto the bumper mount and it required guying with some nylon or fiberglass string.

What I tried to do was develop a true center-loaded whip for the Hustler mast. This one I am using now is still not quite center-loaded. The reason is that when the antenna is true center-loaded the 1.5 to 1 SWR points is only about 200 kHz. With the radiator being a little shorter than the mast the bandwith increases. With the dimensions I am including the bandwith is about 360 kHz!

The SWR at resonance will increase from 1.02 to 1 to 1.08 to 1 as measured on our HP swept frequency system. With the SWR meters on the market I don't think you could see the difference.

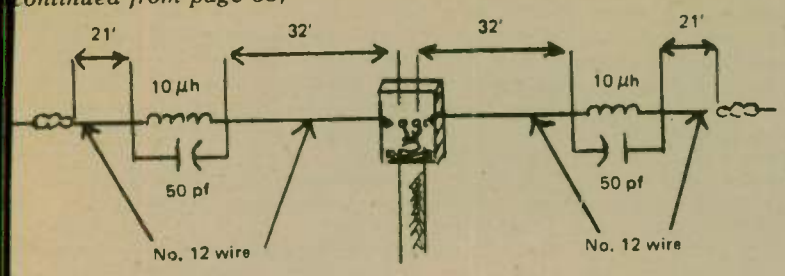
For anyone who has a small lathe and would like to give it a try, here are the coil dimensions.

The whip is 58" long and is cut from the top section of our 102" stainless steel whip, which has a diameter of .200 at that point. It would be possible to use other diameter whips but they would probably end up being longer & having a narrower bandwith. The whip must have a small metal ball on top. I used a 150 pf 1 KV silver mica capacitor across the bottom of the whip from center conductor of coax to ground to improve the match. Some rigs might require a higher rating capacitor. For the finishing touch I painted the coil with "Q-Dope" and covered it with 3/4" diameter 3 M Heat sink.

"MARAC Newsletter"

(*please turn to page 39*)

(continued from page 38)



5 band cape antenna

This five band antenna was designed by engineers at Cape Kennedy and is dubbed appropriately the 5 Band Cape Antenna". I have heard it on all bands and it worked extremely well. The construction details and drawings were sent to me by Lee Firman, W6GWL, and I believe this to be the answer to a low cost all band antenna that can be put together in only a few hours.

The drawing shows the antenna taken from one of the test prints at the Cape. The overall length of the system is 106 feet. It is best to keep the entire antenna horizontal if at all possible.

Build the traps first. Electrically, each trap consists of a 50 pf capacitor (Centralab 850S-50Z) which is shunted by a 10 uh inductor. It is rated at 7500 volts and should safely handle a kilowatt. Miniductor stock is used for the inductor (B & W 3905-1). It should require about 15 or 17 turns for each trap. There is plenty of space inside the inductor to install an 'egg' type insulator and the capacitor.

Once you have the capacitor, the egg strain insulator and the ends of the coil soldered together, use a grid dip oscillator to tune 7.1 MHz by pruning one end of the coil a very little at a time. It is a good idea to use the station receiver to assure accuracy of the GDO. Comments by Lee are that he used a 1:1 Balun and 75 ohm coax RG59 for low power and RG 11 for high power.

Bob Press, WA6FNE
"W6SD Carrier"

4 years

(continued from page 26)

service efforts. You are **Worldradio.**

As we close the chapter on what is past and look forward to the future it would be appropriate to recognize those who gave us that extra boost. Our gratitude (and that of all our readers) is extended to our special patron Lee Shaklee, W6BH, and to our **lifetime subscribers:**

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David C. Eastman
and two who wish to remain anonymous.

And our deep thanks to our good advertisers. We ask that you please patronize the firms whose support pays for the printing and the postage. The best to you from all of us.

Novice

(continued from page 37)

been your most interesting Amateur Radio experience up to now? What nets have you joined? What do you think of your local radio club? What kind of welcome did they give you? We're going to print a list of good ones that make the Novice feel at home.

A few things we'd be interested here at **Worldradio** in knowing is: How did you first hear about this Amateur Radio? Did you get your license on your own, by yourself, or did you go to a class? What did you think of the class?

We send a copy of this newspaper to every new Novice; it's our way of saying hello and letting you read about all the great things going on in your newfound activity. Since you've just spent a bunch of money on gear we'll make it a bit easier to afford this information source. For a Novice, your first subscription the annual rate is only $4 rather than the usual $5. You get a lot for your money with **Worldradio.**
— W6AJY

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Medical: Any licensed amateur radio operator in the medical or paramedical field should join MARCO (Medical Radio Council). Contact: Stan Carp, M.D., K1EEG, 44 Main St., Saugus, MA 01906, (617) 233-1234.

Editing a Club Paper? Need some help? Amateur Radio News Service would like to hear from you. For info write: Sybil Allbright, W6GIC, 8658 Encino Ave., San Diego, CA 92123.

Revolutionary!!! Learn or improve CW ability the easiest way. Developed by Russ Farnsworth, W9SUV. 13 wpm in half the time. 3 LP records, $9.95, CA + tax. DANA RADIO, 2704 16th St., Sacramento, CA 95818.

Be prepared for emergencies with the SST T-1 Random Wire Antenna Tuner. Also great for field day, camping trips, and home operation. Tunes a random wire for all band operation. $24.95 postpaid. 1 year guarantee. See large ad this issue. SST Electronics, Box 1, Lawndale, CA 90260 (Calif. res. add 6% sales tax).

Wanted: An opportunity to quote your ham needs. 36 years a ham gear dealer. Collins, Drake, Ten-Tec, Swan, Kenwood, Temp, Clegg, Regency, Icom, Hy-Gain, and all others. Also $25,000 inventory used gear. Request list. Chuck, W8UCG, Electronic Distributors, Inc., 1960 Peck St., Muskegon, MI 49441. (616) 726-3198, Telex-22-8411.

Beginners RTTY Handbook — Brand new with everything you need to know to get on RTTY. Theory, application and simple equipment you can build. $2.50. Published by the RTTY JOURNAL, PO Box 837, Royal Oak, MI 48068.

Free QSL samples — stamp appreciated. SAMCARDS, 48 Monte Carlo Dr., Pittsburgh, PA 15239.

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

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

Prestige call plates engraved on 2x8 blue, black, red or simulated walnut plastic $2 each. Winser, 2049 Yosemite, Milpitas, CA 95035.

Wanted: Old issues of WHITES RADIO LOG 1927-1957. Write or mail to Dennis W. Vasilatos, 7327 West Lane, Loomis, CA 95650.

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

Free Catalog! Semiconductors, ICs, Diodes, RF Transistors, Tubes, etc. Send SASE to MHZ Electronics, PO Box 7155, Phoenix, AZ 85011. Phone (602) 947-1287.

Buy — Sell Recondition Teletype Machines, Acoustic Couplers, Modems, CRT's and accessories. Call or write: Vardon & Associates, Inc., 930 N. Beltline, Suite 140, Irving, TX 75061, (214) 252-7502, TWX 910-860-5761.

Fax Paper, 19-1/8" wide. Good for weathermap and desk fax recorders. $2.95 box, 4 for $9.00, 12/$25. Fax and RTTY list free. Jim Cooper, W2BVE, 651-W Forest Avenue, Paramus, NJ 07652.

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

Wanted for boy's club. Technical Books, Magazines, and courses. E. Ezekiel, 43/2 Shaviv, Herzlia 46-221, Israel.

For Sale: Practically new SWAN CYGNET 270 xcvr. used about 25 hrs. — $415.00. HyGain Hamcat antenna system, 10 thru 75m, w/bumper mount — $50. Compl set QST since Oct. 1966 — make offer. Contact WB6VFF, 151 Forest Knolls Dr., San Francisco, CA 94131. Phone 415-731-2876.

Wanted: Regency Stand-by One VHF transceiver, 119-127 MHz. R. Boyd, 16923 Hillcrest St., N. Edwards, CA 93523.

Picture QSL cards made from your photo of yourself, shack etc. 250 — $10.00, 1,000 — $19.50. Full color from slide $38.50. Samples free. Picture cards. Box 5471, Amarillo, TX 79107.

Mobile Ops. Tired of Ignition Noise? Please send SASE for info on shielded ignition systems. Summit Enterprises, 20 Eider Street, Yarmouthport, Mass. 02675.

For Sale: Brand New Pencil-Thin Dynamic Microphones. Hi-Impedance, 10,000 ohms, with 14' cable, stand, lavalier holder and plug. Freq. Response 100-10,000 Hz. $3.95 postpaid. 20' Microphone extension cables with plug. $1.45 postpaid. Money back guarantee. M & S Enterprises, W6BJB, 721 N 20th St., San Jose, CA 95112.

Russian Postage Stamp honoring Ernst Krenkle (DXers will recognize him as RAEM) plus booklet on collecting topical stamps only 25 cents when requesting approvals of stamps depicting radio, TV, telephony, telegraphy, satellite communications, electronics, electrical engineering. Alkanstamps, Box 3494, Scottsdale, AZ 85257.

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Auto-Call keeps up with the latest ham info from Washington, D.C. Subscriptions $3.50 a year, sample copies 25 cents. Address: Auto-Call, 2012 Rockingham, McLean, VA 22101.

Bay Area ham radio repairs. Mack, K6BE, Berkeley. 415-548-1889.

Wanted: Old battery receivers, National SW-3, SW-4, SW-5, FB-7, Pilot Super Wasp, old broadcast receivers, magazines, call books handbooks, catalogs and early wireless material, Erv Rasmussen, W6YPM, 164 Lowell St., Redwood City, CA 94062.

Pre-1956 Baseball Cards Wanted. Particularly want pre-WWII cards issued by tobacco and candy companies. Horne, Box 1276, Paradise, CA 95969.

Free Bargain Brochure — ICs, Diodes, Transistors, etc. Send stamped, self-addressed envelope: WEIRNU, PO Box 1307, Colton, CA 92324.

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Police scanners — Regency ACT R10/H/L/U — $169.00, 10 free crystals. Bearcats: BC3H/L — $159.95, BC4 — $179.95, 8 free crystals. New BC101 — List $350.00. Special $295.00. Special prices with no crystals. Call 201-962-4695. Narwid Electronics, 61 Bellot Rd., Ringwood, NJ 07456.

Loads of model 15 KSR teletype machines — only $25. 19's complete with tables, reperferators, character counters, transmitter distributor, etc. — only $65. C.B. Goodman Co. 5454 So. Shore Dr., Chicago, IL 60615. Phone anytime: (312) 752-1000, ext. 516.

Unbelievable but true. There are a few amateurs who are not subscribers to this great newspaper. If you are one of them please note page 11. Get on the bandwagon. Now we also have a super special. If you're a little uncertain take our trial subscription — the next two issues for one dollar. Send it to "Worldradio", 2509-E Donner Way, Sacramento, CA 95818.

QSL samples with 400 cut catalog. Send 35 cents to: Ritz Print Shop, 5810 Detroit Ave., Cleveland, Ohio 44102.

Sell — 55 solid years of **QST** in binders. Make offer, all or part, W2AY, 29-29 213 Street, Bayside, NY 11360.

Your old gear collecting dust? Buyers & Sellers Ham Radio Brokerage. See our ad, page 28.

RF Connectors: PL259 or SO239, five for $3.50; UG175/U or UG176/U, five for $1.20; PL258 female splice, two for $2.25; M258 "T", $2.80 each; M359, two for $3.50. All postpaid. Outside U.S.A. add 15%. NJ residents add 5%. Send for catalog. Cookit, PO Box 101-C, Dumont, NJ 07628.

R-390 Receiver Owners — Now available, Government Surplus MX-2840/URR, Audio Frequency Detector. Used to convert the I.F. output to an audio output. Connects to I.F. output, J-116, of R-390. Brand new original carton contains: MX-2840/URR, connecting cables, power cable, technical manuals, spare parts kit, 110-125 VAC power supply. $29.95, prepaid. Colonel Wayne D. Russell, 9410 Walhampton, Louisville, KY 40222.

Want FTDX-100, cash or trade. Accutron gold watch, never used. Have Triton I w/AC, new, swap for Atlas. WØBNF, Box 105, Kearney, NE 68847.

Unscramble police code with decoders. Works on all scanners and receivers. For prices and brochure write: Don Nobles, Box 275, Hot Springs, AR 71901, 501-623-6027. (Dealers wanted)

Prop Pitch motors wanted — medium sized, in good condition. Need repair and maintenance manuals if available with motors, or separate. Need several for friends overseas, J. P. Ashcraft, WB5BFZ, 3008 Southwestern Blvd., Dallas, TX 75225.

Wanted to buy: pre-1930 Wireless gear and Morse keys. Any type? Condition. Write A. Shawsmith, VK4SS, 35 Whynot Street, West End, Brisbane, Queensland 4101, Australia.

Grounded grid filament chokes, 28 turns-double-on ferrite rod 30 amps. Sellout 5 for $23 postpaid. WA4LXX, F.E. Coble, 251 Collier Ave., Nashville TN 37211.

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Power Transformer — for Collins 516F-2 POWER SUPPLY. New — latest type $45.00. W. M. Thomas (WA6DST), 715 Silver Spur, Rolling Hills, CA 90274. (213) 377-7284.

Wanted — service manuals with schematics, or copies, for Morrow MBR-5 and Hallicrafters SX-71 receivers. W6OGL, 2404 Christmas Tree Lane, Bakersfield, CA 93306.

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Atlas Ops. Share in the Atlas Adventure Newsletter and Club being organized. Send SASE for full details and sample Newsletter. c/o ATLAS Newsletter, 9004 Harvest Way, Sacramento, CA 95826.

QSL Samples: .25, N & S Print, PO Box 11184, Phoenix, AZ 85061.

Wanted: SBA-300-4 two-meter converter for SB-301. W6OWM, 818 Cresta Vista Way, Aptos, CA 95003.

Collins 30S-1, excellent operating condition — $1050. Alpha 374, new in warranty — $975. Sid Sidman, 3571 Gresham Ct., Pleasanton, CA 94566. 415-846-2400.

Collins S-Line: 75S-3C, 32S-3, 516F-2, 30L-1, 312B-4 — $2200.00. C.T. Robertson, WB5LEE, RT #2 Box 144B8, Boerne, TX 78006.

Young man with proven sales ability wants to hear from reputable firm that needs distributor-salesman for line of electrical test equipment or radio products with good marketability. Can cover northwest Washington. Jim Kobus, 1567 Axton, Ferndale, WA 98248.

Wanted to buy antique, table-model radios of any make or condition, dating before 1932. Crystal, battery, or early AC types. Also old radio books and magazines, old tubes, radio parts. Write David WAØEUJ, 1880 Gage, Topeka, KS 66604.

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