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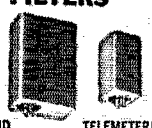

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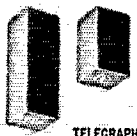

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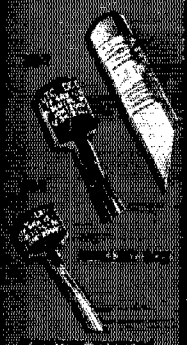
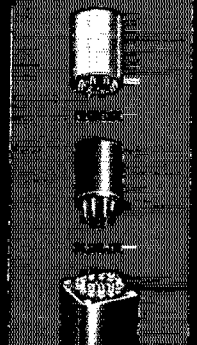


COMPACT WIDE-RATIO



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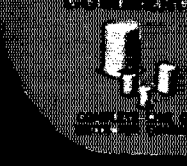

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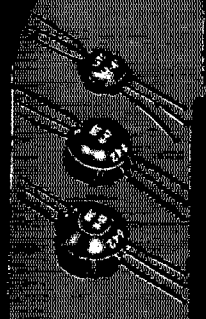
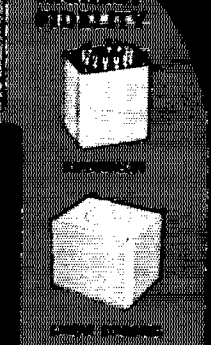


HIGHEST RELIABILITY



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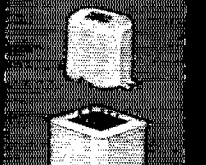

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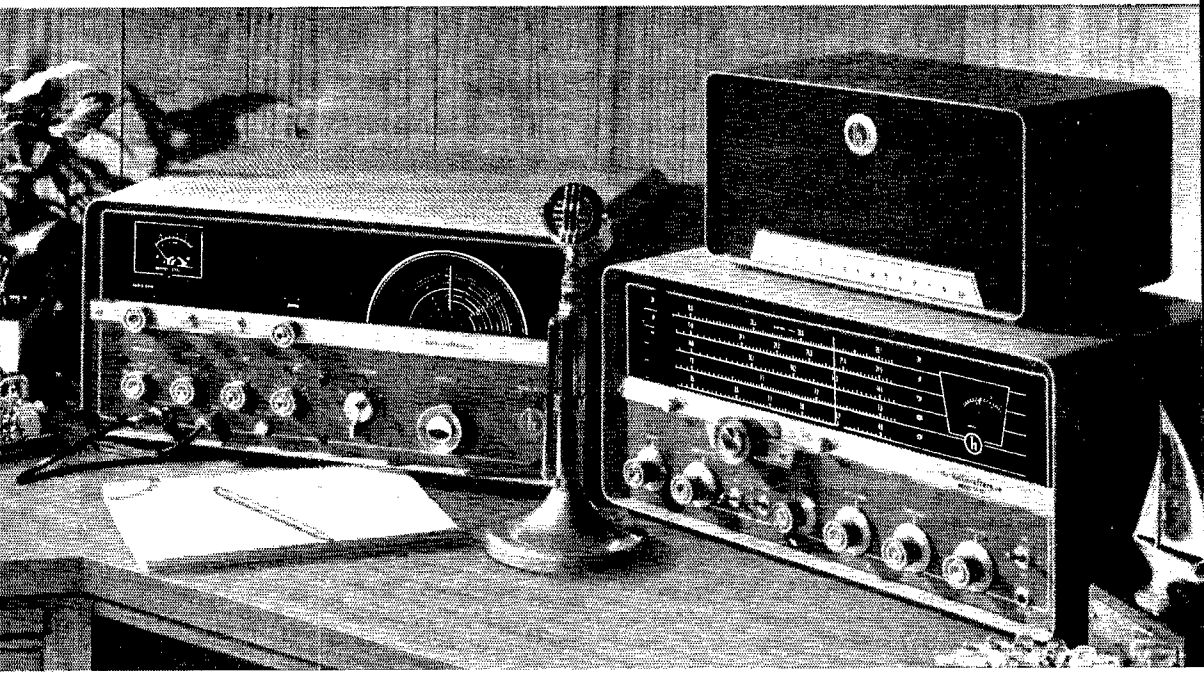

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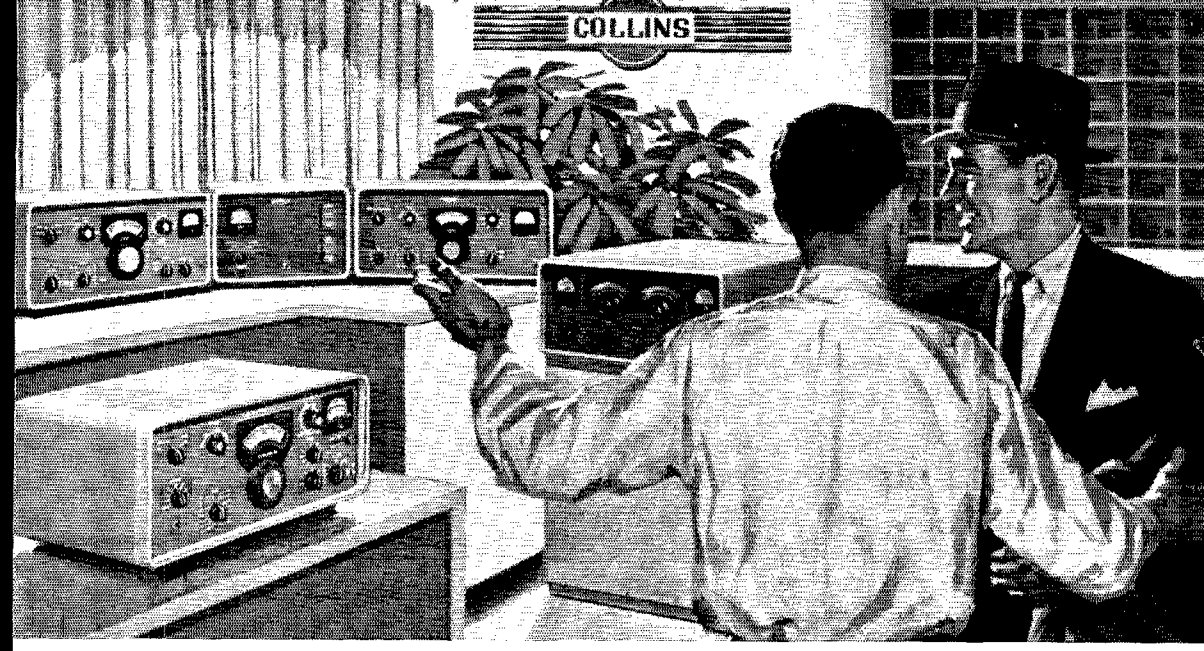

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JANUARY 1960

VOLUME XLIV • NUMBER 1

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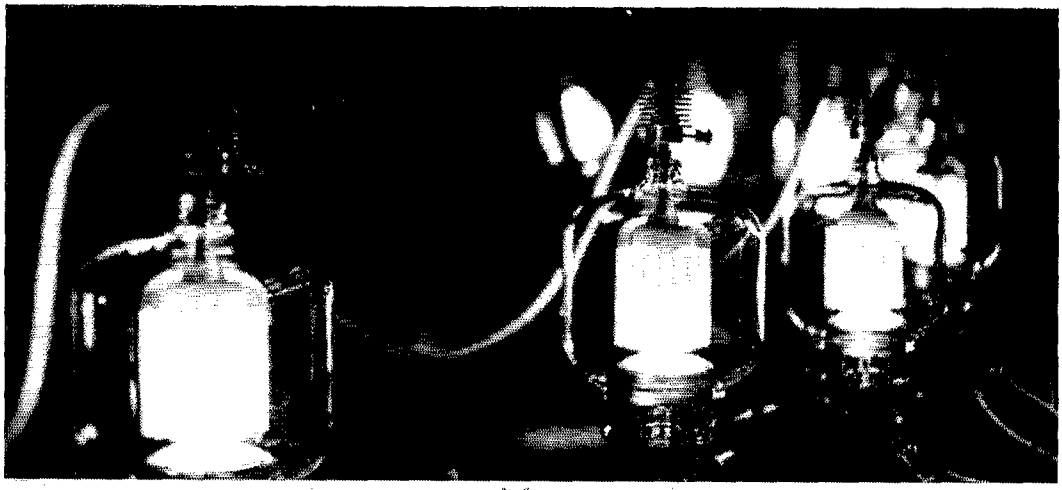

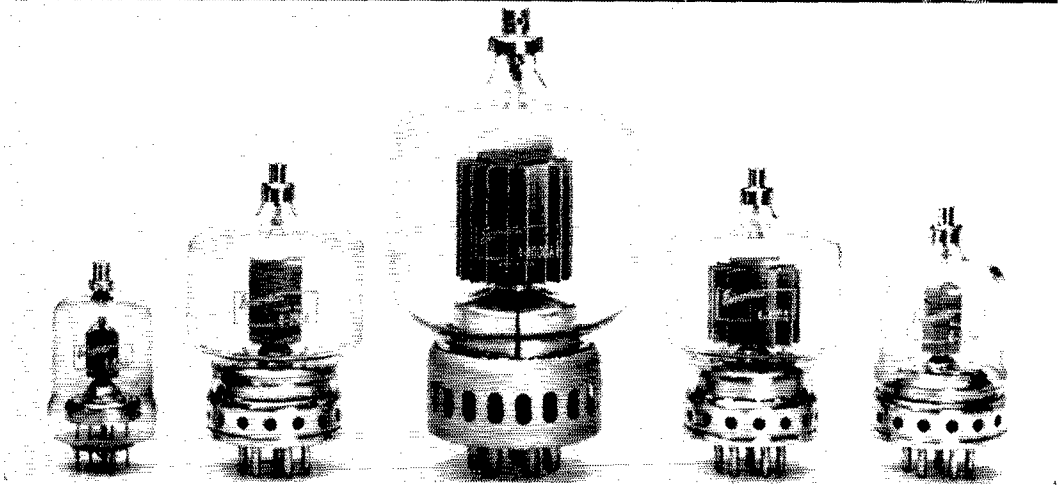

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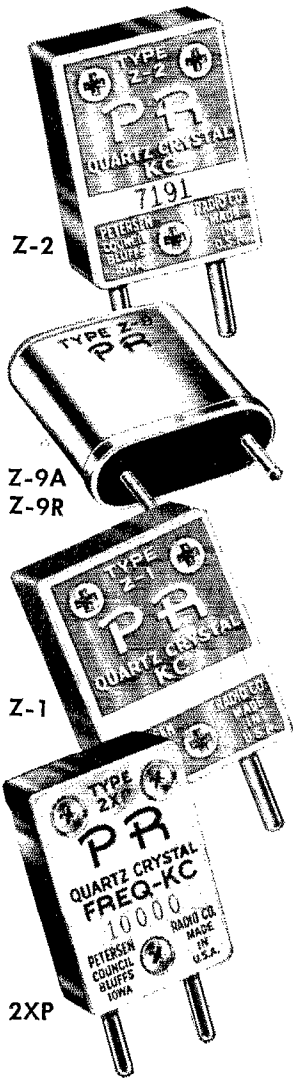

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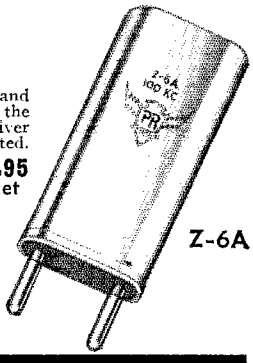

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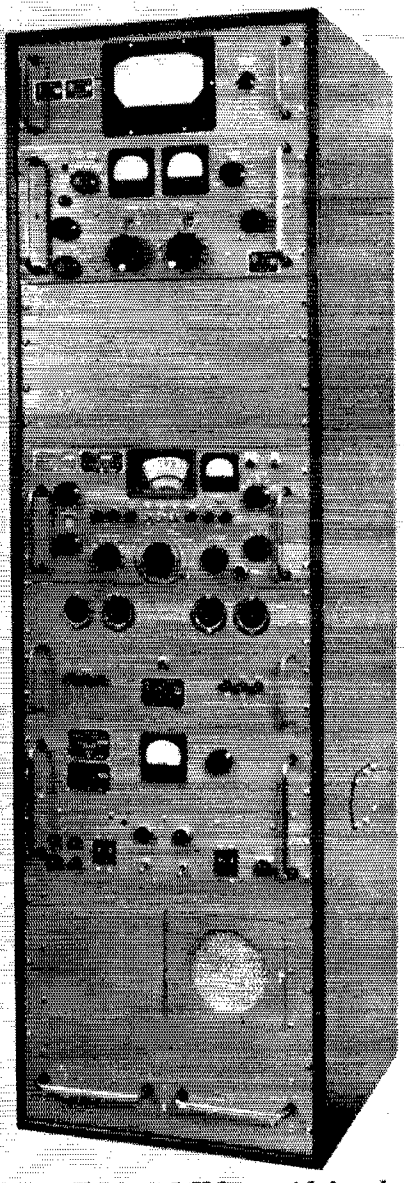

MODEL SBT-1K
BULLETIN NO. 237

3 KC or 7.5 KC per sideband.

With or without synthesizer.

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is a noncommercial association of radio amateurs, bonded for the promotion of interest in amateur radio communication and experimentation, for the relaying of messages by radio, for the advancement of the radio art and of the public welfare, for the representation of the radio amateur in legislative matters, and for the maintenance of fraternalism and a high standard of conduct.

It is an incorporated association without capital stock, chartered under the laws of Connecticut. Its affairs are governed by a Board of Directors, elected every two years by the general membership. The officers are elected or appointed by the Directors. The League is noncommercial and no one commercially engaged in the manufacture, sale or rental of radio apparatus is eligible to membership on its board.

"Of, by and for the amateur," it numbers within its ranks practically every worth-while amateur in the nation and has a history of glorious achievement as the standard-bearer in amateur affairs.

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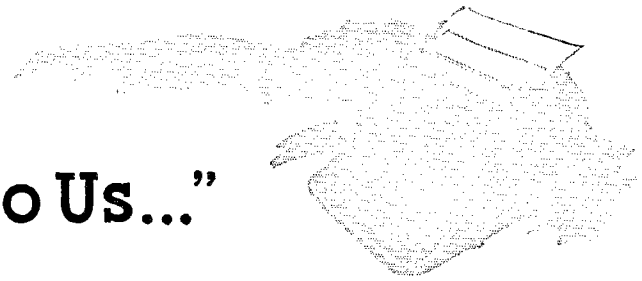


"It Seems to Us..."

THE YEAR IN REVIEW

Bright-eyed, young 1960 is running hard (it's a political year). He'd like to match an impressive list of amateur activities and achievements recorded in 1959.

Old Man 1959 leaves him a legacy that's going to be hard to beat. For one thing, there's the Geneva radio conference, a success story climaxing more than three years of work on the part of government and industry people, including the League. A kind word from President Eisenhower, two new third-party traffic agreements, new FCC rules permitting Technicians on two meters, along with other changes, four new v.h.f. records, increased Field Day activity, continued growth in the National Traffic System, strengthening of RACES, award winners — all these are part of the 1959 history book.

Topping the list is the Geneva story. For a solid four months commencing in mid-August, delegates from more than 80 nations met to examine the world's radio regulations and discuss their numerous proposals for revision. At our copy deadline the conference is almost — but not quite — over. Thus we can only report the outlook as of the moment — the happy prospect that the Geneva (1959) radio regulations will continue provisions for every amateur frequency assignment now available in Canada and the United States. Should more definite news arrive by press time, we shall include it elsewhere in this issue.

More good news in 1959 was that President Eisenhower, on the occasion of the opening of the International Radio Consultative Committee technical radio conference at Los Angeles, April 1, sent by amateur radio a message of greetings and welcome to the delegates from all over the world. The President's message, bestowing praise on amateurs, was delivered from W3WTE, the amateur station at the White House, which was in contact with K6USA, special amateur station at the CCIR conference.

From the White House where the amateur was in the limelight, we turn to the State Department, which announced two new third-party agreements, one of them just at year's end. U. S. amateurs may now exchange messages on behalf of third parties with Mexico and Venezuela, making eleven countries with which our government has agreements.

Domestically, the Federal Communications Commission amended amateur rules making two meters (actually 145-147 Mc.) available to Technician Class licensees. As the year drew to a close, three amateur dockets awaited Commission decision: the possibility of Extra Class license incentives, two and six meter c.w. sub-bands, and the proposed expansion of the 20-meter phone sub-band.

That the FCC's amateur license unit was again a bee-hive of activity is best illustrated by the fact that we're now over the 200,000 mark in numbers of U. S. amateur licensees. Only eight years ago we topped 100,000; how soon will it be 300,000 — or a million?

RACES also got a boost. Additional frequencies now include segments for c.w. (in 80, 40, 20 and 15) and phone (in 75, 40 and 15), along with military-to-amateur liaison channels at 75 and 6 meters. F.s.k. is now permitted in the 6-meter RACES band. There was also a change to provide remote control above 220 Mc.

During the year, FCC made other miscellaneous changes in the regulations — for example, giving notice that it might call up Technician and Novice Class licensees for personal examination in the event of a serious violation such as out-of-band operation, lack of purity and stability of signals, or transmitter-caused BCI or TVI. State governments kept pace with the FCC amateur actions, too: West Virginia and Iowa, during the year, were added to the list of states issuing amateur call letter license plates, for a total of 45 out of the 50, including Alaska and Hawaii.

The growing number of amateur licensees was paralleled by notable gains in the National Traffic System. Setting a good example, young 1959, for the month of January, reported message traffic totals rose from 14,000 to 24,500. The 1959 Field Day will also share in the growth spotlight — more than 13,000 amateurs participated, representing a gain of 16% over the previous year. There was also a marked rise in general contest activity and award applications such as DXCC and WAS.

Taking advantage of summer propagation conditions, v.h.f. enthusiasts accomplished four new DX records. Untopped at press time: W6DQJ/6–K6AXN/6, June 14, on 1215 Mc., 400 miles; W7JIP/7–W7LHL/7, July 24, 10,000 Mc., 187 miles; W6NLZ–KH6UK

(Please turn the page)

(mainland to Hawaii), June 22, 220 Mc., 2540 miles; and SM6ANR–G3KEQ, June 13, 420 Mc. 650 miles. The IGY v.h.f. propagation study project coordinated by ARRL formally terminated during the year, with considerable praise for participating amateurs received from the USAF Research and Development Command and the National Academy of Sciences. A somewhat less ambitious program, with a core of the same observers, was continued under the aegis of Stanford University with the specific aim of learning more about transequatorial scatter.

Some of our real old timers were taken back 35 years to "Wireless North Pole," the first radio communication with the polar area, when special-license K1WNP was operated aboard the historic Arctic exploration ship *Bowdoin* during its last voyage to the Mystic, Conn., sea museum. Eighteen-year-old Julius M. J. Madey, K2KGJ, was chosen to receive the GE Edison Award for his handling of more than 12,000 messages for isolated South Pole personnel. James J. Lamb, former technical editor of *QST*, was presented the ARRL Merit Award "for his contributions to amateur communication techniques, especially in the development of methods for achieving high selectivity and noise reduction in radio receptions".

In retrospect, 1959 gives us a lot to talk about. Geneva, new FCC rules, v.h.f. records, special events, operating and technical achievements, all produce a notebook Father Time is proud to haul out of his vest pocket and show to his grandchildren — the succeeding years. It takes teamwork and our active local clubs across the nation — from Portland, Maine to Turlock, California — helped the amateur fraternity make 1959 a good year to remember.

Welcome 1960! . . . and from the Headquarters gang, a Happy New Year to all!

QST

COMING A.R.R.L. CONVENTIONS

March 18–19 — Michigan State, Saginaw, Michigan.
May 1 — New England Division, Swampscott, Massachusetts.
July 30–31 — North Dakota State, Minot, North Dakota.

OUR COVER

Our cover this month is a "teaser," giving you an idea of what's coming in the February issue. It's a front-panel view of the DCS-500, a receiver built by W1ZIF and featuring 500-cycle selectivity. Judging from our correspondence during the past year, interest in home-built receivers is running high, and we're glad to add another suitable design to the list.

And say, people really do look at *QST* covers! The proof of that will be in the "Correspondence from Members" section of the February issue, where you will hear about the shocking December cover from a number of eagle-eyed readers.

Hamfest Calendar

Florida — The Dade Radio Club is spousoring the Tropical Hamboree in Miami on January 30 and 31. Two days of activities include technical talks and sessions on DX, V.H.F., antennas, sideband, and so forth. There will be contests and prizes, and a display of commercial equipment. The Hamboree activities will be held at the Miami Bayfront Park Auditorium. Pre-registration (prior to Jan. 15) is 50¢, or $1.00 at the door. The Saturday night banquet will be held at the McAllister Hotel, and the tab will be $4.75 per person. Special Hamboree hotel rates at the McAllister are $7 for a single and $10 for a double. For further information contact the Hamboree Chairman, % Dade Radio Club, P. O. Box 104, Miami 1, Fla.

Back Copies and Photographs

Back copies of *QST* referred to in this issue are currently available, unless otherwise indicated, from our Circulation Department. Please send money order or check — 50¢ for each copy — with your order; we cannot bill small orders nor can we ship c.o.d.

Full size (8 by 10) glossy prints of equipment described in *QST* by staff members (*only*) can be furnished at $1.50 each. Please indicate the *QST* issue, page number, and other necessary identification when ordering, and include full remittance with your order — we do not bill nor ship c.o.d.

Strays

A QSL card intended for K1BQT had a long trip — from Boothbay Harbor in Maine to Raymond, Maine, by way of Oregon.

The address read K7BQT, Chief Op., Raymond, Box 7, Portland, Maine. The box address was apparently no good. There was no name. A helpful postal clerk with some ham district knowledge forwarded it on to Oregon. The Oregon people discovered K1BQT on the face side of the QSL and sent it to Raymond, Maine, where it belonged.

The Oregon ham and postal clerk W7NGW — who rescued this card — comments: "This represents only a small percentage of cards with bad addresses. Most would be destroyed. If a card is worth having printed and filling out, it should be worth the time to do it right."

W1IJD and W1WFJ in front of the KG1FN shack. Rifle is taken along at all times, as protection against polar bears.

BY ROBERT H. MELLEN,* W1IJD,

with FRED J. WILLIAMS,* W1WFJ,

and CARL T. MILNER,* W1FVY

Hams on Ice

Six-Meter DX Operation at Fletcher's Ice Island, T3

AFTER years of trying to work those rare Arctic DX stations, few of us could resist the chance to actually operate one. Our opportunity finally came about when the U. S. Navy Underwater Sound Laboratory, New London, Conn., became involved with Arctic work in connection with submarine operation under the ice pack. After talking with the boys who participated in last year's program in the far North, Fred Williams, W1WFJ, and I decided that it probably wasn't as rigorous as it might first appear, and it would give us a chance to try out some ideas on v.h.f. propagation from north of the auroral zone.

A letter to Ed Tilton, *QST* V.H.F. Editor, requesting information about summer v.h.f. propagation conditions in the Arctic gave us the answer that very little was known and this might be an excellent chance to learn something about it. Carl Milner, W1FVY, veteran of the *Nautilus* polar trip, offered his spare-time services as expedition outfitter, procurement officer, public relations man, equipment debugger, and guardian of our interests at the home front while we were away, and the project got under way. By the first of April all gear was ready and packed and I headed north with three other Laboratory people toward our destination, Fletcher's Ice Island, T3. Fred was to follow later in May.

T3 is a 150-foot thick kidney bean of glacial ice about 5 by 10 miles in size, which had been drifting around the Arctic Ocean long before the Air Force first established a camp there in 1952. Since then it has served as a scientific station and home for as many as a dozen scientists at a time, with about an equal number of supporting military personnel.

In April of this year, T3 was still under the Greenland Air Command so entry to the far North was made via Thule. Our call, KG1FN, assigned by the MARS Director, Eighth Air Force, reflects the Greenland origin and also is appropriate for the phonetics "Frozen North," later modified to "Frozen Nose." In July the island was transferred to the Alaskan Air Command since it is quite a bit closer to Alaska than to Greenland.

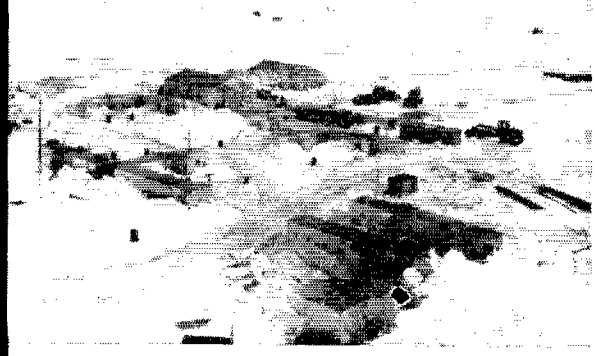
During the week layover at Thule Air Force Base we met some of the Greenland hams so familiar to stateside sidebanders; among them Rick DeZafre, KG1DZ, and Mel Fuhrmann at KG1BO. Here my first contact was made with home, via W1PHP and W1VP. Later during the summer we contacted Thule many times and chatted with the boys we had met on the way through.

The flight to T3 from Thule was a long one; more than a thousand miles over rugged islands and oceans of ice. T3 had drifted southwest to about 74° N 130° W, far from its position near the pole a few years earlier. On the afternoon of April 11, the plane let down into the snowy mist and landed smoothly on the 6000-foot snow-covered runway. The camp, which was to be home for six months, looked like an oasis in the frozen wastes, a far cry from the pathetic wind-blown tents of the early Arctic explorers.

We were met by the entire camp personnel, including Tramp, the huge Husky who turned out to greet us, taking advantage of the nose wheel to salute us in the manner common to all canines. Two of the boys held up a large banner reading "Welcome Arctic Hero." This was for former T3er Paul Adams, KN1LCP, who came to replace one of the Weather Bureau men. The temperature was 30° below but at least the welcome was warm.

After introduction to Col. Ed Feathers, the camp commander, I headed for camp to see the boys at the radio shack. The camp, a neat arrangement of 30-foot aluminum house trailers without wheels, looked very livable. One group of three trailers formed the main complex, housing the mess hall, recreation room and work room. Five others served as living quarters, and another four were scientific laboratories and the radio shack. Besides these buildings there were also a large garage housing the weasel and snow vehicle, a supply building and numbers of canvas-covered Jamesway huts. All buildings were ele-

* c/o U. S. Navy Underwater Sound Laboratory, New London, Conn.



Main camp on Fletcher's Ice Island, T3. Most buildings are aluminum house trailers, minus wheels. Island is floating block of ice, about 5 by 10 miles in size.

vated on ice pinnacles about ten feet above the general ice level, a reminder of the previous summer's melt which eroded away the ice surface everywhere except under the trailers. Already the yearly task of resetting them on the level ice and blasting away the remaining pinnacle was in progress.

At the KG1DT shack, I was warmly welcomed by old-timer and chief operator Bob Olson, W7YJP, and replacements Al Cresse, K5KJF and Bill Yarborough, K5DHY. The interior of the shack looked like any first-class station at home with the familiar KWS-1 and 75A-4, as well as the usual BC-610, military v.h.f. gear, and two beacon transmitters. With all the gear we brought along, it was sure to be an interesting summer. I was soon initiated into the group with a QSO with Stan Surber, W9NZZ, and sent some of the famous Stan-O-Grams. These were to substitute well for mail service, especially after the runway melted out, when we would be completely isolated from the outside world.

The next weeks were spent setting up our Jamesway laboratory hut at the edge of the island about a mile from the main camp and getting our scientific projects going. Since the island was completely surrounded by sea ice, we had some trouble finding the edge and the extreme cold made our work quite difficult. One morning we awoke to 40° below temperature and 30° below was common, but we knew the days were rapidly getting longer and the spring warm-up comes fast. Soon the midnight sun would bring temperatures into the comfortable 30s.

Business Before Pleasure

There wasn't much time for ham radio during these first few weeks. Our project required drilling several holes through the ice, which we soon found was 18 feet thick and cold enough to freeze shut again in a few hours. Keeping the holes open was a full-time job.

By the middle of June, however, all the snow was gone and the melt season began. Water collected everywhere in ponds and puddles before overflowing into the streams carrying it down to the sea ice. A large pond behind the shack was frequented by a dozen friendly and curious seals, which in turn attracted hungry polar bears. We spotted more than a dozen of these white monsters during our stay, but only one gave trouble. He was surprised in the camp area and chased the commander into his quarters.

After these many trials and tribulations things settled down and life was pretty easy. By the time Fred arrived in the middle of May our scientific projects were going well and we were on the air on 20 c.w. and phone with a long-wire antenna, Viking II CDC and GPR-90 receiver. The v.h.f. beams had been installed and the 6N2 fired up to automatically crank out KG1FN on 6 meters whenever possible. Soon Carl, W1FVY, reported the welcome news that he had contacted the Collins Company about our project and they were shipping us a KWM-1 on loan, to be returned if it survived air drop and rigors of the Arctic. Luckily, it arrived on the last plane of the season and we quickly hooked it up to our Telrex Tri-band beam to begin our almost daily schedules with W1PHP and the Lab Club station, W1RQU, operated by Carl. We were even able to continue our regular schedules on the Shoreline V.H.F. Society 2-Meter Net, with the help of a mike-to-speaker patch by W1PHP. Fred, who had been forced to leave home to get to T3 before the runway disappeared, was anxiously awaiting news of the long-delayed arrival of a new junior operator. When it finally happened the news took less than twenty-four hours to get through via W1PHP and the next morning Fred was able to get the news firsthand via W1VP. We got so used to chatting with the boys back in the States that only when the blackouts knocked out all h.f. signals did we begin to feel the isolation of our drifting home.

Six-Meter Signals, at Last!

In spite of the fact that Carl had written to 6-meter v.i.p.s throughout the world asking them to listen for KG1FN's six-meter signals on 50.04 Mc., and publicity had been given our project in *QST* and over W1AW, there was no sign of activity until May 7. At 2025 PST, several weak phone signals were heard coming from the direction of the Great Lakes. These could not be identified and faded out quickly. Nothing more occurred until late in June, when Carl reported that we had been heard in Tennessee and Florida on June 26 at 2055 EST.[1] I was sure sorry to have missed the opening but the long weary hours of fruitless operating had dulled our alertness. From that time on things started to pop and we seldom suffered the frustration of lack of activity on 6.

Word finally got to us that Jack Reich, KL7AUV, at Anchorage, about 900 miles to the southwest, had his beam toward us and was running automatic keying between 6:45 and 7:45 A.M.

[1] The time of this report does not tie in with the experience of the KG1FN operators as to time of band openings in the evening hours. More information would be helpful, and 50-Mc. operators who may have heard the KG1FN signal in any areas or at times not mentioned in this article are asked to send details to ARRL.

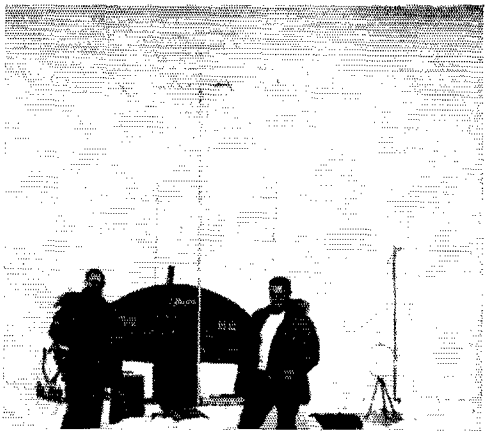
every day on 50.08. On July 7, the first time we listened, Jack was heard weakly but apparently he could not hear us. We continued to listen for him throughout our entire stay and heard him almost every morning except during h.f. blackouts. He deserves a medal for persistence, having operated more than 150 hours before finally making the grade.

Toward the end of July, strong signals below the six-meter band and Canadian Channel 2 TV signals were heard almost every evening. Finally, on July 25 at 1830 Alaskan time (2230 CST), our CQ was answered by W9ADM, Baraboo, Wis., giving us our first complete QSO. This was followed by an incomplete try with a VE4 in Manitoba, and a solid contact with KØGIQ, New Prague, Minn. That evening WA6AXG(?) and other California stations were heard but not worked. All were phone signals; weak and mostly unreadable. Our calls on c.w. failed to attract their attention. Where were the c.w. DX hounds who operate on 50 Mc.? The next morning at 9:00 A.M. KL7AUV answered our call and our first Alaskan contact was completed on c.w. with S5 signals.

Many evenings there were loads of signals just below the band, from the south, but no ham signals were heard again until July 31, when QSOs were completed with stations in Minnesota, Wisconsin and Alberta. On August 1 ten stations in these areas, and North Dakota and Michigan, were worked between 1920 and 2110 AST. DX breaks continued throughout August and early September. The total number of stations worked increased to fifty, with repeat contacts bringing the number of 6-meter QSOs to more than twice that number. Numerous attempts were made to break through on 2 meters but these failed, even when 6-meter signals were 40 over 9. The final score on 6 meters was 9 states worked, in the 7, 8, 9, Ø and KL7 call areas, plus VE4 and VE6. We missed a rare Utah contact August 11, when a Salt Lake City station was heard with an S9 signal at 2130. Some of the contacts with KL7CDG and KL7CJN were really "ragchews" when the Alaska path opened up in the evening. Our states worked were Alaska, Minnesota, North Dakota, Wisconsin, Michigan, Illinois, Nebraska, Iowa and Montana. Utah and California were heard.

If this doesn't seem like much of a score for six months' activity, compared to the hundreds of QSOs on the lower bands, consider that it was all done without F_2 openings, yet most of the distances were over 2000 miles. It would appear that this mode of propagation, whatever it may have been, has no counterpart at lower latitudes.

Fred did most of the operating on 15 and 20 c.w. and s.s.b. and racked up quite a number of contacts. Among the more interesting was a three-way between KC4USB in the Antarctic giving a number of stateside stations pole-to-pole



Antennas at KG1FN include 6-element 144-Mc. beam and 4-element 50-Mc. array, on 25-foot pipe, center, long wire on pole at the rear of the shack, and tri-band beam at the right.

contact in one operation. We also made contact regularly with Chuck, W7BCJ/MM, aboard the icebreaker *Staten Island*, which was operating in the area at the time, and in September learned that they were breaking through the polar pack to T3. Fred took advantage of this unusual mode of transportation to get to Point Barrow where he picked up a plane back to home and family.

New Propagation Mode?

As so often happens, the results of our v.h.f. experience seem to raise more questions than they answer. At least we know that during the summer and early fall months a sporadic type of propagation occurs fairly frequently. Whether this is connected in any way with auroral conditions is not known. One of the problems we were most curious about was the effect of transmitting through the auroral zone. This is a circle of high activity centered roughly at the north magnetic pole and passing through College, Alaska. During some periods of auroral propagation in the states our signals were reported steady and clear without any sign of auroral growl. If this is a type of forward scatter, it appears to be peculiar to 6 meters, since we never heard signals on the 2-meter band, in many hours of listening.

KL7AUV's signal from Anchorage in the mornings was also quite remarkable. At first, the "bursty" quality reminded one of tropospheric or ionospheric scatter. Between bursts there was a weak but steady background. The signals ap-

Operating position, with transmitter rack at the left. KWM-1 used mostly on 14 Mc. on the table at the right.

V.h.f. setup at KG1FN. A 6N2 Viking combination served for transmitting on 50 and 144 Mc. Tapetone converters (not visible) worked into GPR-90 receiver.

parently disappeared completely during h.f. blackouts, suggesting that the ionosphere played a part in propagation. Later in the summer the signals were entirely bursts of less than a second's duration, similar to meteor bursts, and often impossible to read.

During several periods of high solar activity, reception on v.h.f. was impossible because of the extremely high sun noise, at times as much as 60 db. above normal in the direction of the sun. Curiously enough, at one time the sun was quiet on 6 meters and 10 db. above normal on 2 meters. When scanning the horizon for sky noise with the v.h.f. beams, a hot spot in the direction *opposite* the sun was consistently noted in periods of quiet sun. Usually this effect gave an increase in sky noise 3 to 4 db. above normal on 6 meters and 1 to 2 db. on 2 meters. Tracking the noise showed that it followed the movement of the sun and more careful measurement seemed to show that it peaked up about 200° from the sun's bearing and not 180° as we had first thought. The sun was above the horizon twenty-four hours a day in this period. The effect also apparently disappeared during h.f. blackout.

In September and early October, when it was beginning to get dark at night again, several beautiful auroral displays were seen. Visible displays seemed to have little or nothing to do with v.h.f. conditions except on one occasion when rapidly variable noise was noted on 6 and 2 for several minutes.

By the first of October the new runway was ready and our projects completed. When we left on October 9, the 6-meter gear which had been left in the care of a new operator, K4JXL, was quietly grinding out KG1FN, but the equipment was taken off the air in late November. We are planning to return to the far North in February, but expect to stay at the second ice station, "Charlie," which should be very near the pole at that time. Plans for bigger and better v.h.f. beams and full scale operation on both 6 and 2 are under way and we are looking forward to more interesting v.h.f. activity from the North Pole.

Further Comments by W1FVY

Since this article was first prepared further study of transmission modes has led to some interesting possibilities. I had been telling Dr. Mellen that I felt sure that the auroral zone held the key to the explanation, but not as originally envisioned.

Last year the December issue of *Military Electronics* had an article on auroral effects on communications, which showed the location of the auroral zone. A study of Harang's book *The Aurorae* revealed the distribution of ionization in this layer to be highly concentrated at about 480 kilometers mean altitude. A reference to work of Lovett, *et al.*, reported in *Nature* of September 13, 1947, showed that their tests indicated that the base of the auroral cloud reflected 46-Mc. signals, not 76-Mc. signals. The latter work was apparently in connection with sounding the ionosphere from a location beneath the auroral zone.

With these bits of information the next step was to investigate the behavior of the ionized "auroral cloud" as a mirror reflector. Using a chart, we laid out the position of the auroral zone and of T3. Next, we drew a line representing the locus of reflections of T3 signals by the auroral mirror. Lo and behold — this line neatly falls directly through all the areas which Bob had worked this summer

We next used the 4/3 earth radius formula to determine how far along the auroral zone we could go before we reached the radio horizon, taking the effective height of our reflector to be about 500 km. This procedure indicated that Bob should have been able to reach as far east as the Washington, D. C. area.

One other factor which may be of significance was gleaned from the log: almost all contacts were made with stateside stations in periods of high auroral activity and within an hour of solar midnight at the stateside station, progressing westward in step with midnight in each zone.

The idea that the mode was some sort of reflection is borne out in the fact that the signals were of high intensity and showed very little "Arctic growl" or flutter. There was no auroral character reported from any of the stations worked and most reported only normal fading usually associated with F_2 or sporadic-E signals.

Harang's book indicates the base of the auroral layer is essentially flat and may be up to several degrees wide (100 to 200 miles). When this is considered, the mirror reflection zone will be twice

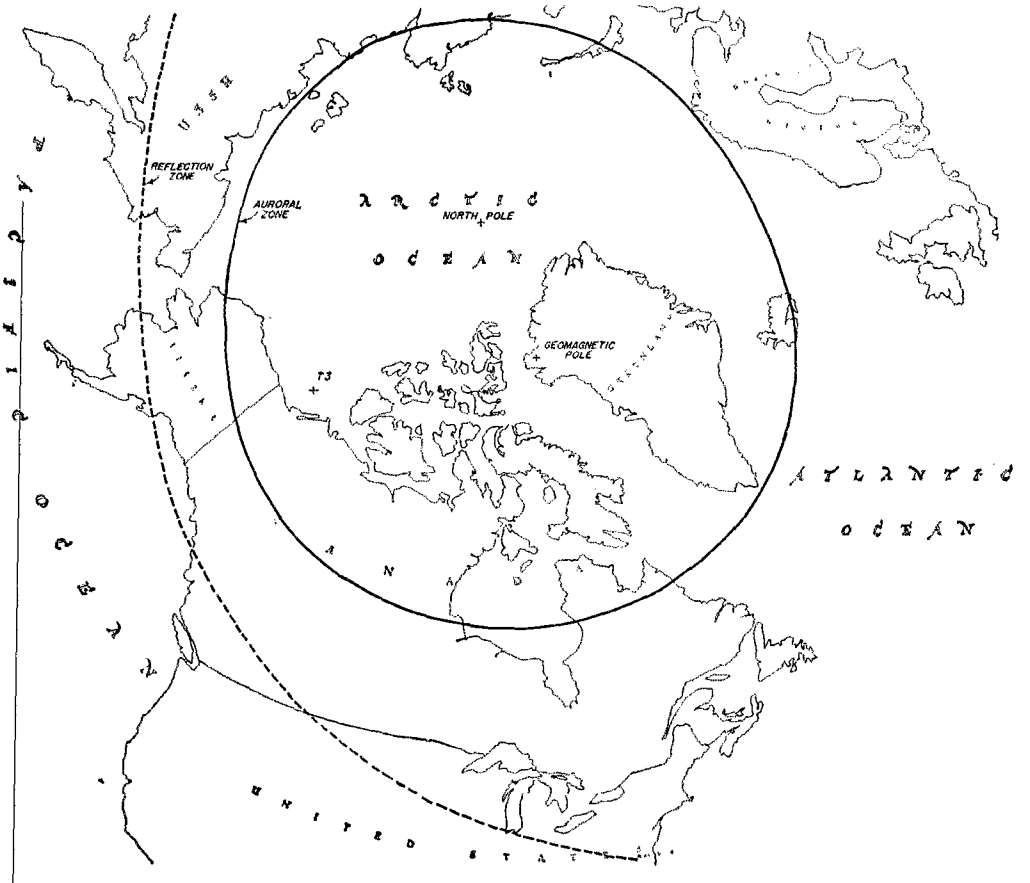
this width, due to square-law spreading. The fact that no 144-Mc. signals ever got through agrees with Lovett's findings for auroral reflection.

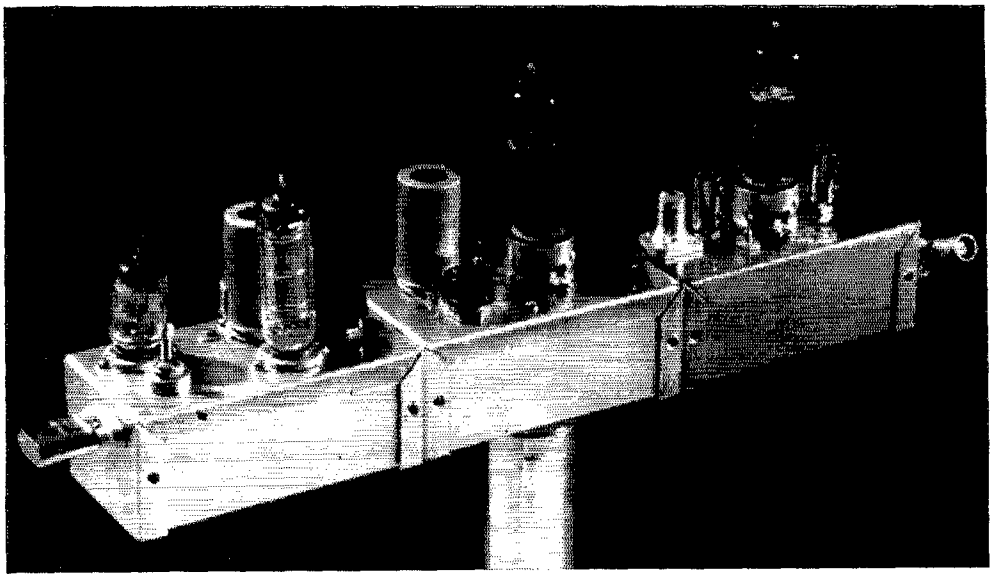
This theory may be verified during our 1960 winter trip to Station Charlie. A quick estimate shows that due to the more northerly location of Charlie the probable mirror zone may be limited to California, Nevada and Arizona. Areas farther east may be beyond the radio horizon. It also appears that a 6-meter station at Point Barrow ought to be able to work into the lakes region, and a station at Resolute, on Cornwallis Island in the Canadian Arctic, should be able to reach a zone extending all across the southern part of the United States. We hope we can get someone to set up 50-Mc. gear in these areas, to see if this theory can be confirmed. QST

Editor's Note — Examination of the KG1FN log shows instances of the band being open, judging by the evidence of commercial signals close to the band edges, but no signals of amateur origin in the band. Other entries show amateur signals heard, but no contacts possible. This lack of success can be charged in part to the large time differences. (T3 time was 5 hours earlier than Eastern Standard, and nearly all the KG1FN contacts were made after 1830, their time.) But lack of alertness on the part of some v.h.f. enthusiasts must also be admitted. We need to keep a more careful watch for weak signals, especially c.w., and we should not let our operating fall into too-rigid patterns as far as beam aiming is concerned.

Future operation on 50 and 144 Mc. at Ice Station Charlie, probably under a KL7 call will offer fine opportunities for gathering information on v.h.f. propagation in the far North. V.h.f. amateurs everywhere are asked to be on the lookout for these stations, and to report contact with or reception of them to ARRL. Whenever possible, details of these operations will be run in *QST*. Late information will be put out via the Headquarters station, W1AW, and other Bulletin stations.

A possible explanation for the far-north 50-Mc. propagation from KG1FN is reflection from the base of the aurora. The auroral zone is shown here as a solid line, centered on the geomagnetic pole. The broken line shows points that are within theoretical working range, assuming a reflection height of 500 kilometers. It will be seen that the areas worked by KG1FN on 50 Mc. following this line closely, though they cover by no means all of it.





The conversion unit for 144 Mc. by W3PYW is built in three small boxes, connected together. At the left is the crystal oscillator-buffer on 39.2 Mc. The middle unit is the 6360 tripler to 117.7 Mc. At the right is another 6360 used as a mixer Feeding 26.4- to 27.4-Mc. energy into this, along with the 117.6 Mc. from the other two stages, produces a resultant signal at 144 to 145 Mc.

Mixing for Two-Meter V.F.O., S.S.B. and F.S.K.

V.H.F. Operation with an Existing H.F. Exciter

BY FRANK C. WHITE,* W3PYW

AFTER missing some choice DX contacts during the last V.H.F. Sweepstakes, I decided that a v.f.o. for my two-meter rig was a "must." During the contest, I wanted to be within 10 kc. of the edge of the band, and I didn't have a rock that close. I also wanted to zero in on a local's frequency and work VE3DIR as soon as the local signed, and I didn't have a rock for that frequency, and so it went. Most v.h.f. enthusiasts will have a dozen reasons of their own for wanting v.f.o., but the conventional oscillator-multiplier arrangement simply is not good enough to satisfy the exacting v.h.f. man. If I was going to plunge and go v.f.o. on two, the results had to be topnotch. Here were my requirements:

1) Accuracy in calibration, preferably to within a kilocycle.

2) Stability, better than many crystal-controlled two-meter rigs currently in use.

3) Good keying; no chirps, no key clicks.

4) Ability to use s.s.b. or f.s.k. on two, when desired.

5) Suppression of all undesired products to *at least* 50 db. down; preferably 70 db.

* 2706 Harmon Road, Silver Spring, Md.

The foregoing requirements meant only one thing, mixing in the v.h.f. range had to be employed. Mixing is a technique that has been used since the advent of superhet receivers, and more recently in all transmitters designed for s.s.b. operation. It was apparent that a crystal-controlled frequency would have to be generated up near 144 Mc., with which a stable h.f. signal could be mixed to give the 144-Mc. output frequency. Several rules would be applied early in the design of such a unit. The crystal frequency should be as high as possible to eliminate unwanted harmonic radiation. The v.f.o. frequency should be as high as practicable to simplify elimination of unwanted products in the mixing process. Harmonics of the v.f.o. or crystal should not fall near the desired two-meter output frequency.

Some examples will serve to illustrate the trouble that can be encountered. Let us assume that we are going to use a 13-Mc. crystal with a quintupler and a doubler to give a crystal-controlled 130-Mc. signal. To the 130 Mc. we could add 14 Mc. from the v.f.o. to give 144. But wait a minute! The ninth harmonic of the crystal (117 Mc.) when added to the second

harmonic of the 14-Mc. signal (you can hardly keep it out) gives an undesired product of 145 Mc. And more yet! The thirteenth harmonic of the crystal gives you 143 Mc. This particular arrangement would give strong unwanted products every megacycle and weaker products every 500 kc. We can throw that combination out!

If we use a 26-Mc. third-overtone crystal (an obviously better answer) we make out somewhat better, but don't forget the tenth harmonic of the 14-Mc. v.f.o. which ends up right smack on 144 Mc., when the desired output is 144.8 Mc. (28.8 × 5). Thus, as you v.f.o. up the band toward 145 Mc., the undesired tenth harmonic and the desired mixing product get closer together in frequency. There is nothing much you can do to get rid of the unwanted products when this occurs.

I was fortunate in one respect; I had a KWS-1 which seemed like an appropriate source of a stable h.f. signal. The KWS-1 is provided with several convenient test jacks, one of which can be used to "rob" a small amount of h.f. energy. The decision was made to use the 11-meter range of the KWS-1, by taking the 27-Mc. signal from the plate of the 6CL6 driver.

If you don't own a KWS-1, don't sign off at this point. It is relatively simple to obtain a watt or so from most any h.f. rig without a major modification. All you need to do is put a 5-$\mu\mu$f. capacitor in series with the plate of a driver stage providing a few watts of power, and go through a pi network to match to a 50-ohm coax cable. In the case of the KWS-1, it was necessary only to insert a BNC plug in the 6CL6 driver plate circuit test point (which already had the 5-$\mu\mu$f. capacitor in series with it) and build the pi network into the smallest-sized Minibox. See Fig. 1. This was attached to the back of the KWS-1. Note that the capacitance of the coax cable to the KWS-1 provides the input capacitance for the network. The coil is a small slug-tuned 2-inch job, available ready-made. The output capacitance need not be variable unless you are a bit shy on drive. In my case, I use thirty feet of coax cable and end up with ample 27-Mc. signal to drive the grid of the v.h.f. mixer at the far end.

When the KWS-1 is used in this way, the heater use for the final (fuse F_{503}) is removed and the heaters and blower motor are shut down. When the KWS-1 is used on the h.f. bands, the pi network is left plugged in, as it has no effect on the normal operation.

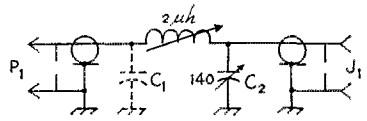


Fig. 1—Coupling unit for taking off 11-meter output from the 6CL6 stage of the KWS-1. Capacitor values in $\mu\mu$f.

C_1—Capacitance of the coaxial cable (6 inches of RG-58/U, with BNC fitting attached).

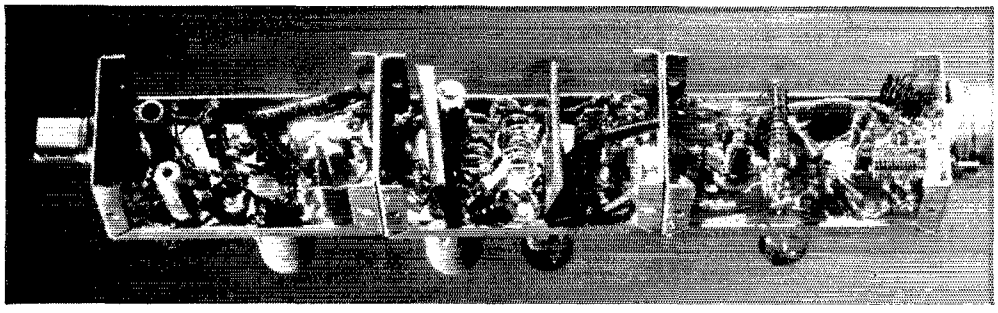
C_2—140-$\mu\mu$f. variable. (Need be variable only if available power output is marginal.)

J_1—Coaxial chassis fitting, BNC type.

P_1—Coaxial cable fitting, BNC type.

The 11-meter band of the KWS-1 was used, to reduce undesired products in the mixer as much as possible. If the 10-meter band had been used and the 28-Mc. output were mixed with a 116-Mc. crystal-controlled signal obtained from the third harmonic of a 38.666-Mc. crystal, trouble would be encountered as this combination is tuned toward 145 Mc. When it is being used at the low end of the two-meter band, the fifth harmonic of the 28-Mc. signal (140 Mc.) is 4 Mc. removed from the desired output on 144 Mc. (28 + 116). Four megacycles is enough separation to keep the undesired products down pretty well, but it doesn't provide the 70-db. reduction which was stated in my requirements as the goal. If you do not have an 11-meter output available, the 28 + 116 combination can be used for covering the lowest 500 kc. of the two-meter band, but not much more, unless you live out in the "boon docks" where a signal 30 to 40 db. down from your fundamental won't bother neighboring hams. The best answer is to buy several crystals and cover the band in 500-kc. chunks and restrict the v.f.o. range to 28 to 28.5 Mc. The overtone crystals are relatively inexpensive anyhow.

The 11-meter range of the KWS-1 is ideal for the purpose. It covers from 26.4 to 27.4 Mc., which provides 1-Mc. coverage at two meters. A



Bottom view of the three Minibox assemblies, with components in the order shown in the other photograph. Note that copper shields are mounted across the tube sockets in the middle unit.

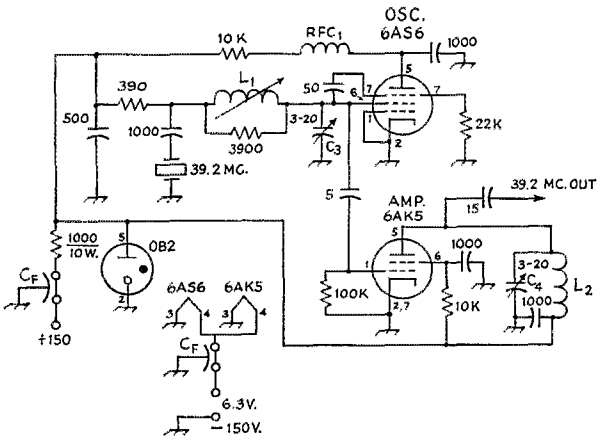


Fig. 2—Oscillator-amplifier assembly for the 144-Mc. s.s.b. conversion string. Capacitor values in $\mu\mu$f. Resistors ½ watt.

C_F—Feed-through capacitor, 55 $\mu\mu$f. or more.

C_3, C_4—20-$\mu\mu$f. miniature variable (Johnson 160-110).

L_1—14 turns No. 22 enam. on ⅜-inch slug-tuned form.

L_2—22 turns No. 22 enam., ¼-inch diam., close-wound.

third-overtone crystal at 39.2 Mc. is used. The third harmonic (117.6) is mixed with 26.4 to give 144 Mc. With this particular combination of frequencies the nearest unwanted products are 157.6 (39.2 × 2 + 26.4 × 8) and the fifth and sixth harmonics of the crystal which fall at 132 and 158.4 Mc. By careful check with a 75A-4 receiver, it has been proven that there are no unwanted products with this frequency combination that can be found, when a "50 db. over S9" signal on the fundamental frequency is used as a reference.

The entire oscillator-mixer assembly is built in three 2 × 4 × 1½-inch Miniboxes. The transistron oscillator (Fig. 2) is novel and is highly recommended. It is stable and settles down on frequency after *thirty seconds* warm up. You may have a pet overtone oscillator circuit that gives more output than the one shown, but I doubt if you can find one more stable. In my opinion, a major contribution to the success of my unit has been this circuit. The crystal is series resonant and is part of a pi network. The grid-cathode capacitance of the 6AS6 is the other capacitive portion of the network. The output of the oscillator is only a few milliwatts. The 5-$\mu\mu$f. coupling capacitor is made from the insulated wire leads, twisted together. Originally, I had planned to triple in the 6A5K (5654) stage that followed the oscillator but because of the low output from the oscillator it was found necessary to run straight through on the crystal frequency. Although I anticipated trouble with the 6AK5 buffer, there was no tendency to oscillation.

The voltages of both the 6AS6 and 6AK5 are stabilized, even though a plot of frequency variation with a.c. voltage change (no VR tube) shows only minor frequency change. With the VR tube installed, I varied the line voltage from 90 volts to 120 a.c. and the crystal frequency didn't move a cycle. As shown by the schematic, the crystal oscillator and buffer are in a Minibox by themselves. This type of construction is recommended for circuit isolation. The power leads enter each Minibox on feed-through capacitors. I had 55 $\mu\mu$f. on hand. Any similar or larger value would suffice.

The output of the 6AK5 buffer is fed to a second 6AK5 which operates as a tripler driving a 6360 buffer on 117.6 Mc. With these two stages, Fig. 3, housed in their own Minibox, the circuit isolation is ideal. The 6360 mixer is in a third Minibox. The 117.6-Mc. output of the 6360 buffer is fed to the cathode of the mixer. This is highly preferable to use on the screen, which has been suggested previously. Cathode injection with push-pull output nicely eliminates the 117.6-Mc. energy from the output. The cathode

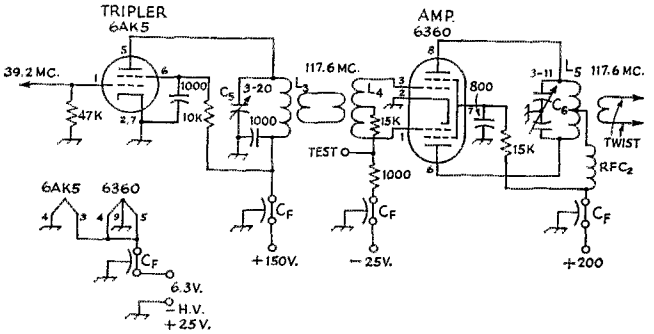


Fig. 3—Tripler-amplifier for developing 117.6-Mc. injection for the mixer. Capacitor values in $\mu\mu$f. Resistors ½ watt.

C_5—20-$\mu\mu$f. miniature variable (Johnson 160-110)

C_6—11-$\mu\mu$f. butterfly variable (Johnson 160-122).

C_F—Feed-through capacitor, 55 $\mu\mu$f. or more.

L_3—5 turns No. 16 enam., ⅜-inch diam., ⅜ inch long, c.t.

L_4—8 turns No. 18 enam., ¼-inch diam., ¾ inch long. Mount L_3 and L_4 parallel, ½ inch c. to c. Link between has 2 t. No. 22 enam. at each end, with leads twisted. Insert links at centers of both coils. See photo.

L_5—Same as L_4; 2-turn link at center.

RFC_2—1.8-μh. v.h.f. choke (Ohmite Z-144).

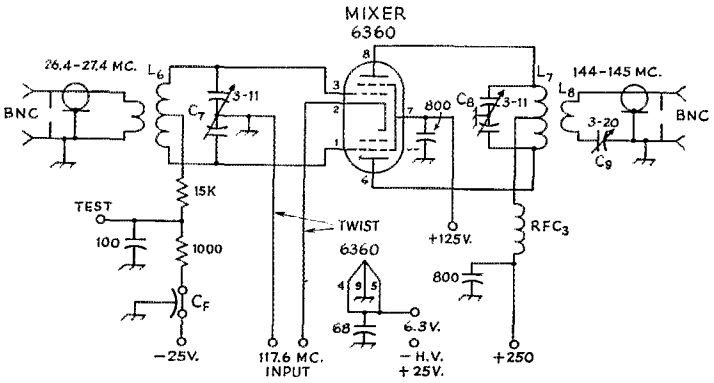


Fig. 4—Mixer stage for 144-Mc. output. Capacitor values in $\mu\mu$f. Resistors ½ watt.

C_7, C_8—11-$\mu\mu$f. butterfly variable (Johnson 160-211).

C_9—20-$\mu\mu$f. miniature variable (Johnson 160-110).

C_F—Feed-through capacitor, 55 $\mu\mu$f. or more.

L_6—50 t. No. 22 enam., ¼-inch diam., 1¼ inches long, c.t. Can be wound on high-value resistor. 5-t. link at center.

L_7—6 t. No. 16 enam., ⅜-inch diam., ⅝-inch long, c.t.

L_8—3 t. No. 22 enam., ⅜-inch diam., at center of L_7.

RFC_3—1.8-μf. r.f. choke (Ohmite z-144).

of the 6360 is not tuned.

The 11-meter output from the KWS-1 (about a watt) was fed to the mixer through coax cable and link-coupled to the grid of the 6360. With push-pull input and output, the even-order harmonics are eliminated in the output.

The 6360 mixer gives about 3 watts output, which is used to drive a pair of 6155s, Class AB_1 at about 175 watts output. This combination, using the KWS-1 as a source of 11-meter s.s.b. signal, has provided many excellent s.s.b. contacts on two meters.

The KWS-1 frequency is varied to permit covering from 144 to 145 Mc. with only a "touch-up" of the 6360 mixer and 6155 output tuning near 145 Mc. A crystal on 39.533 Mc. is plugged in to cover 145–146 Mc. No adjustment of the tuned circuits of the crystal oscillator portion is necessary. Assuming the frequency of the 11-meter signal is correct, the two-meter output frequency should be within 5 kc. of that predicted. The crystals supplied to me by the American Crystal Company (823 Fifth St., Kansas City, Mo.) produced an output on two meters that was within 2 kc. of the predicted frequency.

Anyone who has used a mixer to produce clean signals knows the pleasure that can be expected in keying the 11-meter signal to produce c.w. on two meters. The signal is chirpless and sounds more like a 40- or 80-meter signal than one on two meters. I have been most pleased with the performance of the unit described and want to pass on the information on design for the benefit of others. QST

Strays

Here are the January schedules for the various MARS technical nets.

First Army MARS

(Wednesday evenings, 2100 EST, 4030 kc. upper sideband)

Jan. 6 — The Automicron.
Jan. 13 — Antenna Multi-Couplers.
Jan. 20 — Television and the Amateur Operator.
Jan. 27 — Basics and Applications of Re-inforced Plastics in Communications Products.

AF-MAR Eastern

(Sundays 1400 EST; 3295, 7540 and 15,715 kc.)

Jan. 3 — Recess date.
Jan. 10 — Review of Technical Topics.
Jan. 17 — Basics of Single Sideband.
Jan. 24 — Fundamentals of Transistors.
Jan. 31 — Optics and the Visible Spectrum.

AF-MARS Western

(Sundays 1400 local time; 7832.5, 3295 kc. and 143.46 Mc.)

Jan. 3 — Technical Net Session.
Jan. 10 — Basic Radioteletype Discussion.
Jan. 17 — Radioteletype Printer Maintenance and Trouble Shooting.
Jan. 24 — Electrochemical Power Cells and Accessory Equipment.
Jan. 31 — Net Session and Conversion Information with a Technical Discussion.

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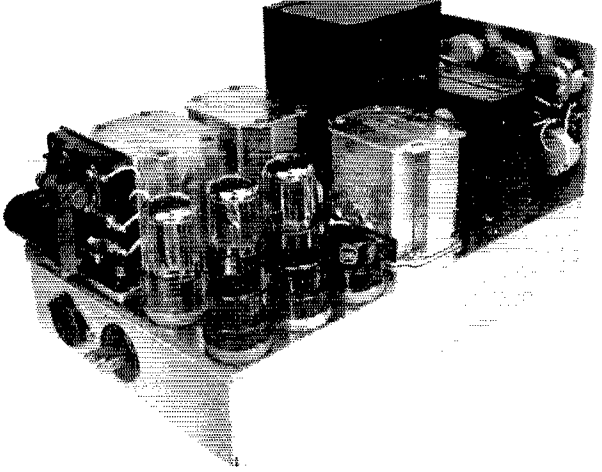
The Columbus, Ohio, Amateur Radio Assn. made the *Columbus Dispatch* Sunday magazine with big pictures and headlines explaining Field Day activity. Commented the baffled reporter: "Radio amateurs' Field Day is known far and wide among the radio hams as real fun, but we never saw a more serious, harassed bunch of guys in our lives."



The break-in unit built by W2LYH makes liberal use of surplus and salvaged ("junk box") components, but suitable currently catalogued items readily can be substituted. The chassis size is 7 × 11 × 2 inches. The circuit layout is not critical, and may be varied to suit the builder's taste. The panel at the far end has the nine potentiometer controls and the phone jack mounted on it.

Combining Keying Wave Shaping, Antenna T.R. Switching, Receiver Muting, and Side Tone

A Complete Break-In Unit for C.W.

BY ROBERT V. McGRAW,* W2LYH

This unit does everything you need for effective c.w. break-in operation, including amplitude limiting of incoming signals and elimination of keying and switching clicks in the receiver. It's based on using a "silent" v.f.o., the alternative to oscillator keying.

ONE of my favorite ham radio subjects has always been break-in c.w. operation, and the different methods of obtaining it. Since descriptions of these methods have been very interesting to me, I thought that perhaps the system used at this station might be of some interest to others who have been working on the same problem. The system provides full break-in operation, in which the breaking signal can be heard between dots at the fastest sending speed, with no compromise in the quality of the transmitted signal. It uses only one antenna and gives monitoring of the keying without clicks or thumps in the headphones. Most of the functions of the system have been combined into one unit, as shown in the photographs. These functions will be described separately.

Transmitter Keying

The transmitter uses a shielded v.f.o. unit with a continuously-running oscillator and two untuned Class A buffer stages, and grid-block keying is applied in a stage which doubles to 80 meters. The local signal is absolutely inaudible on any band with the key up, so there is no need to key the oscillator,[1] and the keying can be shaped as desired by adjusting the constants of the keyer circuit.

The blocking bias is supplied by a half-wave rectifier, V_{5B}, Fig. 1. The leading and trailing edges of the keying envelope are adjusted by means of R_9 and R_{10}. The purpose of diodes V_{6A} and V_{6B} is to separate these two adjustments, so that one does not affect the other. When the key is closed, capacitor C_1 discharges through V_{6B} and R_9, thus shaping the leading edge. When the key is opened, capacitor C_1 charges through V_{6A} and L_1, thus shaping the trailing edge.

Inductance L_1 could be replaced with a resistance but, as pointed out by W1DX,[2] while an RC circuit gives a good leading edge shape, a better trailing edge shape is obtained with an LC circuit. This is shown in Fig. 2. It is possible to round off the trailing edge nicely without putting tails on the signal, and the envelope as seen on a scope shows the same shape on the leading and trailing edges. In a high-impedance keying circuit such as this, a rather high inductance value is required for L_1 — something on the order of 500 to 1000 henrys. The secondary winding of a junk-box audio transformer has worked very well, and a good range of adjustment is obtainable by shunting the primary winding with R_{10}.

The shape of the keying envelope seems to be unaffected by the following stages of the transmitter if no stage is overdriven. Naturally, if a

* Peg's Lane, Riverhead, N. Y.

[1] This requires using a low-frequency (160-meter or broadcast band) v.f.o. followed by a Class A amplifier, both well-shielded, before the keyed stage. Such a unit was described in *QST* for February, 1950 (Smith, "A Solution to the Keyed V.F.O. Problem").

[2] Goodman, "Chirp-Free Break-In Keying," *QST*, October, 1953.

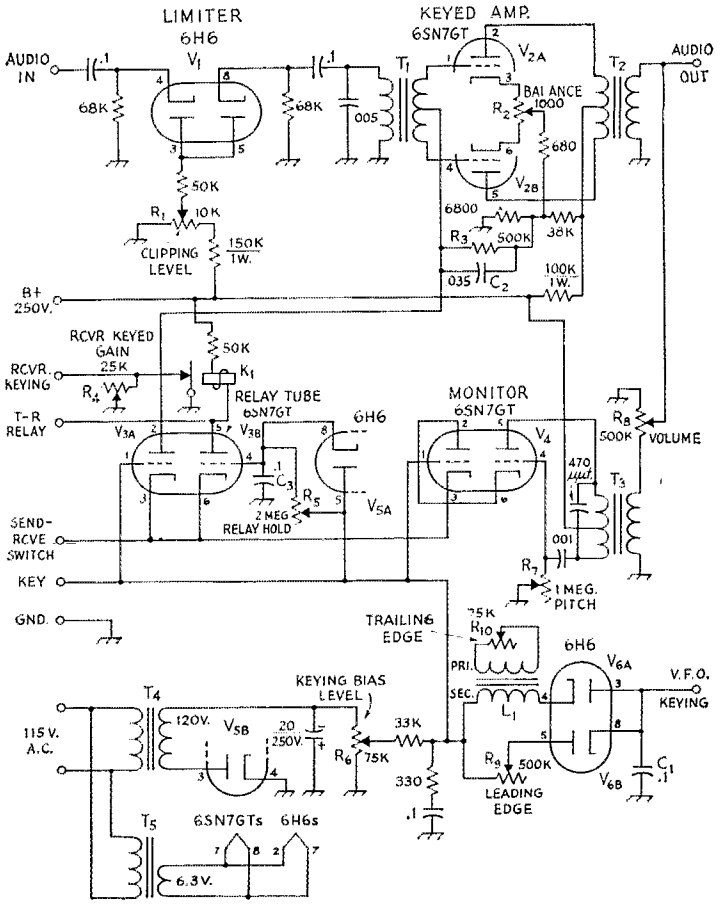


Fig. 1—Circuit diagram of the c.w. break-in unit. Return paths for keying, audio and send-receive switch circuits are to ground (chassis). See Fig. 3 for t.r. relay circuit. Unless otherwise indicated, capacitances are in μf., resistances are in ohms, fixed resistors are ½ watt. Capacitors with polarity marked are electrolytic; others may be paper, mica, or ceramic as convenient.

C_1, C_3—0.1-μf. paper.
C_2—0.035-μf. paper.
K_1—Fast-acting sensitive relay, s.p.s.t. or s.p.d.t. (see Fig. 3).
L_1—Audio transformer, interstage type; see text.
R_1, R_2—Composition control, linear taper.
R_3—0.5 megohm, ½ watt.
R_4, R_6—Composition control, linear taper.
R_5, R_7, R_8—Composition control, audio taper.
R_9, R_{10}—Composition control, linear taper.
T_1—Interstage audio transformer, single plate to p.p. grids (any type satisfactory).
T_2, T_3—Output transformer, plate to line type (Thordarson 22S72 or equivalent suggested).
T_4—Power transformer, 125 volts at 15 ma. (Stancor PS-8415 or similar).
T_5—Filament transformer, 6.3 volts at 3 amp.

stage is driven beyond the point where its output ceases to rise it will act as a limiter and will tend to square up the keying envelope. The v.f.o. is provided with an output control, which is set at the point where the antenna current just starts to drop. This control is also used for adjusting the power output of the transmitter, giving smooth control from zero to maximum.

Fig. 2—Trailing-edge wave shapes with *RC* and *LC* circuits.

Limiter and Keyed Audio Stage

The audio output of the receiver is fed through a limiter, V_1, and a keyed audio amplifier, V_2, to the headphones. The limiter prevents signals from rising above a chosen audio level, and is quite useful for saving the eardrums. The keyed amplifier serves to disconnect the phones from the receiver when the key is down, so that any clicks or thumps which might be generated in the receiver are not heard. When the key is closed, V_{3A} conducts, and the voltage drop across R_3 and C_2 instantly biases both triodes of V_2 beyond cutoff. When the key is opened, the triodes do not conduct again until C_2 has discharged through R_3, giving a few milliseconds delay, during which time the transmitter output drops to zero, the receiver r.f. gain is keyed to normal level, and the

antenna is switched to the receiver. A push-pull amplifier is used so that the plate current can be cut off sharply without causing a click in the phones. Potentiometer R_2 is set to the point where the click is balanced out.

Relay Tube

The "relay tube", V_3, performs two functions. One triode keys the audio amplifier, V_2, as just described. The other has two relays in its plate circuit. One relay (Fig. 3) serves as a t.r. switch,

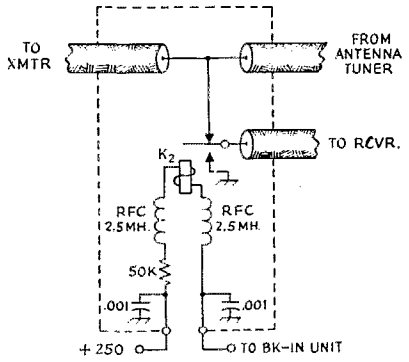


Fig. 3—Coax-line break-in relay circuit. In actual construction, a single chassis-mounting type coax connector is used at the junction of the lines from the transmitter and antenna tuner, with a "Tee" fitting for making the connection, as shown in one of the photographs. The relay is the same as the keying relay in Fig. 1; the one used by the author is a Signal Corps type BK-35, but any fast-acting relay having a 10,000-ohm coil can be used. Suggested alternatives are the Sigma 4F, 5F or 11F, Advance SV, Potter & Brumfield SS5D, or Struthers-Dunn 1AXA124.

and the other, K_1, keys the receiver r.f. gain by the well-known method of lifting the normally-grounded end of the r.f. gain control from ground. Since there is no need to reduce the gain all the way to zero, R_4 is included to provide a means for adjusting the key-down gain; this gives the relay contacts less work to do, and also permits monitoring the transmitted signal directly at the receiver output if desired. It is evident from the circuit diagram that when the key is closed, capacitor C_3 will discharge rapidly through diode V_{5A}, triode V_{3B} will conduct, and both relays will operate. The relays are closed before any r.f. comes from the transmitter.

While it is desired that the relays operate quickly when the key is closed, they should hold in for a few milliseconds after opening the key, until the transmitter output has dropped to zero. This action is achieved by allowing C_3 to discharge rapidly through diode V_{5A} when the key is closed, and to charge more slowly through R_5 when the key is opened. The cathodes of the relay tube and the audio oscillator are returned to ground through one pair of contacts on an external d.p.s.t. "send-receive" switch, the other contacts of which control the transmitter power supplies. When the switch is in the receiving (open) position the break-in system is thus disabled, to allow spotting of the v.f.o. frequency.

T.R. Relay

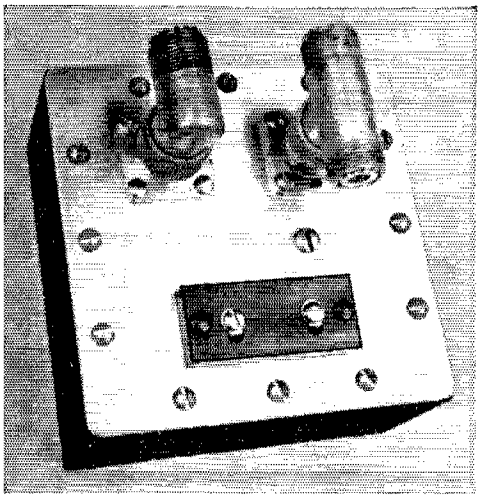
The t.r. relay performs the same function as the more commonly used tube-type t.r. switch. When the key is open the receiver input is connected to the coax cable inner conductor through the normally closed contacts of the relay, as shown in Fig. 3, and when the key is closed the receiver is grounded through the normally open contacts. Note that the relay does not handle any power, its only function being to lift the receiver off the coax line.

Since the r.f. voltage on the coax line is low, almost any type of small fast-acting relay is suitable. The one used here is the same type as the one which keys the receiver r.f. gain, shown in the photograph. The t.r. relay is mounted in a small metal box provided with coax fittings. A "tee" fitting is convenient for connecting it into the line. An antenna tuner is used for matching open-wire feeders to the coax line.

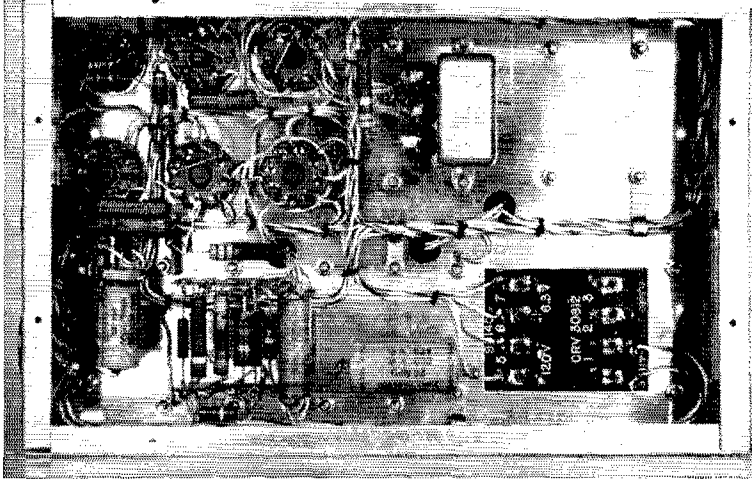
This relay t.r. switch has performed perfectly on all bands, 80 through 10 meters, and while I don't claim that it has any signal gain, it has no loss either. Also, it generates no spurious signals or TVI, and feeds much less r.f. into the receiver from the transmitter than any tube-type t.r. switch I have tried.

Keying Monitor

A blocking-type audio oscillator is used as a keying monitor. One triode of V_4 serves as a keyer for the oscillator, to isolate the v.f.o. keying circuit from any voltage that is developed at the grid of the oscillator due to the blocking action. This oscillator gives a very distorted wave, which is desirable for monitoring. A sine-wave audio oscillator was used at one time, but it was very tiring to the ears. R_7 adjusts the pitch of the tone, and R_8 adjusts the level.



The t.r. switch, a keyed relay of the same type used in the break-in unit, is mounted in a 4 × 4 × 2-inch metal box. Practically any fast-acting sensitive relay can be used since the contacts do not have to carry r.f. current.



A neat wiring and cabling job makes the bottom of the chassis look simple. The power transformer visible through the cutout at the lower right is a surplus item combining the plate and filament functions specified in Fig. 1 for T_4 and T_5

Analysis of Operation

The sequence of the over-all operation is shown in Fig. 4. Potentiometer R_6 in the grid-blocking supply is provided for setting the level of the blocking bias. To key the v.f.o., it is required only that this voltage be set to a value sufficient to cut off the keyed stage. However, if we set the voltage slightly beyond this point, there will be a time interval, with proper shaping of the leading edge, after the key is closed and before there is any output from the v.f.o., which can be used for setting the system to the transmitting

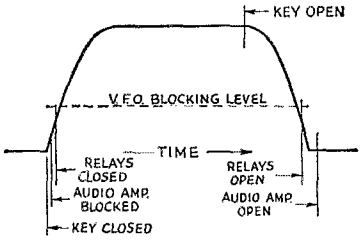


Fig. 4—Sequence of events in the operation of the break-in unit on each dot or dash. V.f.o. output is cut off during the time the keying voltage is below the dashed line.

condition. During this period the phones are disconnected from the receiver, the receiver r.f. gain is reduced, and the antenna is switched, all before any r.f. comes from the transmitter. When the key is opened, the transmitter output falls to zero, the relays open, and the keyed audio amplifier again connects the phones to the receiver. This action is repeated for every dot and dash, giving the maximum opportunity to hear a breaking signal without the annoyance of clicks and thumps in the phones.

Adjustment

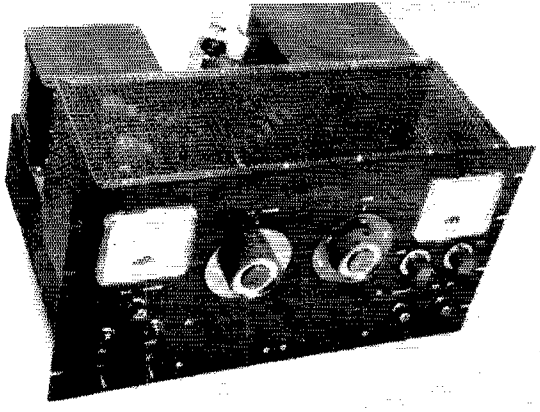
The nine potentiometers mounted on the panel provide the adjustments required for setting up the system for smooth operation. The first step is to set the keying bias level (R_6) somewhat beyond the voltage required to block the keyed stage. Then the leading and trailing edges are shaped (R_9 and R_{10}) to give the desired keying characteristics. Next, the "relay hold" control (R_5) is set so that the relays hold in until the transmitter output has dropped to zero, as determined by listening directly at the receiver output. If the relays open too soon, a loud click will be heard when the key is opened. R_5 should be set just beyond the point where this click disappears. The "amplifier balance" control (R_2) should be adjusted to balance out any click which might be heard at the instant of closing the key. The limiter control (R_1) sets a maximum on the level of audio signal in the phones, and should be set so that no clipping occurs on normal signals. The pitch (R_7) and volume (R_8) of the keying monitor can be adjusted to suit your preference, and then you are all set for some smooth break-in c.w. operating.

The only way I can think of to improve on the system would be to locate the transmitter about ten miles away, but it's handier to have it within reach. QST

Strays

It looked like a hungry trip ahead when Captain R. J. Beach's river boat ran out of chow on the Tahquamenon River in the wilds of Michigan's upper peninsula.

There were 80 passengers aboard and a five-hour run to any restaurant. But the captain is W8NBJ. Operating 75-meter mobile, he called W8ZDF who phoned the captain's XYL. Mrs. Beach drove to the rescue with hamburger and buns, hiking the last part of the way to hail the boat from a deer camp near the down river tie-up.



This amplifier operates at a plate input of approximately 500 watts, uses a pair of 811As in grounded-grid, and is complete with power supply on a 13 × 17 × 4-inch chassis. The rack panel is 10½ by 19 inches. Front-panel controls, arranged to give a balanced appearance, include the plate tuning capacitor and band switch in the center, filament and plate power switches with their pilot lights at the lower left, sensitivity control and forward-reflected power switch for the directional coupler at the lower right, variable loading capacitor and auxiliary loading-capacitor switch underneath the 0-1 milliammeter at the right, and the grid-cathode milliammeter with its switch at the upper left. The filter choke, 866As and plate transformer occupy the rear section of the chassis.

A Table-Top Half Kilowatt

Grounded-Grid Parallel 811As for S.S.B. or C.W.

An amplifier-cum-power supply on one chassis is a convenient package to have, especially when it fits in a receiver-size table-type cabinet and can be run at a half kilowatt input. Add constructional simplicity, a minimum of operating controls, and pleasing appearance and you have the article described here.

BY ERNEST A. COONS,* WIJLN/FOE

THE amplifier shown here will run at about 500 watts input on c.w. — or p.e.p. input as an s.s.b. linear — on all bands from 80 through 10 meters. I wanted a simple amplifier that would be small and neat, and with which I could change bands quickly. The result is small enough to sit on the operating table right along with the rest of the station equipment; no need for big racks here!

Using a pair of 811As in parallel in the grounded-grid circuit, this rig is a good one to use following transmitters such as the Viking Ranger, DX-40, Globe Scout, and others of similar power class, for a worth-while increase in power output on c.w. As a linear amplifier following an s.s.b. exciter it requires no swamping not only because the 811A grids provide a fairly constant load in themselves, but also because the fed-through power with grounded-grid presents an additional constant load to the driver. The total driving power needed on any band is less than 20 watts.

An additional useful feature is a built-in directional coupler using a version of the "Mickey Match."[1] Besides its obvious application for checking the s.w.r. on the transmission line to the antenna or for help in tuning up a coax-coupled antenna coupler, it is practically indispensable as an indicator of relative power output in tuning the amplifier, for reasons which will be discussed later.

The Circuit

A number of tube types could be used in an amplifier of this power class, but I decided on the 811As because they do not need a bias supply and are not expensive. (Surplus 811s can be used if you don't want to buy new tubes; the ratings are not quite as high but they can be pushed a bit in intermittent service such as c.w. and s.s.b.)

The complete circuit is shown in Fig. 1. Don't expect to find anything startling — the whole thing was taken from parts of proven circuits here and there in the *Handbook* and put together to meet my needs. To save trouble and work, standard components were used throughout — the only special construction is the shielding and a few simple r.f. chokes. The tube filaments are driven directly from coax input from the driver; no tuning is used or is needed in this circuit. The filaments are kept above ground by the B & W type FC15 filament choke.

The plate tank is the familiar pi network, using a B & W type 851 tapped coil and band-switch assembly. This assembly has been modified slightly in two respects: First, the copper-strip 10-meter coil normally mounted at the top of the rear plate was taken off and moved so that it is supported between the tank assembly and the stator of the tank tuning capacitor as shown in

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[1] Bunce, "The 'Mickey Match'," *QST*, November, 1958. A modified version also is described in the chapter on measurements in the 1959 edition of *The Radio Amateur's Handbook*. The circuit used here combines the r.f. switching of the original "Mickey Match" with the fixed load resistor used in the *Handbook* arrangement. — *Editor.*

the top view. A short length of copper strip is bolted between the free end of the coil and the right-hand stator connection of the tuning capacitor, to support the free end. This change was made in order to avoid the long lead that would have had to be run from the capacitor to the regular input terminal on the tank assembly, since this terminal is at the right-hand side of the assembly as viewed from the top. The turns of the 10-meter coil were also squeezed together a bit to increase the inductance, because it was found that a rather large amount of capacitance had to be used to tune the circuit to the band with the coil at its original length. The length is now 1⅝ inches between mounting holes.

The second modification was the addition of a

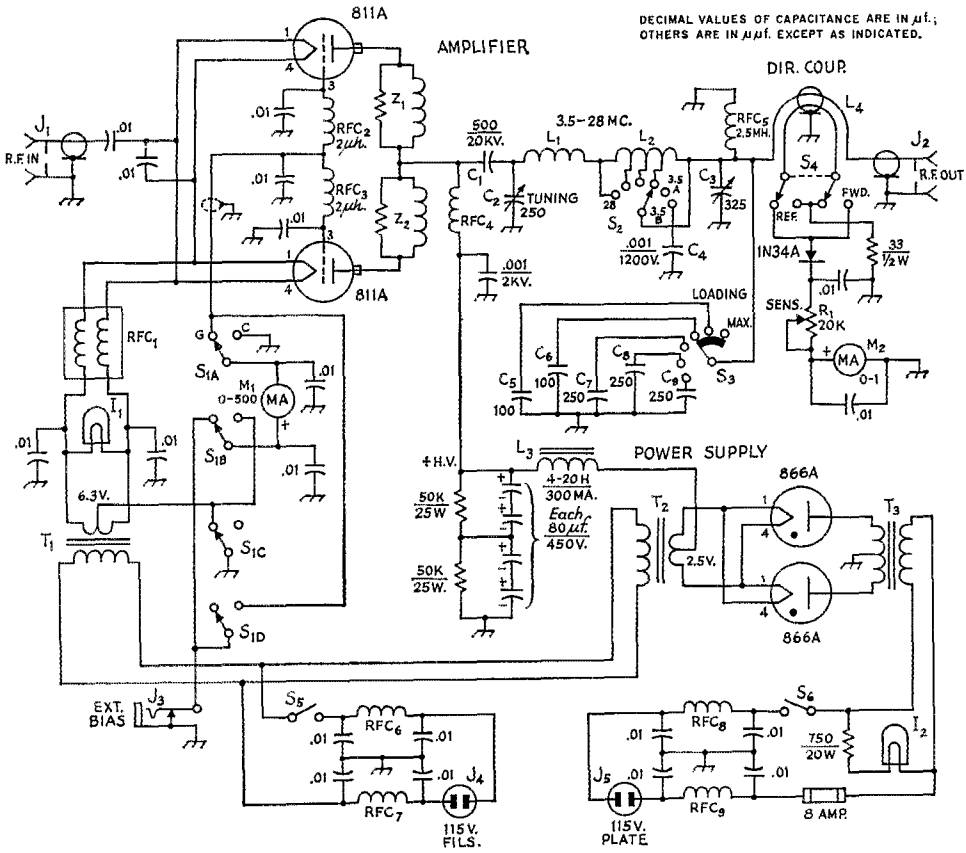


Fig. 1—Circuit diagram of the parallel-811A grounded-grid amplifier. Unless otherwise specified, fixed capacitors are disk ceramic, 600-volt rating.

C_1—500 μμf., 20,000 volts (TV "doorknob" type).

C_2—250-μμf. variable, 2000 volts (Johnson 250E20).

C_3—325-μμf. variable, receiving type (Hammarlund MC-325-M).

C_4–C_9, inc.—1200-volt mica, case style CM-45.

I_1, I_2—6.3-volt dial lamp, 150-ma. (No. 47).

J_1, J_2—Coax connector, chassis mounting.

J_3—Closed-circuit phone jack.

J_4, J_5—115-volt male connector, chassis mounting (Amphenol 61-M1).

L_1, L_2, S_2—5-band pi-network coil-switch assembly; see text (B & W 851).

L_3—Swinging choke, 4-20 henrys, 300 ma. (UTC S-34).

L_4—Section of coax line with extra conductor inserted; see Footnote 1 for construction references.

M_1, M_2—Milliammeter, 3½-inch plastic case (Triplett 327-PL).

R_1—20,000-ohm composition control, linear taper.

RFC_1—Filament-choke assembly, to carry 8 amp. (B & W FC15).

RFC_2, RFC_3—2 μh. (National R-60).

RFC_4—90 μh.; 4⅜-inch winding of No. 26, 40 t.p.i., on ¾-inch ceramic form (B & W 800).

RFC_5—2.5 mh., any type.

RFC_6–RFC_9, incl.—18 turns No. 14 enam., close-wound, ½-inch diam., self-supporting.

S_1—4-pole 2-position rotary, nonshorting (Mallory 3242J or Centralab 1450).

S_2—Part of tank assembly; see L_1L_2.

S_3—Miniature ceramic rotary, 1 section, 1 pole, 6 positions used, progressive shorting (Centralab 2042).

S_4—Miniature ceramic rotary, 1 section, 2 poles, 2 positions used, nonshorting (Centralab 2003).

S_5, S_6—S.p.s.t. toggle.

T_1—Filament transformer, 6.3 volts, 8 amp. min. (UTC S-61).

T_2—Filament transformer, 2.5 volts, 10 amp. (UTC S-57).

T_3—Plate transformer, 3000 volts center-tapped, 300 ma. d.c. (UTC S-47).

Z_1, Z_2—Parasitic suppressor, 100-ohm 2-watt carbon resistor assembled inside 2½-turn coil of No. 16 tinned, ½-inch diameter, ¾-inch long.

pair of switch contacts on the rear switch plate of the tank assembly. There is an extra position on this plate with holes already provided for contacts, and it seemed like a good idea to use a set of contacts here to switch in additional output loading capacitance on 80 meters, where a large output capacitance is needed. The variable loading capacitor, C_3, and the five fixed mica capacitors, C_5 to C_9 inclusive, give continuous variation of capacitance up to 1275 $\mu\mu$f. on all bands, including the regular band-switch position for the 80-meter band. However, if the switch is turned to the extra position an additional 1000-$\mu\mu$f. mica capacitor is connected in parallel, so that continuous variation of capacitance to over 2200 $\mu\mu$f. is possible on 80. This takes care of cases where the load resistance happens to be unusually low or reactive.[2]

A 500-ma. d.c. meter is used for reading either total cathode current or grid current alone. The cathode current is read in preference to plate current because of safety considerations. Putting the meter in the hot d.c. plate lead leaves nothing but a little plastic insulation between the high voltage and the meter adjusting screw. Although the meter could have been connected in the negative plate supply lead since the power supply is self-contained, I prefer to have the negative firmly grounded to the chassis. It is a bit of a nuisance to have to subtract the grid current from the cathode current in order to find the plate current, but it isn't serious. The d.c. grid circuit has a jack, J_3, for introducing external bias either for blocked-grid keying or for cutting off the plate current during receiving, and a four-pole switch, S_1, is therefore needed for handling the meter switching while keeping all circuits functioning normally.

The power supply uses 866As with a plate transformer giving 1500 volts each side of the center tap, and working into a single-section choke-input filter. The filter capacitor consists of four 80-μf. electrolytics connected in series to handle the voltage, giving an effective filter capacitance of 20 μf. This supply is running well below its capabilities in the intermittent type of operation represented by c.w. and s.s.b., and the amplifier is somewhat "over-powered" in this respect. A lighter plate transformer can be used since the average current in regular operation is only about half the maximum tube rating of 350 ma. for the pair. However, a heavier supply was used here because plate modulation may be tried some day. This might make it necessary to use a tank capacitor with larger plate spacing (3000-volt rating instead of 2000 volts, which is plenty adequate for c.w. and s.s.b.) but there is room enough to install a capacitor about two inches longer if it is needed.

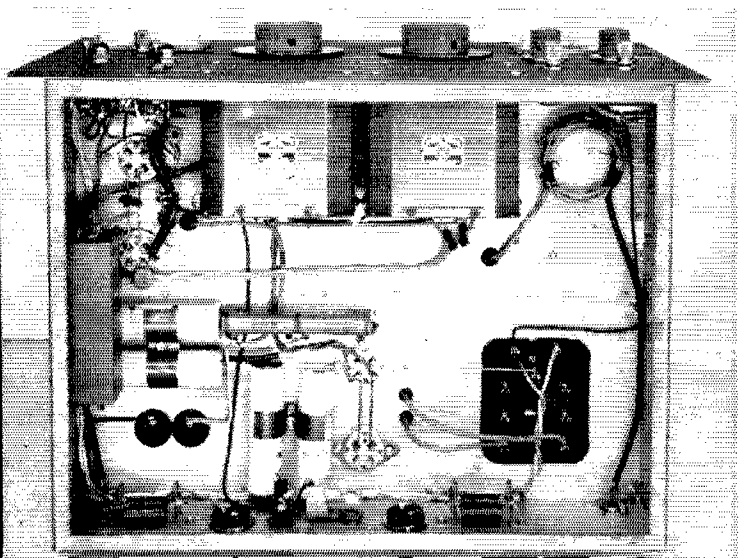
The a.c. inputs to both filaments and plates have TVI filters installed right at the a.c. connectors. The chokes in these filters, RFC_6 to RFC_9 inclusive, are homemade by winding 18 turns of No. 14 enameled wire close-wound on a half-inch dowel or drill.

Construction

The ordinary principles of good construction as given in the handbooks were followed in layout and assembly. The only space available for the filament transformers was below chassis, so these were mounted on the front wall of the chassis as shown in the bottom view. There is plenty of room for all other power-supply parts below chassis, and the photographs make any further comment on this section unnecessary.

The r.f. layout shown in the top view is almost an exact copy of the circuit layout as given in Fig. 1. The plate blocking capacitor, C_1, is mounted on a small right-angle bracket fastened to the left-hand stator connection of the tank capacitor, C_2. The tube plates are connected to C_1 through individual parasitic-suppressor assemblies, Z_1 and Z_2. The hot end of the plate choke, RFC_4, also connects to this same point. The tank capacitor is mounted on ¾-inch ceramic pillars to bring its shaft to the same height as the switch shaft on the tank-coil assembly. The capacitor is grounded by connecting the bottom of its frame through a half-inch wide strip of

[2] These contacts can be obtained directly from the manufacturer of the tank assembly. To secure a set of contacts with mounting hardware, send one dollar to Barker & Williamson, Beaver Dam and Canal, Bristol, Penna., specifying the type of tank assembly for which they are wanted. The contacts are not catalog items and are not available through dealers.—*Editor.*



In this below-chassis view, the two filament transformers are at the top, mounted on the chassis wall. The 811A sockets are at the upper left. The rectangular box on the left-hand wall contains the FC15 filament-choke assembly. The "Mickey Match" directional coupler is at the upper right. Filter capacitors and the bleeder resistors are in the lower section. A.c. inlets, fuse holder, bias jack, and the 115-volt line TVI filters are on the bottom chassis wall.

aluminum to essentially the same point at which the plate-choke bypass capacitor, a 0.001-μf. 2000-volt disk, is grounded. The ground end of the aluminum strip actually is under the bottom of the plate choke, and the ground lug for the bypass capacitor is just to the left. This strip, plus short leads in the circuit from the tube plates through the tank capacitor to ground, keeps the resonant frequency of the loop thus formed well up in the v.h.f. region; this is important because it permits using low-inductance parasitic chokes in shunt with the suppressor resistors, and thus tends to keep the r.f. plate current at the regular operating frequencies out of the resistors. With other tank grounding arrangements originally tried, larger parasitic chokes had to be used and it was impossible to prevent the resistors from burning up when operating on 10, 15 and even 20 meters. Now they do not overheat on any frequency, and v.h.f. parasitics are nonexistent — although without the suppressors the parasitics are only too much in evidence.

The output loading capacitors, C_3 through C_9, are mounted toward the rear so the leads from the tank coil can be kept as short as possible. A length of copper strip is used between the coil and the stator of C_3; originally this lead was No. 14 wire but on 10 meters the tank current was enough to heat it to the point of discoloration. The ground lead from the fixed units, made to the rear bearing connection of C_3, is also copper strip. C_3 and S_3 are operated through extension shafts, using Millen flexible couplings to simplify the alignment problem.

Underneath the chassis, each 811A grid is bypassed directly to the socket-mounting screw nearest the plate choke (right-hand side of the socket in the bottom view). The d.c. leads have small chokes, RFC_2 and RFC_3, with additional bypasses for good r.f. filtering, particularly at v.h.f. since grid rectification generates harmonics in the TV bands. The filament choke, RFC_1, is mounted so that the filament side is close to the filament terminals on the tube sockets; the other end is bypassed directly to the chassis.

The shielding around the amplifier consists of two pieces of sheet aluminum and a perforated aluminum ("do-it-yourself" type) cover having the shape of an inverted U. The top view shows how the rear wall is made. Its edges are bent to provide flanges for fastening the cover with sheet-metal screws, and there is a similar flange projecting to the rear at the bottom for fastening the wall to the chassis. The front piece extends the full height of the panel and is identically drilled and cut out for meters and controls. It has flanges at the top and extending down the sides from the top to the chassis. The cover itself extends down over the sides of the chassis for about one inch. Numerous screws are used for fastening the cover, to prevent leakage of harmonics.

The shields over the meters are made as described in the caption for the inside top view. Meter leads are bypassed to the shield boxes where they emerge.

The *Handbook* should be consulted for methods of checking and adjustment of the directional coupler.

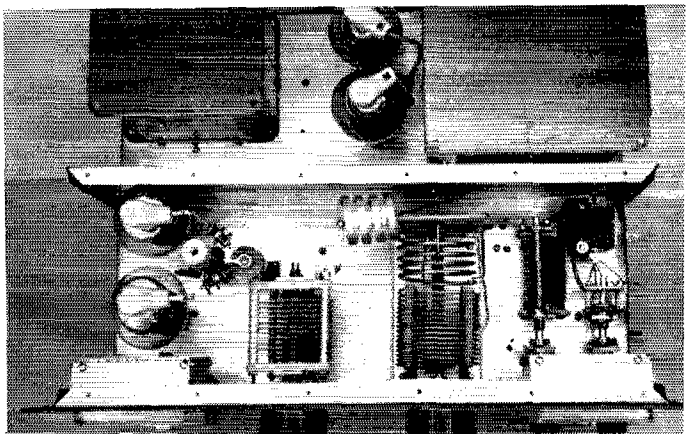
Operating Conditions and Tuning

The voltage delivered by the power supply is approximately 1500 volts with no drive and with the tubes taking only the no-bias static plate current, which is about 60 ma. At the full load of 350 ma. the voltage is slightly under 1400. Optimum operating conditions for 1400 volts at 350 ma. peak-envelope power input as an s.s.b. linear call for a peak-envelope grid current of 60 ma. The peak-envelope tube power output is close to 350 watts under these conditions. The same operating conditions are also about optimum for c.w.

The behavior of the cathode current when tuning a grounded-grid triode amplifier is extremely confusing, and the meter is principally useful as a check on operating conditions rather than as a tuning indicator. The best indicator of proper tuning of the plate tank capacitor is the forward-power reading of the directional coupler. For any trial setting of the loading controls and driving power, *always* set the plate tank capacitor control at the point which results in a maximum reading on the power-output indicator. The power indications are only relative, of course, and the sensitivity control should be set to give a reading in the upper half of the scale.

The objective in adjusting loading and drive is to arrive at maximum power output simultaneously with a plate current of 350 ma. and a grid current of 60 ma. — that is, a total cathode current of 410 ma. when the grid current reading is 60 ma. The loading is critical. If the amplifier is not loaded heavily enough the grid current will be too high and the right value of total cathode current either will not be reached or, if reached, the amplifier will be operating in the

(Continued on page 156)



The r.f. section with the shield cover removed. Components here are readily identifiable by reference to the circuit diagram. The meters are enclosed in rectangular boxes made from thin aluminum sheet, formed to be fastened by the meter mounting screws. The back covers on these boxes are made from perforated aluminum, folded over at the edges and held on the boxes by sheet-metal screws. The switch for shifting the 0-500 milliammeter (left) from grid to cathode is concealed by the box which encloses the meter.

One of the most useful tools at the disposal of the radio engineer is a transmission-line calculator known as the Smith Chart. This device eliminates the need for mathematical gymnastics and greatly reduces the laborious task of solving most transmission-line problems. In this article, K6CRT discusses the use of the Chart in some of its simpler applications.

Some Amateur Applications of the Smith Chart

By L. A. CHOLEWSKI, K6CRT, EX-W8SVK*

IN ALL probability, the chief reason that more use of the Smith Chart is not made by amateurs in solving some of their antenna-feeding problems is its formidable appearance at first glance. But a brief description of its construction and some of its simpler applications will show that it is far less complicated than its aspect.

Resistance Scales

Referring to Fig. 1, the Smith Chart [1] consists basically of a circle upon which are placed various circular scales. The only straight line on the Chart — the vertical one in Fig. 1A — is the *resistance axis*. The numbers along this line indicate percentages of the value assigned to the center point — the 100 per cent point indicated by the numeral 1.0 — usually referred to as *prime center*. The calibration of this line runs from 0 at the top to infinity (∞) at the bottom. If prime center is assigned a value of 100 ohms, then 0.5 represents 50 ohms, 0.2 represents 20 ohms, 2.0 represents 200 ohms, etc. If a value of 50 ohms is assigned to prime center, corresponding values will be 25, 10 and 100 ohms.

It is seen that in each case the point on the Chart for any resistance value is determined by dividing the value by the number assigned to prime center. This is called "normalizing." Similarly, points on the Chart are converted back to actual resistance values by multiplying by the value assigned prime center. This process permits the use of the numbers printed on the Smith Charts for values irrespective of their magnitudes. It is common practice to indicate actual impedance values in capital letters (Z_1, Z_A, Z_L, etc.) and corresponding normalized values in small letters (z_1, z_A, z_L, etc.).

Resistance circles (see Fig. 1A) are centered on the resistance axis, are tangent to the outer circle at the $R = \infty$ point, and pass through the calibrated points on the resistance axis. All points along any resistance circle have the same resistive value as the point where the circle crosses the resistance axis.

Reactance Scales

Superimposed on the resistance-circle pattern are segments of other circles tangent to the resistance axis at $R = \infty$. See Fig. 1B. These are *reactance circles*, the large outer circle being the *reactance axis*. The reactance axis is also calibrated in percentages of a selected value — usually the value assigned to prime center. All points along any reactance circle have the same reactive value as the point where the reactance circle touches the reactance axis (outer circle). Values to the right of the resistance axis are positive (inductive), and those to the left of the resistance axis are negative (capacitive).

Plotting Impedances

The plotting of complex impedances can best be explained by one or two examples. Suppose we have an impedance consisting of 50 ohms resistance and 100 ohms inductive reactance ($Z = 50 + j100$). If we assign a value of 100 ohms to prime center ($Z_o = 100$), the z point will be plotted at the intersection of the 50/100 = 0.5 resistance circle and the 100/100 = 1.0 positive reactance circle (point A in Fig. 1B). If a value of 50 ohms had been assigned to prime center, the same impedance would be plotted at the intersection of the 50/50 = 1.0 resistance circle and the 100/50 = 2.0 reactance circle (point B in Fig. 1B).

For example, if a value of 200 is assigned to prime center, then point C in Fig. 1B represents an impedance of $0.5 \times 200 = 100$ ohms resistance, and $1.0 \times 200 = 200$ ohms negative (capacitive) reactance ($Z = 100 - j200$).

In solving transmission-line problems, prime center is usually assigned a value equal to the characteristic impedance of the transmission line to be used. Always record this value at the start to avoid any possible confusion later on.

Wavelength Scales

Aside from the calibrations already mentioned, the perimeter of the large circle has additional scales. Two of these scales (see Fig. 1C) are calibrated in terms of portions of a wavelength

* 110 Camino de las Colinas, Redondo Beach, Calif.

[1] Smith Charts can be obtained at most college book stores.

along a transmission line, one scale (running counterclockwise) starts at the generator (transmitter) end of the line and progresses toward the load (antenna), while the other scale, in reverse, starts at the load and works back toward the generator. The complete circle represents a half wavelength. It is assumed that no amateur should have difficulty in determining portions of an electrical wavelength from the formula:

$$\lambda = \frac{lf_{\text{Mc.}}}{984k},$$

where l = length in ft. and k is the velocity factor furnished in transmission-line characteristic tables. Since the same conditions repeat every half wavelength along the line, the zero point on the wavelength scales may be considered as any multiple of a half wavelength as well as zero. The use of the wavelength scales will be illustrated presently.

Impedance Transformation

When a lossless transmission line is terminated in some impedance other than a pure resistance having a magnitude equal to the characteristic impedance of the line, the input impedance of the line will vary depending on the length of the line. If the terminating impedance is known, it is a simple matter to determine the input impedance of the line for any length of line by means of the Smith Chart.

First we plot the load (antenna) impedance on the Chart. Suppose we have an antenna that shows a resistive component of 25 ohms and an inductive reactance of 25 ohms ($Z_A = 25 + j25$). If the transmission line has a characteristic impedance of 50 ohms, we normalize the antenna impedance by dividing by 50 ($z_A = 0.5 + j0.5$). This is plotted as point z_A on the Chart of Fig. 2.

A circle whose center is on prime center and whose perimeter passes through the plotted point is next inscribed on the Chart. This circle is usually referred to as an *s.w.r. circle*, since the s.w.r. on the line when terminated by the plotted impedance can be determined by the points at which the circle crosses the resistance axis. The s.w.r. (2.6 in this case) may be read directly where the bottom of the circle crosses the resistance axis. (The reading of 0.384 at the top of the circle is the reciprocal — 1/2.6 — which, of course, indicates the same s.w.r.)

The next step in determining the input impedance of the line is to draw a vector from prime center through z_A to intersect the wavelength scales. Since we are starting at the load, the "Toward Generator" scale is used. To find the input impedance of the line at any desired distance from the antenna, we simply rotate the vector through this distance along the wavelength scale. The z_A vector intersects the wavelength scale at 0.088. If we want to find the line input impedance when the line is 0.3 wavelength long, for instance, we add 0.088 + 0.3 = 0.388 and move the vector to this point on the wavelength scale. Then the normalized impedance is

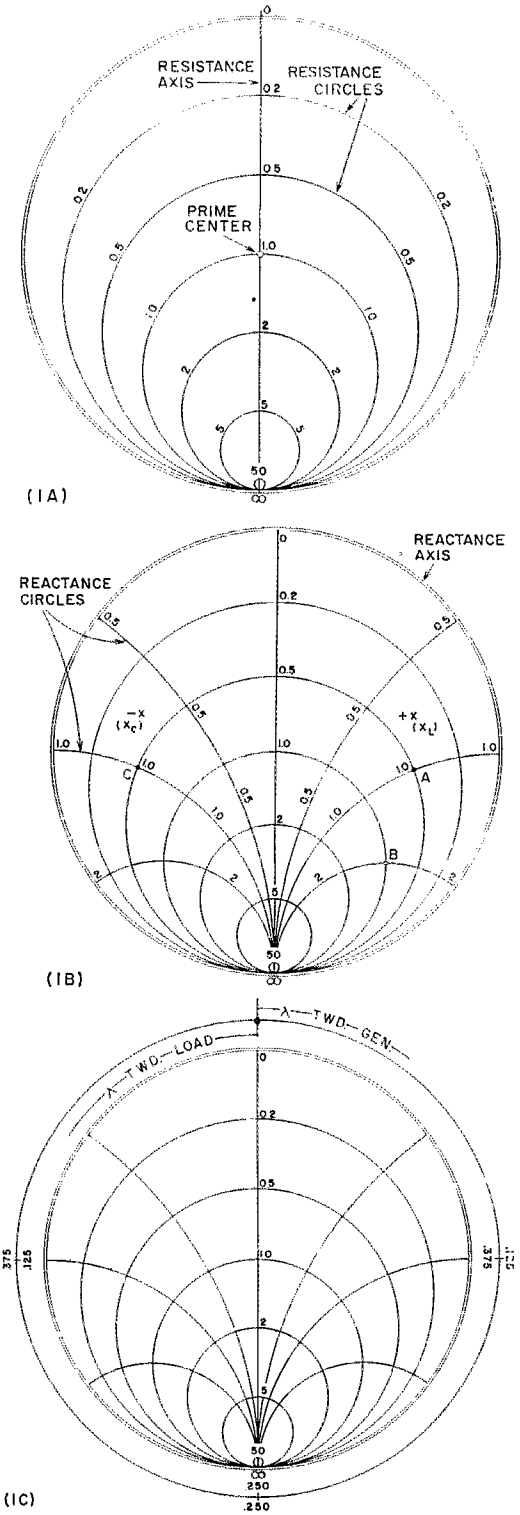


Fig. 1—Construction of the Smith Chart. A—Resistance scales. B—Chart with reactance scales added. C—Wavelength scales.

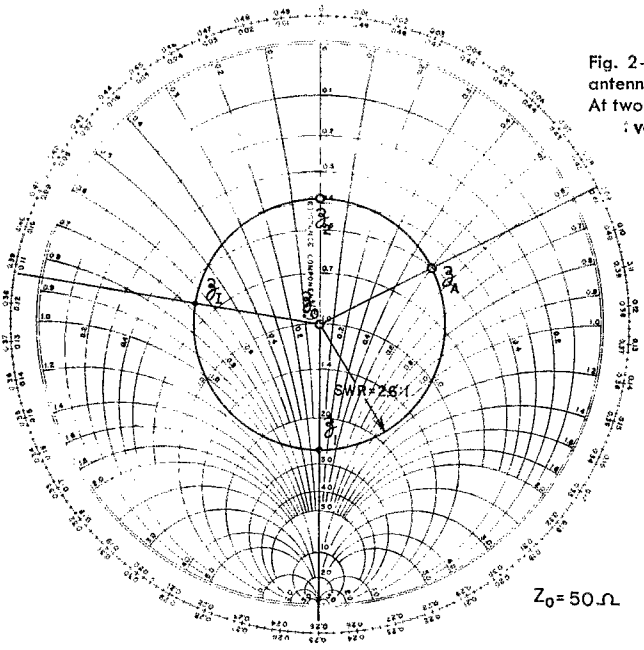


Fig. 2—Determining line input impedance (Z_I) when antenna impedance (Z_A) and line length are known. At two line lengths, the input impedance will be resistive and have values (normalized) of z_1 and z_2.

read at the intersection of the new vector and the s.w.r. circle. The reading here is $z_I = 0.6 - j0.67$. The actual input impedance is obtained by multiplying back by the line $Z_o = 50$, to give $Z_I = 30 - j33.5$ (30 ohms resistance, 33.5 ohms capacitive reactance).

It is interesting to note that the Chart indicates two line lengths for which the input impedance will be resistive. These points are indicated by z_1 and z_2 in Fig. 2, where the antenna-impedance vector swings across the resistance axis. One of these lengths is $0.25 - 0.088 = 0.162$ wavelength; the other is $0.5 - 0.088 = 0.412$ wavelength. Since the Chart reading at z_1 is 2.6, $j0$, the line input impedance $Z_I = 50 \times 2.6 = 130$ ohms for the 0.162-wavelength line. Similarly, the reading at z_2 is 0.384, $j0$ and the input impedance with the 0.412-wavelength line is $50 \times 0.384 = 19.2$ ohms. It should always be remembered that any number of half wavelengths can be added to the lengths given by the Chart without changing the line input impedance (assuming a lossless line).

From this, it can be seen that a transmission line terminated in a load not the same as the characteristic impedance of the line acts as an impedance transformer, transforming the value of the load resistance to some other value at the input to the line. By proper selection of line length characteristic impedance, any load resistance can be transformed to any other value desired.

Measuring Antenna Impedance Remotely

From the foregoing, it may be evident that the process can be reversed to determine the feed-point impedance of the antenna when the length of the line and the line input impedance are known. The line input impedance can be measured by means of an impedance bridge. The electrical length can also be determined either by direct measurement of its physical length and applying the velocity factor, or indirectly by measuring the input impedance of the line when the line is terminated in a short circuit.

In one actual measurement made by the author, the input impedance of a 50-ohm line terminated in a short circuit was $2.5 + j50$, or a normalized value of $0.05 + j1$. This point, z_{IS}, is shown plotted on a Smith Chart in Fig. 3. The terminating load in this case is $Z_{LS} = 0 + j0$ (a short circuit). The vector for this load coincides with the upper half of the resistance axis. Using the "Toward Generator" scale, we find that the distance between the Z_{LS} vector and the Z_{IS} vector is 0.125 wavelength. This is the electrical length of the line.

With the antenna replacing the short circuit, the line input impedance was measured at $Z_{IA} = 50 - j35$, which normalizes to $z_{IA} = 1.0 - j0.7$. This impedance is plotted, the s.w.r. circle is scribed and the z_{IA} vector drawn. Since this is the line input impedance, the "Toward Load" scale is used. The vector intersects the wave-

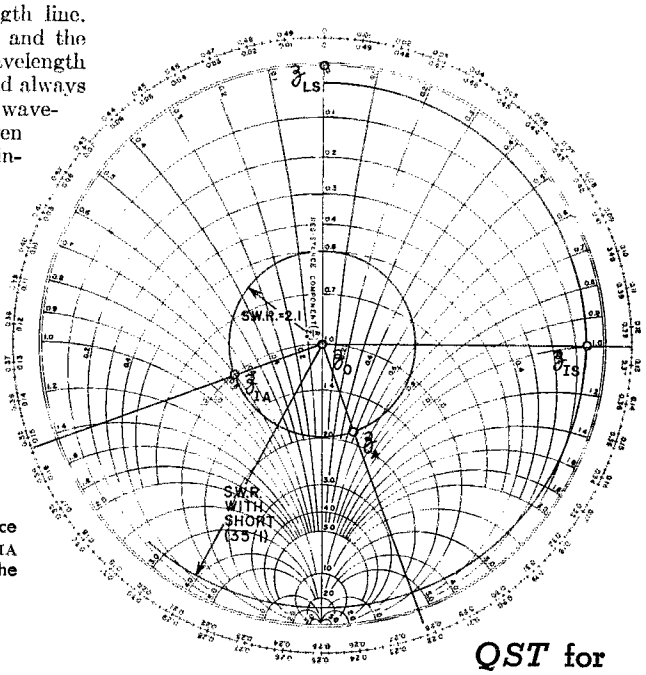


Fig. 3—Chart for determining antenna impedance (Z_A) from measured line input impedances, Z_{IA} with line terminated in an antenna, Z_{IS} with the line terminated in a short circuit.

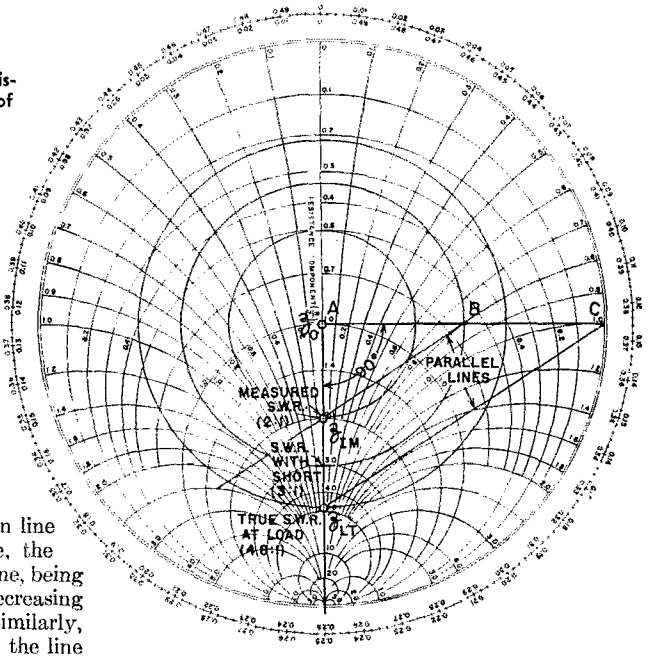


Fig. 4—Chart for correcting for losses in transmission line. Z_{IM} is the measured input impedance of the line; Z_{LT} is the true load impedance.

length scale at 0.153. The vector is now moved the length of the transmission line — 0.125 wavelength — toward the load, to 0.153 + 0.125 = 0.278 wavelength. The normalized antenna impedance, z_A, can now be read at the intersection of the new vector and the s.w.r. circle. The Chart shows this value to be $1.82 + j0.48$, which gives an actual value of $Z_A = 50 (1.82 + j0.48 = 91 + j24$. The s.w.r. circle shows that the s.w.r. on the line is 2:1.

Cable Attenuation

In the foregoing, a lossless transmission line has been assumed. With a practical line, the s.w.r. will change with the length of the line, being greatest at the load end of the line and decreasing as the length of the line is increased. Similarly, losses in the transmission line will cause the line input impedance to vary as the length of the line is changed, even though the line may be terminated in an accurately-matched load. Therefore, s.w.r. measurements made at the input end of the line are not a strictly true indication of the mismatch between the load and the transmission line, and losses in the line will cause some error in the calculations of load impedance from measurements of impedance made at the input to the line, unless suitable correction is applied. The error in both cases will be small if the line is short and has low inherent loss, and the load is reasonably well matched to the line. The error will be greater if the line is long, has high loss per unit length, or if it is operated at a high s.w.r.

True values of s.w.r. and load impedance can be determined from the Smith Chart if the total line loss is known, as in the following example.

The input impedance of a 50-ohm terminated line having a loss of 3 db. is measured and found to be $Z_{IM} = 100 + j0$. This measured value is normalized and plotted and the s.w.r. circle and vector are drawn as shown in Fig. 4. The chart of Fig. 5 shows that a line having a 3-db. loss when terminated by a load equal to the characteristic impedance of the line will have an s.w.r. of 3 when terminated in a short circuit. This s.w.r. circle is drawn on the chart. A line ABC is drawn at right angles to the z_{IM} vector, intersecting the s.w.r. circle of the shorted line and the reactance axis. A straight line is then drawn from B to z_{IM}. A second line parallel to the latter is drawn from point C to intersect the Z_{IM} vector. An s.w.r. circle drawn through this intersection indicates the true s.w.r. (4.8). (It should be noted that the ratio of measured load impedance, $100 + j0$, to the line characteristic impedance, 50 ohms, would indicate an s.w.r. of only 2 to 1.) The true value of load impedance is $4.8Z_0 = 4.8 \times 50 = 240$ ohms. (This compares with the measured value of 100 ohms.)

The loss of 3 db. used in this example is representative of what might be found in a 150-foot length of small coax cable at 28 Mc. So the next time anyone tells you that his s.w.r. is 1 to 1, you will have good reason to doubt his accuracy.

If the same construction is applied to Fig. 3, it will be found that the true values will be only slightly different from the uncorrected values. In this case the s.w.r. with the line shorted is 35 to 1, corresponding to a line loss of 0.25 db. on the chart of Fig. 5. This low line loss, of course, accounts for the smaller error. QST

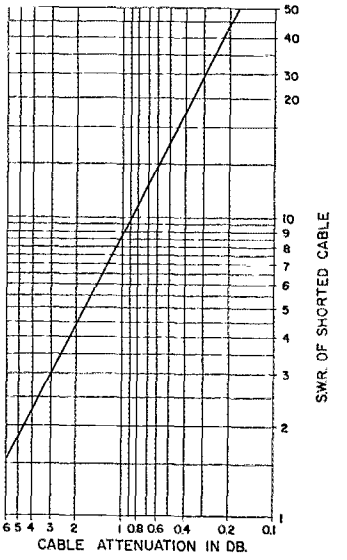
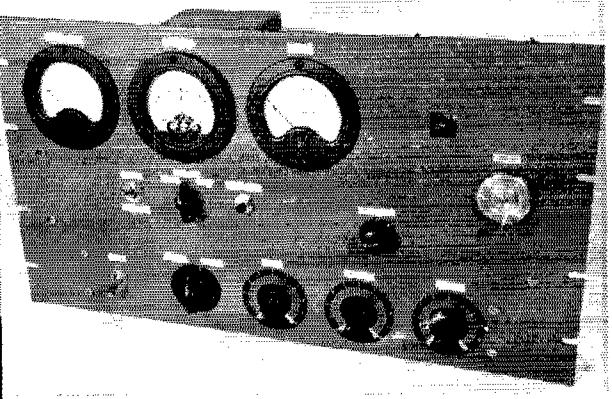


Fig. 5—Graph showing the relationship between the s.w.r. measured with a line terminated in a short circuit and the loss in db. measured when the line is terminated in its characteristic impedance.



This teletype converter works from the i.f. output of any receiver having an intermediate frequency in the 190-550-kc. region. Components on the 10½ × 19-inch rack panel include meters for reading plate current of the keyer stage, discriminator balance, and keying loop current. The controls immediately under the meters are the toggle switch to change from receiving to local keying, a calibrate switch, and push button for scope checking. Along the bottom of the panel are the power switch, signal reversing switch, and controls for per cent mark, sensitivity threshold, and r.f. gain of the BC-453 receiver incorporated in the unit. The BC-453 tuning control, "align input" knob, and window for reading the dial are in the right-hand section.

Radioteletype Conversion from Receiver I.F.

The i.f. type converter for radioteletype makes direct use of the f.s.k. signal, with suitable cleaning up and amplification, and does not require the sharp audio filters used in the two-tone method. Although at first glance the unit described here may seem to be elaborate, this is partly because it includes power supplies and a scope amplifier for adjustment and monitoring. The principal sections are shown in four separate diagrams; in only one, the converter proper, are there any techniques unfamiliar to the amateur without previous RTTY experience.

Surplus Receiver Combined with F.S.K. Detection Shaping and Keying

BY JAMES L. McCOY,* WØLQV/AFØLQV

THERE are two general methods of receiving radioteletype. One is to use a discriminator to detect the signal shift at the intermediate frequency of the receiver. The other is the audio system, using two tones either received directly from a modulated signal or developed in the receiver by using the b.f.o. to beat against the shifting carrier, the audio tones then being separated in filters to develop the proper keying.

This article will discuss the circuitry and operation of an i.f. type converter or terminal unit that was constructed as a project for the Central Technical Net of the Air Force MARS program. Certain portions of the circuit were taken from the CV-57/URR military radioteletype converter, with various modifications to make the unit adaptable to currently-available surplus parts.

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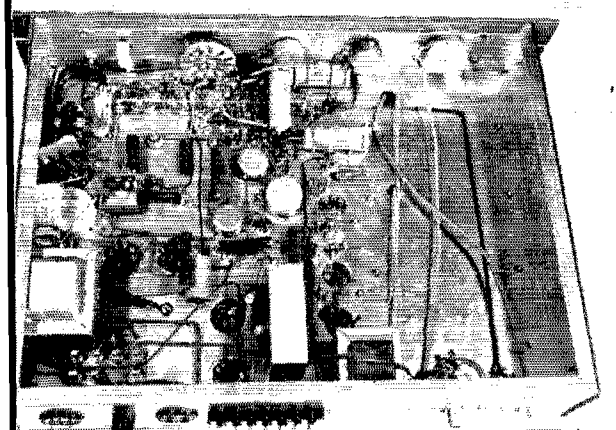
Converter Circuit

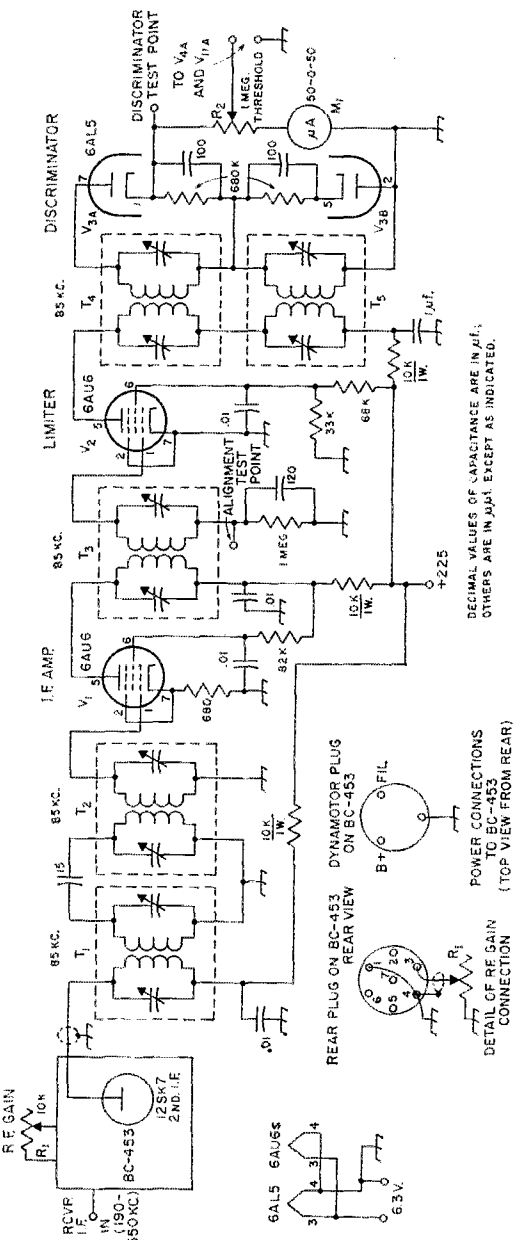
The CV-57/URR converter operates on receiver intermediate frequencies from 395 to 470 kc. The receiver's i.f. is converted to 40 kc., then



The loop-circuit relay, K_2, is at the upper left in this view. Other principal components can be identified by their relationship to the top view, with the amplifier-trigger circuits at the upper left, power supply at lower left, and external i.f. strip running from rear to front just to right of center. Shielded leads through holes in the chassis under the BC-453 are used for r.f. and i.f. input and output connections.

Fig. 1—Circuit of the 85-kc. i.f. amplifier-discriminator. Fixed resistors are ½-watt composition except as indicated. Except for the 1-μf. capacitor, which is paper, and the 0.02-μf. capacitors, which are disk ceramic, fixed capacitors may be either mica or ceramic.

M_1—50-0-50 zero-center microammeter.
R_1—10,000-ohm wire-wound control.
R_2—1-megohm control, audio taper.
T_1-T_5, inc.—85-kc. i.f. transformer (surplus BC-453 type).



amplified, clipped by a limiter and fed into a discriminator. The discriminator output is amplified, filtered, amplified again and then used to trigger two Eccles-Jordan flip-flop multivibrator stages in cascade to key the RTTY loop keyer tubes.

The main point of difference in the unit constructed here is the use of 85 kc., the intermediate frequency of the BC-453 Command receiver, as the second i.f. The 453 not only makes an excellent "front end" for the converter but is capable of tuning to any receiver intermediate frequency from 190 to 550 kc. The BC-453 is modified by removing the third i.f. can and the audio tubes, and then the plate of the 12SK7 second i.f. tube is coupled to an external i.f. strip using the same i.f. transformers as in the second stage of the BC-453 (part No. 7267). The signal next is passed through one stage of amplification and one stage of limiting, and then into a discriminator using two i.f. transformers as shown in Fig. 1.

From this point on the circuit, Fig. 2, is much the same as that of the CV-57. The pulses from the discriminator are amplified and fed into a low-pass filter having a cut-off frequency of 140 cycles. The signal is again amplified and then applied to the grid of the trigger driver tube, V_6. Connected between the grid of the trigger driver tube and ground is a d.c. restorer and its associated circuits. This circuit uses the two diodes of a 6AL5; V_5; the lower one in Fig. 2 clips off the negative portion of the signal and the upper one, with positive back bias, clips the signal above a level of plus four volts. The clipping eliminates any superimposed noise and telegraph distortion, so the signal appearing at the grid of V_6 is a square wave having a peak amplitude of four volts and is identical in shape with the discriminator output.

Keying Circuits

The output of the trigger driver is direct-coupled to an Eccles-Jordan flip-flop stage, V_7, which in turn is capacity-coupled to a similar flip-flop stage, V_8. The flip-flop stages have two stable conditions, one of which results in a higher d.c. voltage across the load resistor than the other, and the stages are switched from one stable state to the other according to the polarity of the square wave of signal voltage from the trigger driver tube. The trigger output, taken from one or the other of the second-stage grids, is thus a keyed d.c. voltage, and is applied to the grids of the 6AQ5 keyer tubes to shift them between the conducting and nonconducting states.

In normal RTTY practice, the loop or locally-keyed circuit is closed during stand-by or mark signal. This keeps the machine in an idling condition to receive the coding pulses that key the loop circuit. The machine is keyed directly from the plates of the 6AQ5s in the CV-57, but in this unit we wished to key a

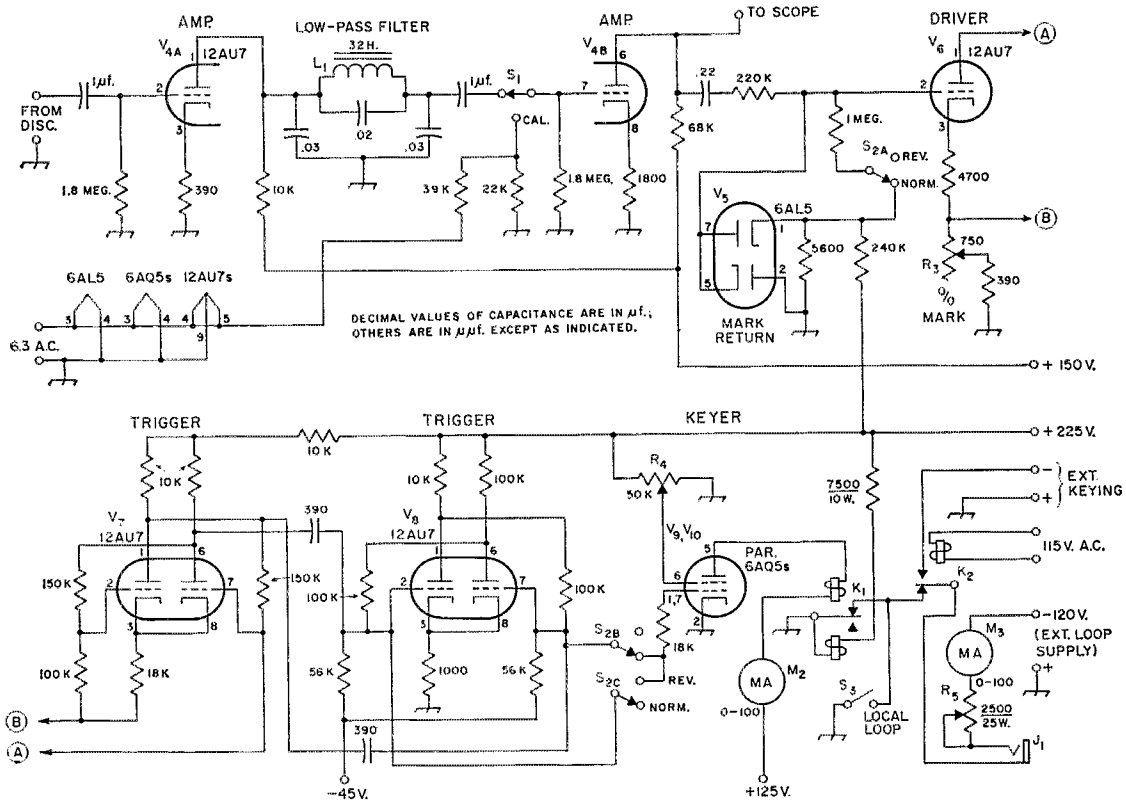
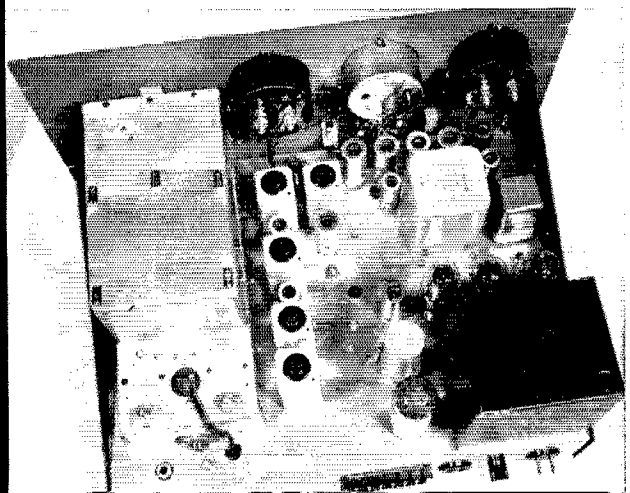


Fig. 2—Converter keyer circuit. Fixed resistors are ½-watt composition except as indicated. Capacitors with capacitance expressed in μf. are paper; others may be either ceramic or mica. The control circuit (K_2) and external keying terminals are used with associated f.s.k. transmitting equipment.

J_1—Open-circuit jack.
K_1—Polarized relay (Sigma 7JOZ-160T).
K_2—A.c. relay, 115-volt coil, s.p.d.t.
L_1—32 henrys at zero d.c., approx. 500 ohms (military surplus; suggested replacement, UTC type VIC-18 or VIC-19, or filter choke rated at approx. 30 henrys).
M_2, M_3—0-100 d.c. milliammeter.
R_3—750-ohm composition control, audio taper.
R_4—50,000-ohm wire-wound control, 4 watts.
R_5—2500-ohm 25-watt rheostat (Ohmite H-0159).
S_1—S.p.d.t. rotary or toggle.
S_2—3-pole 2-position rotary.
S_3—S.p.s.t. toggle.

separate loop circuit so a biased polar relay is connected in the plate circuit of the 6AQ5s. Because of the capacitive coupling in the amplifiers, no d.c. voltage is available from the signal to keep the output tubes conducting during mark or idling. Therefore, a "mark return" circuit is provided in the trigger driver stage for this purpose. In the "normal" position of S_2, used when the signal shifts to the higher frequency in the mark or stand-by position, the grid of the trigger driver is four volts positive, setting the trigger stages to cause the 6AQ5s to conduct. The "reverse" posi-



Top view, from the rear, of components on the 12 × 17 × 3-inch chassis. Power connections to the BC-453, at left, are made through the dynamotor socket on its rear deck. Between the 453 and the chassis wall are the output jack (which must be insulated from the chassis) and the loop current control, R_5. The external i.f. strip (Fig. 1) is alongside the 453, beginning near the rear edge of the chassis and running toward the front (top in this view). The 12AX7 scope amplifier is alongside the limiter, V_2, with its controls, R_6 and R_7, nearby on the chassis. The signal amplifier and trigger circuits (Fig. 2) are alongside the two right-hand meters. The large can in this area is the low-pass filter inductor, and to its right is the polar relay, K_1. Power-supply components are grouped on the near right-hand corner of the chassis.

tion is used when the r.f. signal shifts to the lower frequency on mark. In this position of S_{2A} the grid of the trigger driver is at zero voltage: this sets the trigger stages in the opposite state, but S_2 simultaneously selects the trigger output of proper polarity to cause the 6AQ5s again to conduct.

The "per cent mark" control, a variable resistor in the cathode circuit of the trigger driver, V_6, is for adjustment of the operating bias for most linear amplification of the pulses in this stage. This is necessary because the pulse widths in the loop circuit must be the same as at the output of the discriminator to prevent loss of printing margin. This control, R_3, is adjusted to give a symmetrical square wave at the plates of the 6AQ5s.

Discriminator Alignment

For proper operation the output of the discriminator must be kept at a zero average: that is, the incoming signal must be tuned so that its mean frequency is centered in the discriminator characteristic. The tuning (assuming that the discriminator circuits have been properly aligned for a symmetrical characteristic) is checked by connecting a 50-0-50 microammeter in series with the one-megohm "threshold" (audio level) control, R_2. This potentiometer limits the current through the meter as well as acting as an output control for the discriminator.

Most teletype transmissions operating at sixty words per minute use a shift of 850 cycles. It was decided, therefore, to adjust the discriminator to detect a shift of 425 cycles either side of center of the nominal 85-kc i.f.

First, it is necessary to have some sort of signal generator which can be accurately adjusted to shift the output frequency 425 cycles either direction. Most signal generators will reach the normal i.f. of 455 kc. Connect the generator to the input terminals of the converter and adjust its frequency to the i.f. of the receiver to be used. Tune the BC-453 to this frequency and peak the i.f. strip in the BC-453, including transformers T_1, T_2, and T_3, for maximum d.c. voltage developed across the 1-megohm resistor in the grid return of T_3 (see Fig. 1). With full limiting this should be about −40 volts.

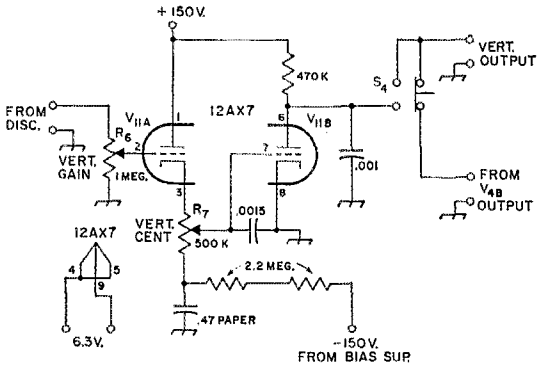


Fig. 3—Oscilloscope monitor vertical output circuit. Capacitances are in μf.; fixed resistors are ½ watt.

R_6—1-megohm composition control, audio taper.
R_7—0.5-megohm composition control, linear taper.
S_4—S.p.d.t. push-button switch.

Next, increase the generator frequency 425 cycles and adjust T_4 for maximum positive output at Pin 1 of the 6AL5 discriminator, V_3, using a v.t.v.m. with a zero-center scale. Reduce the generator frequency 850 cycles and tune T_5 for maximum negative output. Adjustment of one transformer affects the adjustment of the other; consequently, alternate adjustments must be made as the frequency is shifted through 850 cycles to obtain equal and opposite voltages at Pin 1 of V_3. It should be remembered that in f.s.k. the mark condition is high and the shift to the space condition is to a frequency 850

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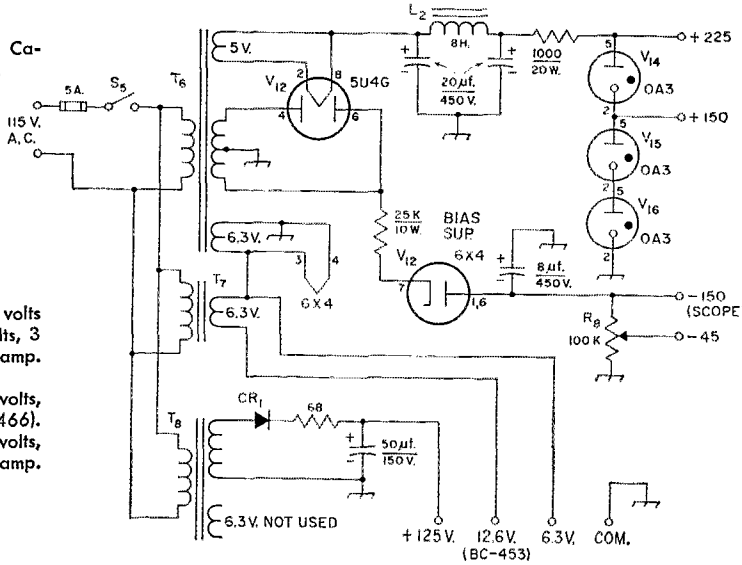


Fig. 4—Power-supply circuit. Capacitors are electrolytic.

CR_1—Selenium rectifier 100 ma.
L_2—Filter choke, 8 henrys at 200 ma. (Stancor C-1721).
R_8—0.1-megohm composition control, linear taper.
S_5—S.p.s.t. toggle.
T_6—Power transformer, 540 volts c.t., 120 ma.; 5 volts, 3 amp.; 6.3 volts, 3.5 amp. (Stancor PC8405).
T_7—Filament transformer, 6.3 volts, 3 amp. (Stancor P-6466).
T_8—Power transformer, 125 volts, 50 ma.; 6.3 volts, 2 amp. (Stancor PA8421).

There must be many owners of BC-454 Command receivers who have gazed at the 6-Mc. end of the dial, wondering if there were not some way of stretching the range a hair to include the 40-meter band. This article tells you how to do it, and also includes information on operation at higher frequencies.

80 and 40 on Same Receiver

BY YARDLEY BEERS,* W2AWH

Two-Band Coverage with the BC-454

THE BC-454 Command receiver, whose tuning range is nominally from 3 to 6 Mc., may be modified very simply to cover the entire 3.5- and 7-Mc. bands.

With the bottom cover removed, the coil unit is observed right behind the front adapter. Remove the two screws which hold the coil unit to the sides of the cabinet and then gently pull the coil unit, which is held in place by sets of miniature banana plugs, out of the chassis.

Coil Alterations

Remove the coil for the r.f. amplifier, which is identified by a red dot and which hereafter will be called L_1, from its case and remove 7 turns and then restore it to its case. In the correct orientation, the three colored dots are in a line.

Next remove the interstage transformer, denoted by a yellow dot, from its case. This contains two coils. The multilayer coil, L_2, is connected to the plate of the amplifier and is untuned, while the single-layer coil, L_3, is connected to the grid of the mixer. Remove 7 turns from the single-layer coil at the end remote from L_2, and then restore the transformer to its case.

Next, remove the local oscillator coil denoted by a blue dot. This contains a small tickler coil, L_4, and a larger tuned coil, L_5. Remove 4 turns from the far end of the long coil, and restore this to the holder. Note that in the correct orientation the banana jacks of the blue-dot coils are oppositely directed to the others. In soldering, be sure that no excess solder flows into these jacks, as the plugs will jam. Then replace the coil set in the chassis. Before applying any appreciable force, be careful that the plugs and jacks are correctly seated because these miniature plugs will not withstand much abuse, and a broken plug would be almost impossible to replace.

Circuit Alignment

Next, remove the outer cover exposing the screw adjustments on the trimmer capacitors. Set the main tuning dial to the highest possible frequency setting (considerably beyond the 6-Mc. mark). Adjust the frequency of a signal generator to 7.3 Mc., and align all the trimmers. Then set the generator to 3.5 Mc., and its signal should be found very close to the minimum frequency setting of the main dial. Test the alignment of the mixer trimmer and see whether maximum response on the input circuit can be obtained within range of the trimmer on the front panel.

If these tests yield satisfactory results, the modification can be considered complete. Otherwise it is necessary to trim the coils. If the tuning range of any circuit is insufficient (a situation which is indicated by the need for more capacitance than is available in the trimmers to reach 3.5 Mc.), the inductance must be increased and the capacitance of the trimmer must be decreased. Conversely, if the tuning range is excessive, the inductance must be decreased and the trimmer capacitance increased. In this way good tracking can be obtained in the amateur bands at the ends of the dial. In the center the tracking is not perfect but is adequate for most purposes.

On finding that the performance generally was satisfactory by following this procedure, I put both covers back on and indicated the new calibration on the dial by making faint scratches at 0.1-Mc. intervals. Because of the success of this modification, I have never felt the desire to buy a 6–9.1-Mc. Command receiver for covering the 7-Mc. band.

Other Bands

Some time later I bought a second BC-454, and I had the unusual luck of being able to obtain several extra coil sets also. I proceeded to wind coils which covered all bands from 1.7 to 50 Mc., inclusive, as shown in the accompanying table. Coil Sets A (1.7-3.6 Mc.) and C (7.0-14.4 Mc.) employed the original forms. In fact, some of the windings were left undisturbed. In set C, the desired tuning range was obtained by removing more turns than in set B. In set A, part of the original windings were removed and replaced by new windings. In sets D and E, the original forms were replaced by pieces of ⅜-inch polystyrene rod held by screws tapped in at one end (except that L_1 in set E is self-supporting). The spacings between the near ends of the L_2 and L_3, and the near ends of L_4 and L_5 were about 1/16 inch. The coils were trimmed by a

* 4 Ploughman's Bush, Riverdale 71, New York.

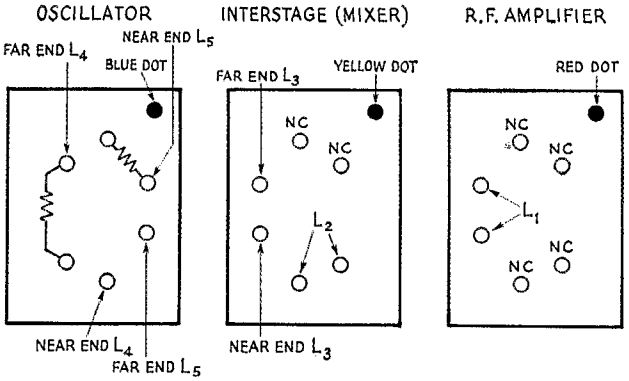


Fig. 1—Sketch showing coil-holder connections, looking at the bottom of the holder.

process analagous to that described in connection with set B (3.5-7.3 Mc.). On several of the higher-frequency coils it was necessary to adjust the spacing of the last one or two turns to get good tracking. The values for L_2 and L_4 were determined by guesswork, except that L_2 of set E was adjusted for resonance at 51 Mc. with a grid-dip meter, with L_3 disconnected. Also, no attempt was made to vary the resistors in the oscillator coil holder. Holes were drilled in the outer cover to permit direct access to all trimmers.

With set A, some background QRM results from i.f. feedthrough because the i.f. of 1.415 Mc. is so close to the signal frequency. Also, for the same reason, tracking is difficult and it is not possible to cover both the 1.7- and 3.5-Mc. bands with the same coils. With sets C and D, tracking in the center of the dial is poorer than with set B, and it is usually worth the effort to reset the mixer trimmer on 21 Mc. after having set it for 14 and 28 Mc. The stability is not good, but c.w. contacts may be carried out on 28 Mc. with a little effort. Although set E tunes down through the 28-Mc. band, no satisfactory operation below about 40 Mc. was obtained. Stability for phone contacts on 50 Mc. is adequate, but it is inadequate for c.w. contacts. On these higher frequency bands greater stability and sensitivity can be obtained by using this receiver at low frequency with a converter ahead of it.

Even though I have demonstrated that the BC-454 can cover all the bands from 1.7 to 50 Mc., I do not feel that it should be considered an "all-band" receiver, even if one is able to acquire extra coil sets.

The inaccessibility of the coils and the fragility of the miniature banana plugs make frequent coil changing undesirable, and ideally each receiver should set permanently on one range. With two receivers respectively employing sets A and C, one can effectively monitor the five most popular bands, 3.5-28 Mc., inclusive, and should there develop any pile-ups denoting the presence of some rare DX, he can then set his receiver of more advanced design and his transmitter on that band and go after it. This is one of the principal facilities provided by Larson E. Rapp's famous QS-59 receiver, and it is obtainable by the method which has been described at a price somewhat less than $10,000. QST

Data for Modified BC-454 Coils

Set	Frequency (Mc.)	Form	L_1 (R.F. Amp.)	L_2 (Amp. Plate)	L_3 (Mixer Grid)	L_4 (Osc. Tickler)	L_5 (Osc. Tuning)
A	1.7–3.6	Original	½" of orig. with ¼" winding of No. 32 wire added at each end	Original	5/16" of orig. with ⅛" of No. 32 wire added to near end and 5/16" of No. 32 added to far end	¼" of No. 32	5/16" of No. 32
B	3.5–7.3	Original	7 turns off original	Original	7 turns off far end	Original	4 turns off far end
C	7.0–14.4	Original	Original trimmed until 14 turns remain	Original	Far end of original trimmed until 12 turns remain	Original	Far end of original trimmed until 11 turns remain
D	14.0–28.7	⅜"	9 turns No. 22, ¼" long	15 turns No. 28	10 turns No. 22, ⅜" long	14 turns No. 28	9½ turns No. 22, 5/16" long
E	40–56	⅜"	5 turns No. 14, ½" long	8 turns No. 28	4 turns No. 14, ⅜" long	5 turns No. 28	4 turns No. 14, ½" long

Notes: 1.) All wire enameled.
2.) All windings are close-wound unless both the number of turns and the length are specified.
3.) L_4 and L_5 are wound in the same direction.
4.) "Far" denotes the end remote from the other winding on the same form, and "near" denotes the end adjacent to the other winding on the same form.
5.) The oscillator operates on the high-frequency side of the signal.

A home-built s.s.b. exciter with professional appearance. The slide-rule dial is described in the text.

Some Modifications for a Popular Unit

BY STIRLING M. OLBERG,* W1SNN

The "S.S.B. Package" Plus

The substitution of a mechanical filter for the original crystal filter, the addition of a slide-rule dial and an improved keying system for the W6TEU s.s.b. exciter described in an earlier issue of *QST* are features of the modifications described here by W1SNN. Layout sketches are available from the author.

In the June, 1958, issue of *QST* was described "A Single-Sideband Package," by George Bigler, W6TEU. It seemed to answer the requirements for an exciter at W1SNN. My friend, W1AZH, and I decided to build this unit but to make some circuit changes and add some other requirements to those originally outlined in the article. Since these circuit changes proved to be advantageous to this station, I thought other amateurs would also be interested in them.

The changes to be outlined are:

1) A mechanical filter to replace the crystal filter.

2) Keying circuitry to reduce or eliminate thermal noise generated by the 6146 amplifier.

3) A slide-rule dial to fit the required capacitor gang.

4) An electronically-regulated power supply for the 195-volt needs of the unit.

5) A notebook and mechanical-layout diagrams so that the unit could be reproduced.

These objectives were accomplished as follows:

Filter

1) The use of a mechanical filter involved a change in the original circuitry. Considerable time was spent in deciding what type of circuit should be used with a Collins Model F-455 mechanical filter. A breadboard unit was constructed and several popular systems tried. These did not work well or would not stay in adjustment as far as carrier balance was concerned. A circuit shown in the Collins advertisement on page 2 of the June, 1958 issue of *QST* was the next to be tried. It seemed to be the answer to the problem and was the circuit eventually used.

To solve the problem of obtaining closely-matched diodes, a Sylvania Type 1N40 was purchased. This small unit, which resembles outwardly a 6H6 tube, proved to be an excellent choice since it is not affected by ambient-temper-

* 54 Linda Ave., Saxonville Station, Framingham, Mass.

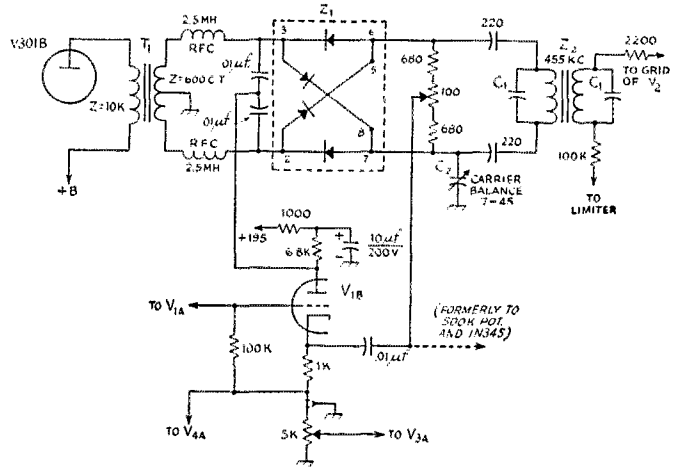


Fig. 1—Diagram showing balanced-modulator circuit and connections to mechanical filter. Unless otherwise indicated, capacitances are in μμf., capacitors marked with polarity are electrolytic, resistances are in ohms, and resistors ½ watt.

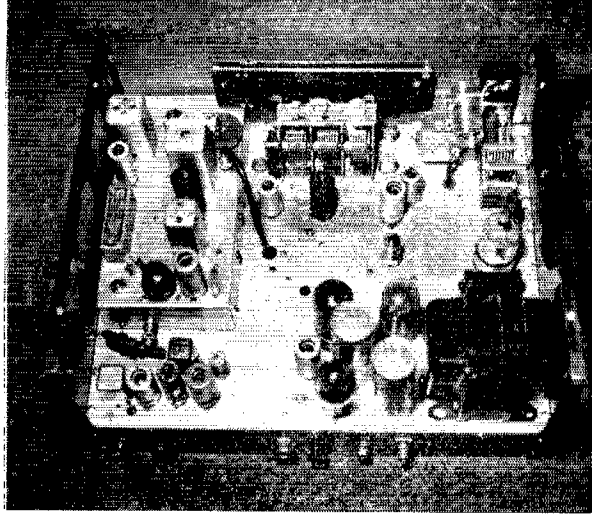
C_1—Value designated for each filter by manufacturer.

C_2—Ceramic trimmer.

T_1—Tube-to-line transformer; primary 10 to 20 K, secondary 500 or 600 ohms, c.t. (Thordarson 22S59, UTC A25 or equivalent).

Z_1—1N40 (Sylvania). Numbering refers to pins on octal base of 1N40.

Z_2—Mechanical filter (Collins F455 F-31).



W1SNN's s.s.b. generator chassis. The mechanical filter is near the bottom edge of the chassis in this view.

ature changes that might seriously affect carrier balance. This unit is easily mounted in an octal socket. The circuit is shown in Fig. 1. A photograph of the s.s.b. generator unit is also included.

2) The keying relay for this unit is a double-throw type. It was evident that the thermal noise generated in the 6146 amplifier while in a stand-by condition impaired reception. This relay therefore swings the screen voltage from a positive voltage to a negative one.

The relay is a Sigma type 22RJCC-5000-G/SIL found in most surplus advertisements. Its coil resistance is 5000 ohms and the relay directly replaces the Potter-Brumfield type SM5LS originally designated. The circuit changes involved in the use of this relay are shown in Fig. 2. The relay is small enough so that it can be mounted in the same position as the original one.

Dial

3) The ARC-5 gang capacitor originally prescribed for this unit can be modified for a slide-rule dial very easily and without the need for any special tools. A 2¼-inch dial pulley is fastened to the threaded dial shaft with the original dial nut. At the top front will be found on either end of the capacitor two threaded mounting tabs bent at right angles to the gang. An aluminum plate 7 inches long and 2½ inches wide, made of 16-gauge aluminum, is mounted on these tabs. This provides a mounting plate for two cable pulleys. The cable, made of standard radio dial cord, is fastened to the large dial pulley at one end. Two turns are wound around the drum and then passed over the cable pulleys and back to the dial pulley, where it is tensioned with a radio dial spring.

Attention should be given to the direction that the gang moves so that it will coincide with a dial scale marked 0 to 1. The dial is marked off in tenths for a one-megacycle range. The photograph and the sketch found in Fig. 3 will probably furnish a better description.

Regulated Supply

4) An electronically regulated supply was used

Fig. 2—Circuit for eliminating amplifier diode noise while receiving. The relay is d.p.d.t. with a 5000-ohm coil (Sigma 22RJCC-5000-G/SIL). This relay replaces K_{301} in the original circuit.

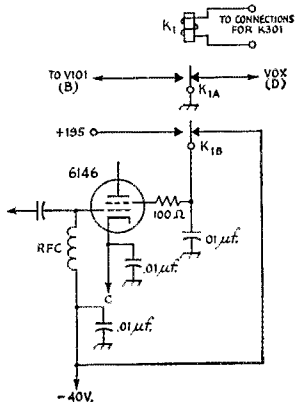
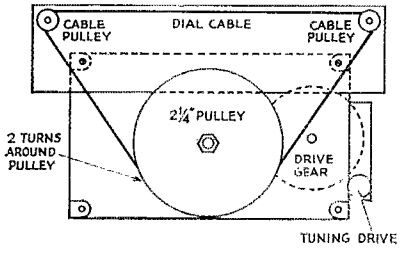
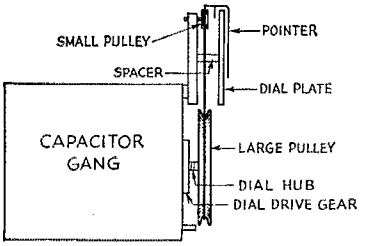


Fig. 3—Sketch showing slide-rule dial drive.





because the screen voltage of the 6146 and all other circuits at 195 volts seemed quite a load to pull through a resistor and two VR tubes. The circuit used can be found in *The Radio Amateur's Handbook*, 1957 edition, Chapter 7, page 228, Fig. 7-17. (Also page 232, Fig. 7-17, 1959 edition — *Ed.*)

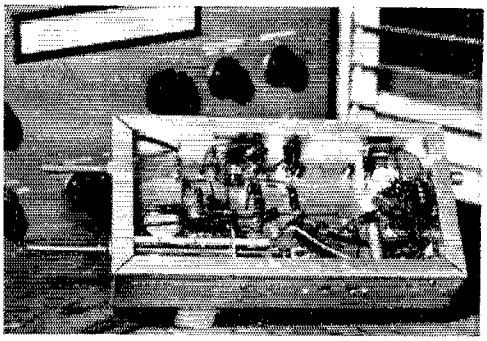
Drawings

5) A notebook full of data was kept on the progress and results of this exciter. All schematic changes were entered and, last but most important, mechanical layout drawings were made to full scale. Two units were constructed from these drawings. A full set of drawings for the mechanical layout of the panel, chassis, s.s.b. generator chassis and dial are available at W1SNN for postage to anyone who would like them.

A Variflex chassis was used. This is made by the Hamner Company (Princeton, N. J.) and can be obtained at most electronic distributors for a moderate sum.

The unit in use at this station has given me many happy hours of s.s.b. and c.w. operation; the unit for W1AZH is nearing completion and looks exactly like mine. Two other operators, W1YBN and W1KYE, have constructed these units, one with the crystal filter, the other with a mechanical filter, and they likewise find them a pleasure to operate.

A phasing-type s.s.b. generator chassis that can be used in place of either crystal or mechanical-filter chassis is being tried experimentally and works quite well. It follows the circuitry of W2EWL's "Cheap and Easy Sideband," without the amplifier. It fits on a small chassis that could replace the mechanical-filter or crystal-filter chassis.



Interior view of W1SNN's filter s.s.b. exciter.

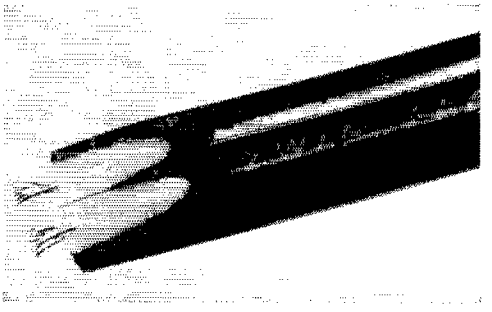
The only adverse comments on the whole system were by nonhams. My XYL and XYLs of W1YBN and W1KYE feel that it looks nice when it's all done, but the interval between the start and finish was sort of hard to take, since we all became very hard to live with until we had the beasts tamed and on the air. QST

New Apparatus —

Amphenol Marine-Core Twin-Lead

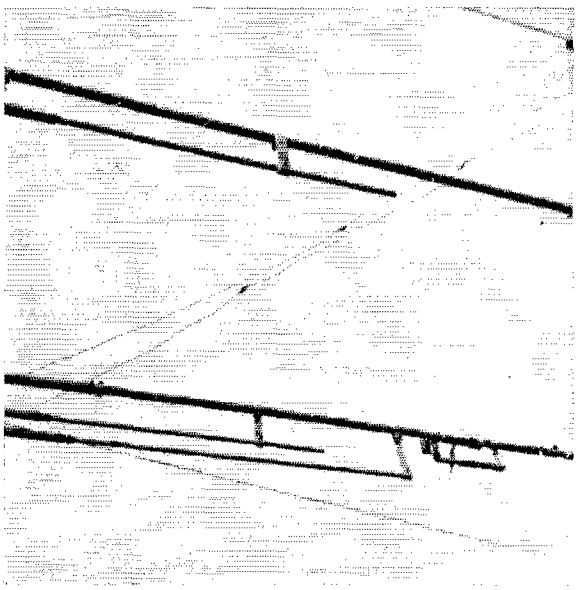
AMPHENOL'S new Marine-Core Twin-Lead is an inexpensive, flexible, lightweight and low-loss transmission line designed for television use in weak-signal or fringe areas where attenuation should be kept at a minimum. Of course it has immediate amateur application as a low-loss line, especially at v.h.f. where damp or rainy conditions usually upset transmission-line performance. Marine-Core line is practically impervious to moisture effects and the attenuation increases only slightly even when the line is completely submerged in water! For instance, 100 feet of regular Twin-Lead submerged in water has an attenuation at 100 Mc. of 11.5 db., but Marine-Core shows only 2.5 db. In dry air it has an attenuation of about 1.5 db. per 100 feet at 100 Mc. It probably would be possible to bury Marine-Core, if necessary — an advantage formerly possible only with coaxial feed lines.

Marine-Core has a nominal impedance of three hundred ohms, an over-all width of a little under ½ inch and a conductor spacing of 0.178 inch. The two conductors are each 7 strands of No. 28 copper wire, imbedded in foamed polyethylene. The entire cable is covered with an outer jacket of brown polyethylene. A cutaway section of Marine-Core Twin-Lead is shown in the accompanying photograph. It is available in 50-, 75-, 100- and 500-foot coils.



— *E. L. C.*

Detail photo showing gamma matching sections and one of the 20-meter loading coils and its electronic switching circuit.



This beam for 10, 15 and 20 has a maximum element length of less than 19 feet. Both capacitive and inductive loading are employed. Bandswitching is automatic. A 10-meter beam will serve as a suitable subject for conversion.

BY K. W. SWAIM,* W9KPM

Short Tribander for 10, 15 and 20

3 Bands on a 12-Foot Boom

IN COMMON with many others who do not have the space for a full-size 20-meter beam, I have been sold on the short-beam compromise ever since the idea was first introduced several years ago. More recently, having the desire to expand to three-band operation, I decided to see what could be done using elements of essentially 10-meter size. The final result is shown in the sketch of Fig. 1 and the photographs.

There is a total of four elements. Three elements are active on 20 meters and two elements on 15 and 10 meters. Element A is the driven element for both 15 and 20. Capacitive hats (see Fig. 2) serve to load the element to resonance at 15 meters. Loading coils L_1 are used to load the elements further for 20-meter resonance. L_2 and C_1 are series resonant at 15 meters and serve as an electronic switch to automatically short out the 20-meter loading coil when operating on 15.

Element B is a 15/20-meter reflector operating on the same principle as the driven element. Operating in a like manner, Element C serves as director for 10 and 20 meters, the series-tuned circuits in this case being tuned to 10 meters. Element D is a conventional 10-meter driven element.

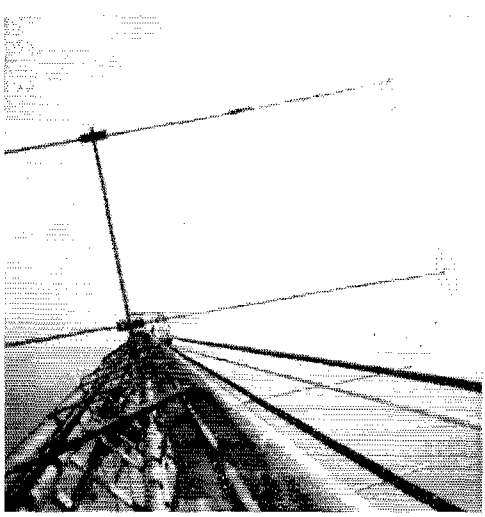
The driven element A is fed with a single RG-58/U line with separate gamma matching sections for 15 and 20, while the 10-meter driven element also has its own line and matching section. The matching sections are the "trombone" type described in earlier issues of *QST*.[1]

* 3710 Winter St., Fort Wayne, Ind.

Construction

The capacitive hats, shown in Fig. 2, are 18-inch wheels of ¼-inch aluminum tubing with

[1] Reynolds, "Simple Gamma Match Construction," *QST*, July, 1957. "Hints & Kinks," *QST*, August, 1958.



Worm's-eye view of W9KPM's compact 3-band parasitic beam.

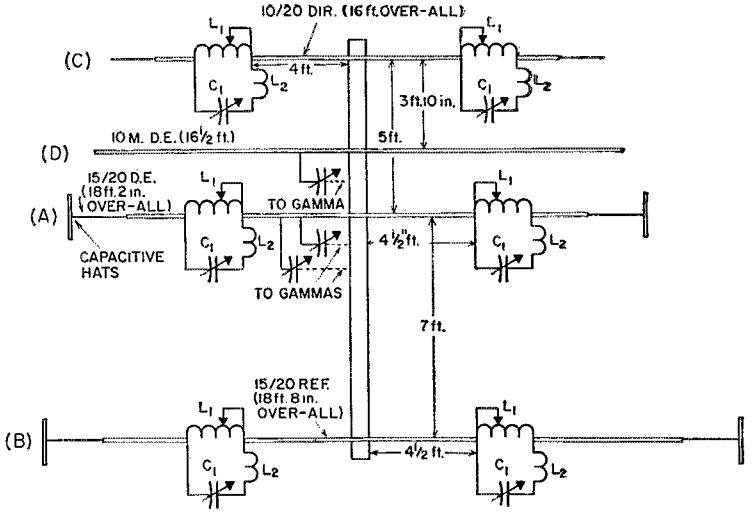


Fig. 1—Sketch showing essential dimensions of W9KPM's tri-band beam. Coils L_1 are the 20-meter loading coils. The series combination of coils L_2 and capacitors C_1 provide electronic shorts across the loading coils when operating on higher frequencies. See Fig. 3 for details. The capacitive hats are used to load the elements to 15 meters. See Fig. 2 for details.

four spokes of the same material. The ends of the spokes are flattened, bent at right angles, and drilled. Small rivets are used to fasten the spokes to the rim. Two bolts at right angles fasten opposing pairs of spokes to the ends of telescoping outer sections of the 15/20-meter elements.

The construction of the sections which include the loading coils and the associated series-tuned circuits is shown in Fig. 3. Each of the loading coils has 18 turns of No. 12 wire wound at the center of a 12-inch length of 1-inch maple dowel boiled in paraffin. The ends of the dowel are inserted 4 inches into the adjacent element members, leaving a 4-inch length of exposed dowel on which L_1 is wound. Bolts through the tubing and dowel keep the dowel in place.

The series capacitors are tubular, made in the same manner as the gamma capacitors.[1] Aluminum strap is used to suspend the capacitor from the element members so that it will bridge the loading coils. One of the straps is broken with a strip of polystyrene insulation, and the series coil, L_2, is bridged across the polystyrene. Each of these coils has 12 turns of No. 12 wire ¾ inch in diameter, approximately 2 inches long, self-supporting.

Adjustment

The adjustment procedure should be the same as for any other parasitic beam[2], with the following variations. With shorting jumpers placed across the loading coils, the 15-meter series circuits are tuned to the center of the band (21.35 Mc. for phone), using a grid-dip oscillator. Then, with the jumpers removed, the element length is adjusted for resonance at the same frequency. Finally, with the element excited at the center of the desired portion of the 20-meter band (14.25 for phone), the taps on the loading coils are adjusted to resonate the element at this frequency, keeping the turns equal in the two coils.

The same procedure is followed next in adjusting the 15/20-meter reflector, but using frequencies of 20.35 and 13.6 Mc. The 10/20-meter director (Element C) is adjusted similarly for frequencies of 29.5 and 14.85 Mc. Adjustments of antenna resonance and the gamma matching sections were made with the aid of an "antenna-scope."

Performance of the beam compares very well with a standard 2-element short beam on 10 and 15 meters. Estimated gain is at least 4 db. On 20 meters, performance equals or betters a well-known 3-element center-loaded commercial short beam which we have had in use here for the last four and one half years. Checks with an s.w.r.

[2] Nose, "Adjustment of Gamma-Matched Parasitic Beams," *QST*, March, 1958.

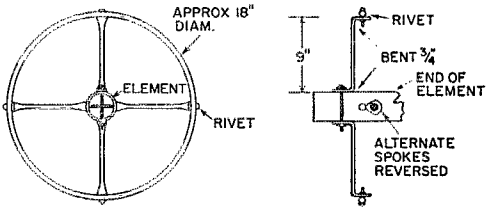
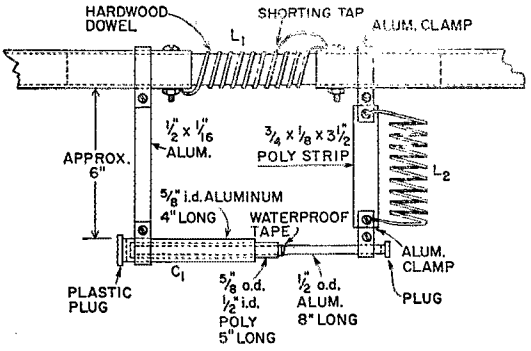


Fig. 2—The capacitive hats are made of ¼-inch aluminum tubing. Note that interference between mounting screws is avoided by reversing alternate spokes.

Fig. 3—Details of the 20-meter loading coils and series-tuned shunts. The loading coil L_1 has 18 turns No. 12 wire wound at the center of a 1-inch hardwood dowel to a length of 4 inches. The ends of the dowel extend 4 inches into each section of the element, the total dowel length being 12 inches. Coils L_2 have 12 turns of No. 12, ¾ inch in diameter. Turns spacing is adjusted as necessary. The capacitor C_1 is composed of two lengths of aluminum tubing with a section of polystyrene tubing as the dielectric. Capacitance can be adjusted by sliding the ½-inch inner tubing back and forth. Maximum capacitance is approximately 35 $\mu\mu$f. Other suggestions for capacitor construction will be found in footnote references.



bridge after final adjustment indicated an s.w.r. of less than 1.5 to 1 over the 10- and 15-meter bands. As might be expected, the loaded 20-meter elements caused some rise in the s.w.r. at the high and low ends of the band, but held within less than 1.5 to 1 over the range of 14,150 to 14,300, when the tuning was centered on the phone band. QST

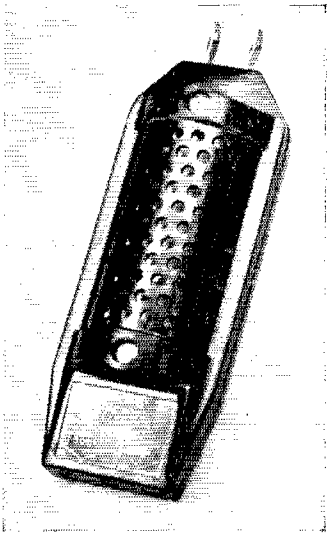
• New Apparatus

Esico Gunchoke

THE formidable looking object shown in the photograph is not a shotgun accessory as its name might imply. Instead, it is a power reducer that is inserted between the a.c. line and a soldering gun, for use when soldering printed circuits and laminated wiring boards. Using the gun with full-on heat could damage the delicate printed circuits.

The Gunchoke reduces temperatures of soldering guns to two selectable temperatures of 500 or 600 degrees Fahrenheit. Selection is made by simply plugging the soldering gun into either one of two sockets provided at one end of the Gunchoke. The soldering gun (or a conventional iron of equivalent wattage) takes slightly longer to heat up to the required temperature when the device is in use; the time lag varies from 25 to 40 seconds depending upon the type of iron or Gunchoke. Several models are available for almost every widely-used gun.

The Gunchoke measures about 6 inches long and 2 inches wide and is manufactured by the Electric Soldering Iron Co., Inc., Deep River, Conn. —*E. L. C.*



Strays

Ernest T. Rosing, W9ZZU, is looking for fellow hams who were in the submarine service during World War II. Rosing, second vice president of the U.S. Submarine Veterans of World War II, says the group is planning a big reunion in San Diego, Calif. next August. Meanwhile, he'd enjoy some ragchewing about old underwater days.

—···—

The York, Pa. Amateur Radio Club reports three father-and-son combinations: W3ZRI-W3ZRJ, K3BZK-K3BYF, and K3CET-K3BPO.

• *Beginner and Novice —*

How To Get Rid of the Other Fellow's Key Clicks

A Simple Audio Limiter

BY LEWIS G. McCOY,* W1ICP

How many times have you had a QSO fouled up because of key clicks from some other station? You've probably had it happen often, in spite of the fact that clicks are prohibited by the amateur regulations. What you probably don't know is that there is a simple way of getting rid of the problem. No, you don't have to chop down the other guy's antenna — although you probably would like to!

This "way" is a simple device, called an audio limiter, that can be plugged into the headphone jack on your receiver. Not only will it help on clicks, it will also serve as a noise limiter for certain types of noise, including the popping type of noise you get from spark plugs and electrical switches. The limiter has another useful function in that it tends to hold very strong c.w. signals down to a comfortable listening level. If you use your own receiver for monitoring your sending, as many hams do, the limiter eliminates the necessity for changing the gain-control setting of your receiver when you transmit.[1]

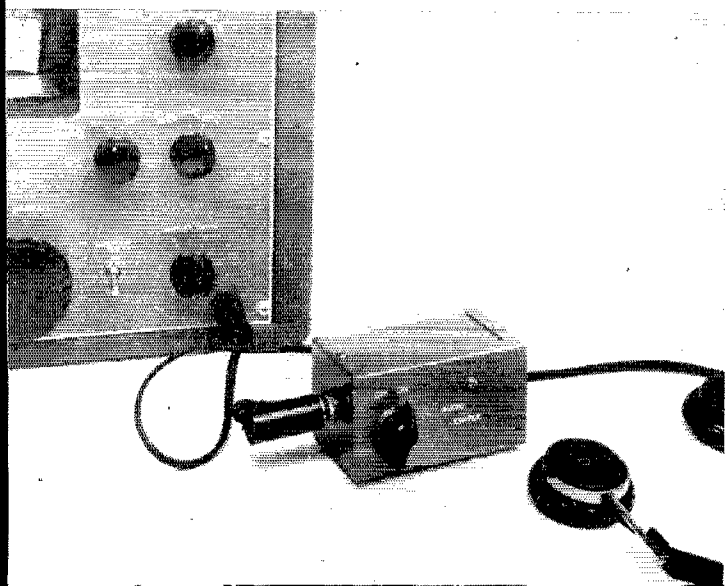
How It Works

The circuit of the limiter is shown in Fig. 1. The unit consists principally of two 1N34 diodes, two penlite cells, a resistor, and a switch. All the components are mounted in a small metal box which is equipped with a phone jack and plug. The plug is inserted into the headphone jack on the receiver and the headphones into the unit. No modifications are necessary as far as the receiver is concerned because the limiter is entirely external.

As you probably have observed when listening to c.w. signals on your communications receiver, the signals reaching the headphones will vary considerably in amplitude. They will range from ear-busting loud ones to very weak signals. When the receiver is switched for a.m. phone reception this condition is not as noticeable because nearly all communications receivers have automatic volume control for a.m. reception and the a.v.c. holds the stronger signals down to a comfortable listening level. However, when switched to c.w., most receivers have no provision for automatic gain control and the stronger signals blast through. Many hams maintain a comfortable listening level by "riding" the gain controls on their receivers. With the audio limiter connected to the receiver any signals that exceed a certain level are automatically clipped.

The diodes, CR_1 and CR_2, are back-biased by 1½ volts from the penlite cells. With this bias voltage the diodes are normally nonconducting. When a signal from the receiver exceeds the bias voltage the diodes conduct, putting a short circuit across the headphones for all voltages above the bias level. There is no limiting action when the signal voltage is below the bias voltage on the diodes. One diode clips the positive signal peaks and the other, the negative.

The limiter circuit as shown works best with high-impedance headphones, 2000 ohms or more. Many of the headphones that were available on



For what it costs in time and money, an "ear-saver" simple audio limiter is one of the best investments you can make for operating comfort in c.w. work. It's useful in other types of reception, too.

* Technical Assistant, *QST*.

[1] Providing, that is, that the receiver, with the gain controls set for normal reception, is capable of giving a satisfactory beat tone on your transmitted signal. Many receivers overload so badly that the beat note either isn't heard or is chirpy. — *Editor.*

the surplus market are the low-impedance type and the clipper will not work well with these unless a step-down transformer is used. (A tube-to-line output transformer having 500-ohm output is suitable. The headset should be connected to the 500-ohm winding. The high-impedance winding can be connected to a phone plug to go into J_1.) Also, the clipper will not work when a speaker voice coil is plugged into J_1.

Construction and Wiring

The unit shown in the photograph was constructed in a $2\frac{1}{4} \times 2\frac{1}{4} \times 4$-inch Minibox. However, any convenient size box or chassis can be used as neither the dimensions nor layout are critical. The penlite cells are held in place by a small bracket, secured by a screw and nut that also holds a two-terminal tie point. If desired, battery holders can be used for the cells, but it was felt that the extra expense wasn't warranted in this unit.

The leads from CR_1 and CR_2 are soldered directly to the penlite case (negative) and tip (positive), respectively. If you happen to get the type of cell that has a foil wrapping, take it out of the wrapping so you can solder directly to the case, because the contact between the cell case and the disk at the bottom of the wrapping is poor unless there is pressure on the bottom. Wrap the bare cell case with tape, if necessary, to avoid short circuits.

When soldering a diode lead, hold the lead with metal pliers near the point being soldered. This will serve to conduct any heat away from the diode. This is important because it is very easy to ruin the diode if too much heat reaches it.

How To Use It

To use the limiter, simply plug it into the receiver phone jack and plug your headphones into J_1. Set your receiver gain controls as you normally operate them, and then tune across the band with limiter switched off. Next, switch in the limiter and go across the band again. You should immediately note the difference, since the stronger signals will be held to one level and any noisy clicks should be suppressed to the point where they are hardly noticeable.

In this simple limiter circuit there is no control over the maximum headphone volume, because the peak signal voltage is set by the bias voltage (1.5 volts in this case) on the clipper diodes. As it happens, this represents a signal level that is satisfactory to most operators. The fact that the clipper bias is not adjustable simply means that the over-all signal level has to be fitted to the clipper, for optimum results. The optimum condition usually is one where clipping just begins on the moderately strong signals, leaving the weaker ones and the usual hiss-type noise background unaffected; this gives good protection to the ears without making the general run of signals take on the somewhat "thin" sound that accompanies heavy clipping. Generally, it is best to run the audio gain fairly wide open and adjust for the clipping level by means of the r.f.-i.f. gain controls on the receiver.

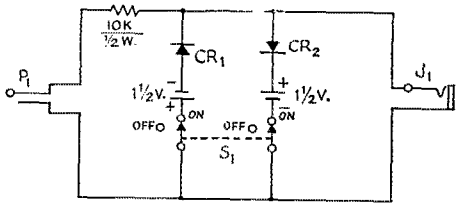


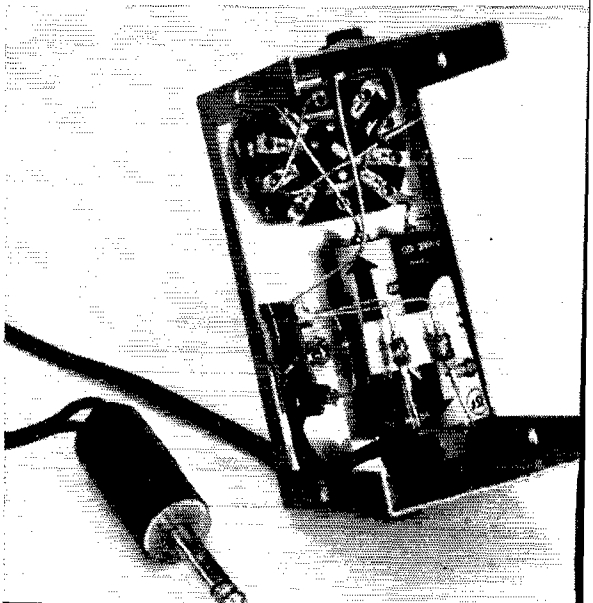
Fig. 1—Circuit diagram of the audio limiter.

CR_1, CR_2—1N34 or similar germanium diode.
J_1—Open-circuit headphone jack.
P_1—Headphone plug.
S_1—2-pole, 2-position rotary switch (Centralab 1464). Photo shows a 2-pole 3-position switch, which was used because it was available conveniently. A d.p.d.t. toggle switch also can be used.

S.s.b. reception is handled the same way as c.w. For a.m. phone, use the receiver's a.v.c. system as you normally would, and adjust the audio gain to set the desired signal just below the clipping level, so that noise peaks above the signal will be clipped off. As it stands, the clipper is, of course, only usable with headphones, so speaker reception is "out" unless the circuit can be installed somewhere between audio stages in the receiver itself.

It is interesting to observe the clipping action on an oscilloscope, if you happen to own one. Before clipping, key clicks and spark-plug noise have tall, sharp spikes when observed on a scope. With the limiter in these disappear above the clipping level, and by observing the scope you can see for yourself what a good job the unit does.

For what the limiter costs, about $3.50, you can't hardly beat it for what it adds to your operating comfort and convenience. QST



The simplicity of the audio limiter is apparent from this interior view. The headphone jack is on the end at the top in this view. The two flashlight cells are clamped to the case by the small bracket, above which the two diodes and the series resistor can be seen. The cord to the phone plug (ordinary lamp cord is suitable) can be any convenient length.

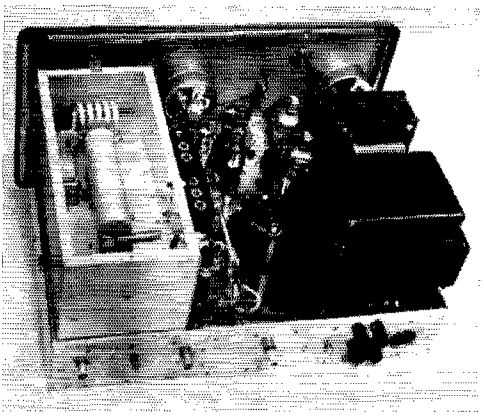
Johnson Viking 6N2 Thunderbolt

THOSE familiar with the Johnson Viking Thunderbolt, will realize, after a glance at the photographs shown on these pages, that there is something new and different about the v.h.f. version. The most obvious feature of the 6N2 model is the unique r.f. circuitry which is contained in a special silver-plated r.f. compartment.

The amplifier is designed for bandswitched coverage of the amateur 6- and 2-meter bands. It uses two 7034 power tetrodes connected in parallel and contains its own high-voltage plate, screen and bias supplies. It is capable of the maximum legal input on both bands when operated Class C. It can also be operated Class AB_1 for s.s.b. or d.s.b. emission at the legal input. If a.m. linear operation is desired, the amplifier may be biased for AB_1 operation at reduced input. Drive requirements for the amplifier are about 5 watts for Class AB_1 linear operation or about 6 watts for Class C.

Fig. 1 shows a simplified diagram of the 6N2's r.f. input circuitry. Although the input is switched from the front panel for 6- or 2-meter operation, the grid circuit is actually a multiband circuit; the switching action simply connects the proper link to couple energy into the network. Fig. 2 is a simplified diagram showing how the multiband input circuit appears on the two bands. On six meters, the circuit is a conventional parallel-tuned circuit with L_3 and C_1 forming the resonant circuit. Inductance L_4, which is a two-turn strip coil (see photographs), appears on six meters as a "hunk of connecting wire" which joins the tuned circuit to the two grids. However, on two meters the circuit becomes series tuned with L_4 being the tank inductance. The 6-meter tank, L_3C_1, has capacitive reactance on this frequency, and varying C_1 tunes the series circuit much as if L_3 were not present. However, L_3 provides a convenient means for coupling drive power into the 2-meter circuit.

[1] *QST*, "Recent Equipment," July 1958.



View of the 6N2 Thunderbolt with its case removed and without the r.f. compartment cover. Power-supply components are grouped along the right side of the chassis. The final amplifier tuning shaft (string drive) is visible between the shielded meters on the front panel. Connectors and controls available on the rear chassis wall are, left to right, r.f. output, ground stud, r.f. input, bias control, external bias jack, fuses, and a.c.-line input connector.

Simplified diagrams of the 6- and 2-meter plate tank circuits are also shown in Fig. 2. The output circuit will match transmission-line impedances of 30 to 300 ohms. On 6 the tank is easily recognizable as a pi network. The tank inductance, L_5, is a five-turn coil wound with silver-plated tubing (see photographs). When changing to two meters L_5 is shorted out, leaving in the circuit a coaxial line consisting of a large-diameter silver-plated cylinder as the inner conductor and the shield box as the outer conductor (on 6 meters the cylinder acts merely as a

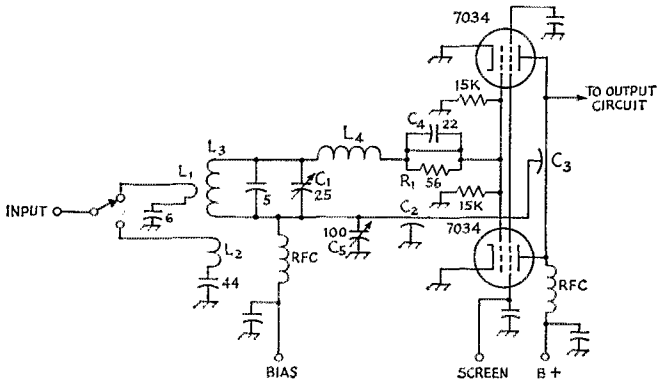


Fig. 1—Simplified diagram of a portion of the 6N2 Thunderbolt transmitter's r.f. section. Capacitances are in $\mu\mu$f. Capacitor C_1 is the grid tuning control, C_3 and C_5 are in the bridge neutralizing network and C_4R_1 is the grid-circuit parasitic suppressor.

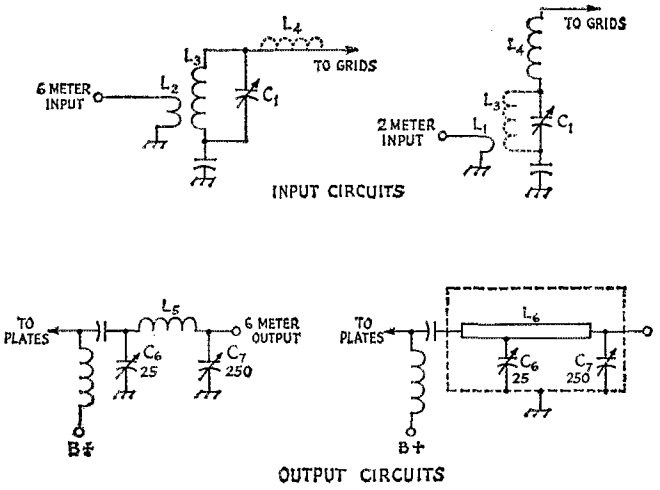


Fig. 2—Simplified diagrams of the input and output r.f. circuits of the 6N2 Thunderbolt transmitter. Refer to Fig. 1 for the actual grid circuit diagram.

connecting lead between the tubes and the 6-meter inductance, L_5). The r.f. compartment box is also silver-plated. Since the line is short it has inductive reactance, and it operates as a high-Q tank coil in a pi network. The same input and output capacitors used in the 6-meter pi also are used on two meters, but since the plate tuning capacitor C_6 has a relatively large capacitance for two meters (25 $\mu\mu$f.) it is tapped down slightly on the line which is labelled L_6 in Fig. 2. Use of the high-Q coaxial line on two meters boosts the efficiency of the amplifier. The manufacturer claims that losses on 144 Mc. are only about 5 per cent of the total tube output.

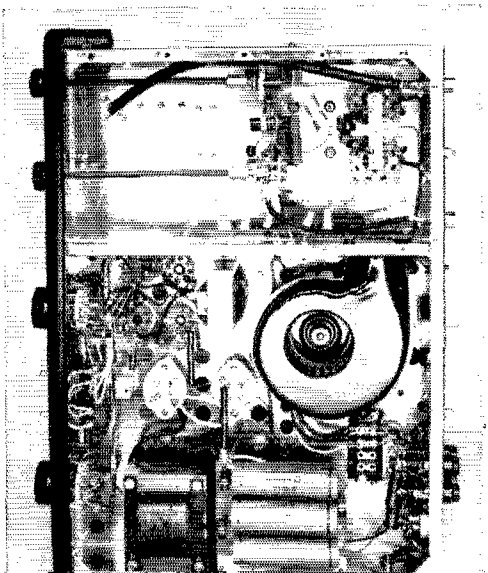
To insure stability in the amplifier, Johnson uses a parasitic suppressor in the grid circuit (see Fig. 1). It consists of an RCL network which includes C_4 and R_1 in shunt with the inductance of the grid-lead strap which, although small, is not negligible at 144 Mc. This network, along with the two 15,000-ohm grid loading resistors, can be seen in the close-up view of the grid circuit. In addition to the parasitic suppressor the amplifier also has capacity-bridge neutralization, using capacitors C_3 and C_5, Fig. 1, as part of the bridge. Capacitor C_3 is a small post that comes up between the two 7034 tubes from the lower grid compartment.

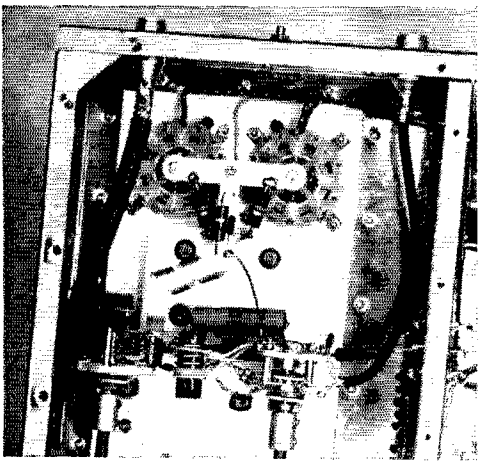
The grid circuit r.f. bypass capacitor, C_2, is a metal plate, about $2\frac{3}{4} \times 3\frac{1}{2}$ inches in dimensions, separated from the chassis by a sheet of plastic dielectric. All leads in the grid circuit requiring an r.f. ground return are physically connected to this capacitor.

The Thunderbolt plate power supply delivers about 2000 volts under full load. Screen voltage is obtained from the plate supply through a screen-dropping resistor and is regulated by a string of VR tubes. Bias for the amplifier is supplied by a combination bias-filament transformer which delivers heater voltage to the final amplifier tubes, filament voltage for the 866AX rectifiers, and 115 volts for the bias rectifier-filter. A selenium diode half-wave rectifier is used with a capacitor-input LC filter in the bias supply circuit and is regulated by a VR tube.

Adequate filtering in the high-voltage circuit is insured by a 5-to-25-henry swinging choke and six series-connected 80-μf. electrolytic capacitors. Safety features are not overlooked either. The transmitter incorporates an interlock that shorts out the high-voltage circuit when triggered. Also, the plate-current meter is connected between chassis and the negative high-voltage output terminal of the supply.

This view underneath the chassis of the 6N2 Thunderbolt shows the separate r.f. compartment at the top with its cover plate removed. Three of the six filter capacitors, which are mounted on a phenolic board, can be seen at the bottom next to the rectifier filament transformer. For cooling the final amplifier tubes and circuitry, air is sucked into the lower compartment in the photograph through a group of holes spaced at intervals in the chassis, then pumped into the r.f. compartment by the squirrel-cage blower. In the pressurized r.f. compartment the air is forced to flow through special tube sockets and chimneys *and cools the tubes and output-circuit* components above the chassis.





Close-up of the two-band grid circuit. The coaxial cable running along the edge of the chassis is the transmitter's output cable. The grid loading resistors and parasitic suppressor circuit are tied to the strap connecting the grid terminals on the 7034 tube sockets. The two-turn strip coil is L_4 (see Fig. 1). The two variable capacitors are the neutralizing capacitor, C_5, which is mounted on the chassis wall, and the grid tuning capacitor, C_1. The 6-meter coil and input links are wound on a phenolic form. The grid r.f. bypass capacitor, C_2, is a metal plate, separated from the chassis by a piece of solid plastic dielectric, located directly under L_4.

The power supply is wired for operation from a 3-wire single-phase 230-volt power source but, if necessary, it can be wired to operate from single-phase 115-volt power. In either case, the maximum power demand at full output doesn't exceed about 1500 watts.

Controls and meters on the 6N2 Thunderbolt include a plate-current/power-input meter calibrated in both milliamperes and amplifier power input (for a plate voltage of 2100 volts). A second meter can be switched to show grid current, screen current, plate voltage, or r.f. output voltage. The latter is measured with a shunt diode rectifier tapped down across the amplifier r.f. output circuit. Fig. 3 shows the voltmeter circuit.

A toggle FIL switch controls the filament and bias voltages while a PLATE toggle switch turns on the plate and screen voltages. Jeweled pilot lamps are mounted above each switch to indicate "on." The MODE switch selects the proper bias and screen voltages for the three positions of CW, TUNE, and LINEAR. The c.w. position is used for Class C operation while TUNE permits tuning and loading of the amplifier at reduced input. For a.m., s.s.b. and d.s.b. operation the switch is turned to LINEAR. Two band switches are necessary, one for the plate circuit and one for input switching. The GRID INPUT switch, in addition to shifting the input link for 6- or 2-meter operation, also allows selection of three resistances, 60, 100 or 200 ohms, to act as "swamping" resistors across the input circuit when the amplifier is operated as a linear. GRID TUNING and PLATE TUNING controls are provided, plus a COUPLING control for adjusting the amplifier loading.

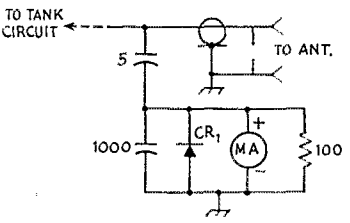
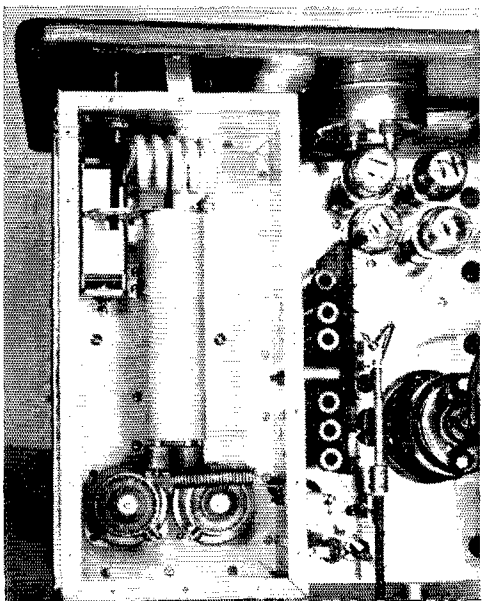


Fig. 3—Relative r.f. output is measured in this shunt diode detector circuit. The diode CR_1 is placed across the capacitive divider so that it "sees" only about 1/200th of the total power. Capacitances are in $\mu\mu$f.

The 6N2 Thunderbolt is housed in a perforated metal maroon-finished cabinet (not shown in the photographs) which measures about 21 inches wide, 11⅝ inches high and 16⅞ inches deep. To suppress spurious radiation all surfaces between the one-piece cabinet and panel make positive electrical connection when fitted together. The indicating meters are electrically outside the shielded cabinet and so their leads have r.f. filters. The a.c. line connections and outside control connections are also equipped with r.f. filters for TVI suppression. The total weight of the amplifier is about 120 pounds. It is manufactured by the E. F. Johnson Co., Waseca, Minnesota. —*E. L. C.*



The coaxial tank output circuit with the compartment cover removed. The 7034 amplifier tubes are at the bottom of the photograph. The coil above the right-hand tube is the plate r.f. choke. The large cylinder running almost the length of the compartment is the center conductor of the 2-meter coaxial line while the coil at the top end of the box is the 6-meter tank inductance. For 2-meter operation the latter coil is shorted out by the ceramic wafer switch at the top.
Output capacitor C_7 is just below this switch. The plate tuning capacitor cannot be seen in this view but is located under the 2-meter cylinder. Most of the components, as well as the surfaces of the compartment, are silver-plated.

26th ARRL International DX Competition

Phone: Feb. 5–7 and Mar. 4–6;
C. W.: Feb. 19–21 and Mar. 18–20

YES, DX Contest time is right around the corner again. Amateurs throughout the four corners of the globe are invited to participate in the 26th ARRL International DX Competition. This is the chance for W/VE stations to chalk up new countries for DXCC, and for other amateurs to put the finishing touches on WAS and WAVE. Your entry in this four week affair will ensure you a flock of frolic and fun.

There is one change in the rules from last year. Alaska (KL7) and Hawaii (KH6) by virtue of now being states of the United States will no longer be counted in the DX contingent, but will be working the rest of the world along with the other W and VE stations. That makes a total of 21 licensing areas for which the DX amateurs will have to be on the lookout. DX amateurs remember: KL7 and KH6 now count for you!

Certificates are offered to the top single-operator phone and c.w. scorer in each country and ARRL section. A special category recognizes multiple-operator stations in sections and countries from which at least three such entries are received. Also within ARRL-affiliated clubs, single-operator members may compete for certificates for the highest c.w. and phone efforts. A gavel will again be on the block, to be awarded to the club which compiles the highest aggregate score.

The award and scoring system is designed to encourage the widest use of our bands; so flexibility of operation is the thing (no certificates are offered for one-band work). Repeat QSOs on additional bands are permitted. For example, when W3ECR and PAØLZ exchange contest information on 10, 15, 20, and 40 meters, the contact-point total, multiplier, and score rise for both entrants. For the DX, the multiplier is the sum of the U. S. A.-Canada licensing areas worked per band, while the W/VE multiplier consists of the sum of different countries (see ARRL Countries List, p. 53) contacted per band. No credit for W/VE-to-W/VE QSOs is allowed.

It is suggested that W/VE c.w. entrants refer to this tabulation in indicating states and provinces. Overseas competitors may use it as a check-off list of states and provinces and for logging abbreviations.

W1 — CONN MAINE MASS NH RI VT
W2 — NJ NY
W3 — DEL MD PA DC
W4 — ALA FLA GA KY NC SC TENN VA
W5 — ARK LA MISS NMEX OKLA TEXAS
W6 — CAL
KH6 — HAWAII
W7 — ARIZ IDAHO MONT NEV ORE UTAH WASH WYO
KL7 — ALASKA
W8 — MICH OHIO WVA
W9 — ILL IND WIS
W0 — COLO IOWA KANS MINN MO NEBR NDAK SDAK
VE1 — NB NS PEI
VE2 — QUE
VE3 — ONT
VE4 — MAN
VE5 — SASK
VE6 — ALTA
VE7 — BC
VE8 — NWT YUKON
VO — NFLD LAB

U. S.-Canadian amateurs have quotas on c.w. (see rule 10) but none on phone. DX amateurs have no quotas; they will QSO as many stations as they can in the 21 W(K) and VE/VO licensing areas on each band. *Note: With the addition of Alaska and Hawaii there are now 21 areas.*

Keep your log neatly and carefully and send a copy to ARRL, *in the form shown*, as soon as the contest ends. It must be postmarked by April

CONTEST TIMETABLE

Phone Section:

Time	*Starts*		*Ends*	
GMT	Feb. 5	2400	Feb. 7	2400
AST	Feb. 5	8:00 P.M.	Feb. 7	8:00 P.M.
EST	Feb. 5	7:00 P.M.	Feb. 7	7:00 P.M.
CST	Feb. 5	6:00 P.M.	Feb. 7	6:00 P.M.
MST	Feb. 5	5:00 P.M.	Feb. 7	5:00 P.M.
PST	Feb. 5	4:00 P.M.	Feb. 7	4:00 P.M.
The second period starts at these same hours Mar. 4.			The second period ends at these same hours Mar. 6.	

C. W. Section:

GMT	Feb. 19	2400	Feb. 21	2400
AST	Feb. 19	8:00 P.M.	Feb. 21	8:00 P.M.
EST	Feb. 19	7:00 P.M.	Feb. 21	7:00 P.M.
CST	Feb. 19	6:00 P.M.	Feb. 21	6:00 P.M.
MST	Feb. 19	5:00 P.M.	Feb. 21	5:00 P.M.
PST	Feb. 19	4:00 P.M.	Feb. 21	4:00 P.M.
The second period starts at these same hours Mar. 18.			The second period ends at same hours Mar. 20.	

EXPLANATION OF DX CONTEST EXCHANGES

Stations in U. S. and Canada Send:

	RS or RST Report of Station Worked	*Your State or Province (or Abbreviation)*
Sample (c.w.)	579	ORE
Sample (phone)	57	Oregon

Stations Outside U. S. and Canada Send:

	RS or RST Report of Station Worked	*Three-Digit Number Representing Your Power Input*
Sample (c.w.)	579	075
Sample (phone)	57	500

LOG, 26th A.R.R.L. INTERNATIONAL DX COMPETITION

Call..... *ARRL Section*.....
Band.....*Mc.* *Sheet*.....*of*.....

Country	*Station Worked*	*Date*	*Time (GMT)*	*Sent*	*Received*
France	F8VJ	2/20	1300	589CONN	479075
	F9ZF	2/20	1345	569CONN	579080
England	G2CP	2/20	1306	589CONN	469150
	G4HJJ	2/21	1245	579CONN	469125
	G2KP	2/21	1255	569CONN	579100
	G3DC	3/19	1430	469CONN	559100
	G6QT	3/20	1822	579CONN	589125
	G5ABG	3/20	1851	469CONN	459075
Germany	DJ2HC	2/20	1315	559CONN	449050
	DL1BZ	2/21	1149	469CONN	559080
	DJ2KR	3/19	1502	559CONN	559045

Sample of report form that must be used by W/VE c.w. participants. When a station is worked for less than the maximum number of points allowed, the additional contact to make up the points not earned in the first contact should be entered at the bottom of the sheet. Canadian entrants should allow two blocks for each country, but may record no more than eight contacts therein. A separate set of sheets should be used for each band.

30, 1960, to be eligible for awards and *QST* listing. No matter how small your report, it is welcome. Convenient sheets are now available free on request from the ARRL Communications Dept.

Mark the dates on your calendar, check the rules below carefully, get your rig in tip-top shape for action, and stand by for the 1960 ARRL International DX Competition scheduled for February and March.

Rules

1) *Eligibility:* Amateurs operating fixed amateur stations in any and all parts of the world are invited to participate.

2) *Object:* Amateurs in the United States and Canada will try to work as many amateur stations in other parts of the world as possible under the rules and during the contest periods.

3) *Conditions of Entry:* Each entrant agrees to be bound by the provisions of this announcement, the regulations of his licensing authority, and the decisions of the ARRL Award Committee.

4) *Entry Classifications:* Entry may be made in either or both the phone or c.w. sections; c.w. scores are independent of phone scores. Entries will be further classified as single-

Sample of report form that must be used by W/VE phone entrants and all participants outside U. S. and Canada, phone and c.w. This example is a U. S. A. phone log. Foreign competitors, of course, would have reverse information in the "Sent" and "Received" columns; their "Received" column would show exchanges like "579CAL," "589ONT" (or, on phone, "46 Vermont," "58 Georgia," etc.), indicating signal reports received and different states and provinces worked; their "Sent" column would carry signal reports and power indicators transmitted.

LOG, 26th INTERNATIONAL DX COMPETITION

Sheet.....*of*..... *Call*..... *ARRL Section*.....*or Country*.....

Date & Time GMT	*Station Worked*	*Country*	*Record of New Countries for Each Band*							*Exchange*		*Points*
			1.8	*3.5*	*7*	*14*	*21*	*28*	*50*	*Sent*	*Received*	
Feb. 6												
1315	UR2BU	Estonia							1	56 Maine	57080	3
Feb. 7												
1300	PAØHBO	Netherlands						1		58 Maine	47075	3
1306	G3DO	England						2		58 Maine	46150	3
1345	PAØWWP	Netherlands						2		56 Maine	59080	3
2030	LU1BN	Argentina						3		58 Maine	57750	3
2310	VP9L	Bermuda				1				57 Maine	56050	3
Mar. 5												
1020	ZL1NG	New Zealand				2				58 Maine	58075	3
1035	ZL1MQ	New Zealand		1						47 Maine	46100	3
1105	VK3MX	Australia		2						46 Maine	45100	3
Mar. 6												
0925	EA3JE	Spain				3				57 Maine	57050	3
1245	G2DYV	England						3			46125	2
1255	G3ACC	England						3		56 Maine	57100	3
1350	G2DYV	England						3		57 Maine		1
2320	YN4CB	Nicaragua				4				58 Maine	58500	3

SUMMARY, 26th A.R.R.L. INTERNATIONAL DX COMPETITION

.....*Entry (C.W. or Phone)* *Call*.....*ARRL Section*.....*or Country*.....

Name.....*Address*.....

Transmitter Tube.....*Power Input*.....

Receiver.....*Antenna(s)*.....

(Logs from W(K) and VE/VO show *number of foreign countries* worked. Logs from other countries show *number of U.S.A. and Canadian call areas* worked.)

Bands	*1.8 Mc.*	*3.5 Mc.*	*7 Mc.*	*14 Mc.*	*21 Mc.*	*28 Mc.*	*50 Mc.*	*Total*
No. Countries QSOd		2		4		3	1	10[1]
No. of Contacts		2		4		6	1	13

Number of Different Countries Worked.....*Number of Hours of Station Operation*.....

Assisting Person(s): Name(s) and Call(s).....

39[2]	×	*10*	=	*390*
(Points)		*(Multiplier)*		FINAL SCORE

Participation for Club Award in the.....
(Name of Club)

I certify, on my honor, that I have observed all competition rules as well as all regulations established for amateur radio in my country, and that my report is correct and true to the best of my belief. I agree to be bound by the decisions of the ARRL Award Committee.

.....
Operator's Signature and Call

[1] Figure in this box is multiplier.
[2] Count 3 points per completed QSO; see rule 8a.

Sample of summary sheet that must accompany all reports.

or multiple-operator stations. Single-operator stations are those at which one person performs all the operating functions. Multiple-operator stations are those obtaining assistance, such as from "spotting" or relief operators, or in keeping the station log and records.

5) *Contest Periods:* There are four week ends, each 48 hours long: two for phone work and two for c.w. The phone section starts at 2400 GMT, Friday, February 5 and Friday, March 4, ends 2400 GMT, Sunday, February 7 and Sunday, March 6. The c.w. section starts at 2400 GMT, Friday, February 19 and Friday, March 18, ends 2400 GMT, Sunday, February 21 and Sunday, March 20.

6) *Valid Contacts:* In the phone section, all claimed credits must be made voice-to-voice. In the telegraph section, only c.w.-c.w. contacts count. Crossband contacts may not be counted.

7) *Exchanges:*

a) *Amateurs in U. S. and Canada* will transmit a three-figure number, representing the RST report, plus their state or province. (The latter may consist of an appropriate abbreviation.) Phone participants will transmit a two-figure number consisting of the readability-strength report plus the state or province. *Example:* W6YY might transmit "579CAL" on c.w., "57 California" on phone.

b) *Amateurs outside W (K) and VE/VO* will transmit six-figure numbers, each consisting of the RST report plus three "power" numbers: the power indicator will represent the approximate transmitter power input. Phone contestants will transmit five-figure numbers, each consisting of a readability-strength report and the three "power" numbers. *Example:* VK2GW, with 100 watts input, might transmit "569100" on c.w., "56100" on phone. If the input power varies considerably on different bands, the "power" number should be changed accordingly.

8) *Scoring:*

a) *Points:* One point is earned by a W (K) or VE/VO station upon receiving acknowledgment of a contest exchange sent, and two points upon acknowledging an exchange received. Two points are earned by any other station upon receiving acknowledgment of a contest exchange sent, and one point upon acknowledging an exchange received.

b) *Final Score:* W (K) and VE/VO stations multiply total points earned under Rule 8(a) by the number of countries worked on one band plus the number of countries worked on each other band. All other stations multiply total points earned under Rule 8(a) by the sum of the number of W (K) and VE/VO licensing areas worked on one band plus the number of W (K) and VE/VO licensing areas worked on each other band.

Countries will be those on the ARRL Countries List. There are 21 licensing areas: 12 in the United States (W1-Ø, KH6, KL7), 9 in Canada (VO, VE1–VE8). [See Countries List on p. 53 — Ed.]

REMINDER

DX Stations: Alaska (KL7) and Hawaii (KH6) can now be worked, making a total maximum multiplier of 21 for any one band.

KL7's & KH6's: You now work DX stations only. VE and other W contacts do not count.

W/VE Stations: KL7 and KH6 contacts do not count.

9) *Repeat Contacts:* The same station may be worked again for additional points if the contact is made on a different frequency band. The same station may be worked again on the same band if the complete exchange for a total of three points was not made during the original contact on that band.

10) *Quotas:* The maximum number of points per country per band which may be earned by W, K, KL7, KH6 stations *in the c.w. section* is 18, and contacts made on the same band with the same country after the quota is filled will not count. Thus complete exchanges with 6 stations in one country on one band fill the band quota for that country. The maximum number of points per country per band which may be earned by VE/VO stations *in the c.w. section* is 24, and contacts made on the same band with the same country after the quota is filled will not count. Exchanges with 8 stations in one country on one band are thus permitted Canadian participants. There is *no quota* for stations in the c.w. section *outside* of the U. S. and Canada. There is *no quota* for *any* station in the phone section.

11) *Reporting:* Contest work must be reported as shown in the sample forms. Each entry must include the signed statement. Contest reports must be mailed no later than April 30, 1960, to be eligible for *QST* listings and awards. All DX Contest logs become the property of the American Radio Relay League and none can be returned.

12) *Awards:* To document the performance of participants in the 26th ARRL International DX Competition, a full report will be carried in *QST*. In addition, special recognition will be made as follows:

a) A certificate will be awarded to the high-scoring single-operator phone and to the high-scoring single-operator c.w. entrant in each country (as shown in the ARRL Countries List) and in each of the mainland U. S. (plus Alaska and Hawaii) and Canadian ARRL sections (see page 6 of any *QST*) from which valid entries are received. In addition, a certificate will be awarded to the high-scoring multiple-operator station in each section or country from which three or more valid multiple-operator entries are received.

b) A suitable certificate will be awarded to the operator making the highest single-operator phone score in each ARRL-affiliated club, provided the club secretary submits a listing of a minimum of three phone entries by members of the club and that these scores are confirmed by receipt at ARRL of the individual contest logs from such members. The highest single-operator c.w. scorer in each club will be awarded a certificate under the same conditions. Only a bona fide resident member, operating a station in local club territory, may compete for club certificates.

c) ARRL will award a gavel to the affiliated club submitting the greatest aggregate phone and c.w. score by its members, whether single- or multiple-operator entries, provided such scores are confirmed by receipt at ARRL of the individual contest logs from such members. Only scores of bona fide resident members, operating stations in local club territory, may be included in club totals.

13) *Judges:* All entries will be passed upon by the ARRL Award Committee, whose decisions will be final. The Committee will void or adjust entries as its interpretation of these rules may require.

14) *Disqualifications:* Each participant agrees to observe the contest rules as well as all regulations established for amateur radio in his country. Violation of any regulation, as confirmed by a single FCC citation or advisory notice or two ARRL accredited Official Observer reports, may constitute grounds for disqualification. Some examples of practices which can result in disqualification: off-frequency (out-of-band) operation, harmonics, spurious emissions, low tone reports in logs, key clicks, splatter, excessive sidebands, W (K) stations working banned countries. QST

Strays

WHAT'S THE SCORE?
OR
WHO BLEW A FUSE?

BY

Western Pennsylvania Multiop Station W3AOH
(W3AOH, LMM, MVQ, QJJ, UHN, VKD and K3DKD)

Having read the results and got quite a jolt,
We "seven ops" wonder just who's the dolt
Who toted the scores and failed to see,
As listed on page 61 October *QST*
That W3AOH with its seven ops,
In multiop phone, came out as tops?
Instead, on page 54, you will see,
A worthy competitor, and a W-three,
Is announced as the winner, W3ECR,
Whose praises are sung by the mag near and far.
This hardly seems cricket, and we think you'll say
That a score which excels by 105-K,
Is far out in front and deserves some acclaim,
As winner and champion of this phone DX game.
Our score of 417 thousand three hundred twelve
Is hardly one you can conveniently shelve!
Are all our efforts to go for nought,
No recognition for the battle fought,
And won, as we see it, fair and square,
A gruelling ninety hour grind on the air,
With parries and thrusts and some fancy passes?
We think ye olde contest editor needs glasses!
There's no way of knowing what your answer may be,
But seven ops, W threes, say seventy-three,
If a correction is issued, despite the late date,
We'll drop all discussion and send eighty-eight!

—•••—

A "hammy" wedding was performed recently with KØAUS as groom, KØMBL as best man, and KØIUC officiating.

—•••—

Coincidence Department: W8GBH lives in Bellaire, Ohio — W5GBH lives in Bellaire, Texas.

25 Years Ago this month

January 1935

. . . VE5HQ won the second annual WVE contest with 22,410 points. W9GBJ led the United States with 7,938. It was the first time any Americans worked all seven Canadian sections.

. . . Ross Hull reported a new triumph on 56 Mc. — hams from Montclair, N. J. and Yonkers, N. Y. reached beyond Boston . . . A reader suggested dissolving celluloid from an old tooth-brush handle in banana oil (cheaply available from hardware dealers) to make a quick-drying coil dope.

. . . W3DD, 20-year-old Thomas A. Benham of Ardmore, Pa., constructed a complete station, including a portable outfit, entirely by himself — although Tom was totally blind from infancy. W3DD is still active today.

. . . Technical articles included a new, simpler circuit for obtaining voice-controlled carrier power . . . a design of high-frequency stages for the amateur superhet . . . and George Grammer's description of a 50-watt transmitter combining modern and less-modern circuits for multi-band operation.

. . . And the new *Radio Amateur Callbook* was advertised as hot off the presses for $1.25, or $4 for the year.

FEEDBACK

In the circuit diagram of Fig. 1, page 31 of the November issue, the arm of switch S_1 should go to ground, rather than to the positive side of the 1-μf. capacitor as shown.

—•••—

With reference to the transistor modulator described on page 24 of the November issue, W6DTQ of the Birtcher Corporation tells us the Birtcher Type 3B645 is *not* anodized and so does *not* provide the necessary electrical insulation.

Partial A.R.R.L. Countries List — For Your Convenience in the 1960 DX Contest

AC3 ..... Sikkim
AC4 ..... Tibet
AC5 ..... Bhutan
AP2 ..... Pakistan
BV ..... Formosa
BY ..... China
C9 ..... Manchuria
CE ..... Chile
CE9AA-AM, KC4, LU-Z, VKØ
VP8, ZL5, etc. ..... Antarctica
CE9 ..... (See VP8)
CEØA ..... Easter Island
CEØZ ..... Juan Fernandez Archipelago
CM, CO ..... Cuba
CN2 ..... Tangier
CN8, CN9 ..... Morocco
CP ..... Bolivia
CR4 ..... Cape Verde Islands
CR5 ..... Portuguese Guinea
CR5 ..... Principe, Sao Thome
CR6 ..... Angola
CR7 ..... Mozambique
CR8 ..... Goa (Portuguese India)
CR9 ..... Macau
CR1Ø ..... Portuguese Timor
CT1 ..... Portugal
CT2 ..... Azores
CT3 ..... Madeira Islands
CX ..... Uruguay
DJ, DL, DM ..... Germany
DU ..... Philippine Islands
EA ..... Spain
EA6 ..... Balearic Islands
EA8 ..... Canary Islands
EA9 ..... Ifni
EA9 ..... Rio de Oro
EA9 ..... Spanish Morocco
EAØ ..... Spanish Guinea
EI ..... Republic of Ireland
EL ..... Liberia
ET2 ..... Eritrea
ET3 ..... Ethiopia
F ..... France
FA ..... Algeria
FB8 ..... Amsterdam & St. Paul Islands
FB8 ..... Comoro Islands
FB8 ..... Kerguelen Islands
FB8 ..... Madagascar
FB8 ..... Tromelin Island
FC (unofficial) ..... Corsica
FD ..... Togo
FE8 ..... French Cameroons
FF8 ..... French West Africa
FG7 ..... Guadeloupe
FK8 ..... New Caledonia
FL8 ..... French Somaliland
FM7 ..... Martinique
FO8 ..... Clipperton Island
FO8 ..... French Oceania
FP8 ..... St. Pierre & Miquelon Islands
FQ8 ..... French Equatorial Africa
FR7 ..... Reunion Island
FS7 ..... Saint Martin
FU8, YJ1 ..... New Hebrides
FW8 ..... Wallis & Futuna Islands
FY7 ..... French Guiana & Inini
G ..... England
GC ..... Channel Islands
GD ..... Isle of Man
GI ..... Northern Ireland
GM ..... Scotland
GW ..... Wales
HA ..... Hungary
HB ..... Switzerland
HC ..... Ecuador
HC8 ..... Galapagos Islands
HE ..... Liechtenstein
HH ..... Haiti
HI ..... Dominican Republic
HK ..... Colombia
HKØ ..... Archipelago of San Andres and Providencia
HL ..... Korea
HP ..... Panama
HR ..... Honduras
HS ..... Thailand
HV ..... Vatican City
HZ ..... Saudi Arabia
I, IT1 ..... Italy
I5 ..... Italian Somaliland
IS1 ..... Sardinia
JA, KA ..... Japan
JT1 ..... Mongolia
JY ..... Jordan
JZØ ..... Netherlands New Guinea
KA ..... (See JA)
KAØ, KG6I, Bonin & Volcano Islands
KB6 ..... Baker, Howland & American Phoenix Islands
KC4 ..... (See CE9)
KC4 ..... Navassa Island
KC6 ..... Eastern Caroline Islands
KC6 ..... Western Caroline Islands
KG1 ..... (See OX)
KG4 ..... Guantanamo Bay
KG6 ..... Mariana Islands
KG6I ..... (See KAØ)
KJ6 ..... Johnston Island
KM6 ..... Midway Islands
KP4 ..... Puerto Rico
KP6 ..... Palmyra Group, Jarvis Island
KR6 ..... Ryukyu Islands
KS4 ..... Swan Island
KS6 ..... American Samoa
KV4 ..... Virgin Islands
KW6 ..... Wake Island
KX6 ..... Marshall Islands
KZ5 ..... Canal Zone
LA ..... Jan Mayen
LA ..... Norway
LA ..... Svalbard
LU ..... Argentina
LU-Z ..... (See CE9, VP8)
LX ..... Luxembourg
LZ ..... Bulgaria
M1 ..... San Marino
MP4 ..... Bahrein Island
MP4 ..... Qatar
MP4 ..... Trucial Oman
OA ..... Peru
OD5 ..... Lebanon
OE ..... Austria
OH ..... Finland
OHØ ..... Aland Islands
OK ..... Czechoslovakia
ON4 ..... Belgium
OQ5, Ø ..... Belgian Congo
OX, KG1 ..... Greenland
OY ..... Faeroes
OZ ..... Denmark
PAØ, PI1 ..... Netherlands
PJ ..... Netherlands West Indies
PJ2M ..... Sint Maarten
PX ..... Andorra
PY ..... Brazil
PYØ ..... Fernando de Noronha
PYØ ..... Trindade & Vaz Islands
PZ1 ..... Netherlands Guiana
SL, SM ..... Sweden
SP ..... Poland
ST2 ..... Sudan
SU ..... Egypt
SV ..... Crete
SV ..... Dodecanese
SV ..... Greece
TA ..... Turkey
TF ..... Iceland
TG ..... Guatemala
TI ..... Costa Rica
TI9 ..... Cocos Island
UA1, 2, 3, 4, 6 ..... European Russian Socialist Federated Soviet Republic
UA1 ..... Franz Josef Land
UA9, Ø ..... Asiatic Russian S.F.S.R.
UAØ ..... Wrangel Island
UB5 ..... Ukraine
UC2 ..... White Russian S.S.R.
UD6 ..... Azerbaijan
UF6 ..... Georgia
UG6 ..... Armenia
UH8 ..... Turkoman
UI8 ..... Uzbek
UJ8 ..... Tadzhik
UL7 ..... Kazakh
UM8 ..... Kirghiz
UN1 ..... Karelo-Finnish Republic
UO5 ..... Moldavia
UP2 ..... Lithuania
UQ2 ..... Latvia
UR2 ..... Estonia
VK ..... Australia (including Tasmania)
VK ..... Lord Howe Island
VK ..... Willis Islands
VK9 ..... Cocos Island
VK9 ..... Nauru Island
VK9 ..... Norfolk Island
VK9 ..... Papua Territory
VK9 ..... Territory of New Guinea
VKØ ..... (See CE9)
VKØ ..... Heard Island
VKØ ..... Macquarie Island
VP1 ..... British Honduras
VP2 ..... Anguilla
VP2 ..... Antigua, Barbuda
VP2 ..... British Virgin Islands
VP2 ..... Dominica
VP2 ..... Granada & Dependencies
VP2 ..... Montserrat
VP2 ..... St. Kitts, Nevis
VP2 ..... St. Lucia
VP2 ..... St. Vincent & Dependencies
VP3 ..... British Guiana
VP4 ..... Trinidad & Tobago
VP5 ..... Jamaica (including Cayman Isls.)
VP5 ..... Turks & Caicos Islands
VP6 ..... Barbados
VP7 ..... Bahama Islands
VP8 ..... (See CE9)
VP8 ..... Falkland Islands
VP8, LU-Z ..... South Georgia
VP8, LU-Z ..... South Orkney Islands
VP8, LU-Z ..... South Sandwich Islands
VP8, LU-Z, CE9AN-AZ ..... South Shetland Islands
VP9 ..... Bermuda Islands
VQ1 ..... Zanzibar
VQ2 ..... Northern Rhodesia
VQ3 ..... Tanganyika Territory
VQ4 ..... Kenya
VQ5 ..... Uganda
VQ6 ..... British Somaliland
VQ8 ..... Cargados Carajos
VQ8 ..... Chagos Islands
VQ8 ..... Mauritius
VQ8 ..... Rodriguez Island
VQ9 ..... Seychelles
VR1 ..... British Phoenix Islands
VR1 ..... Gilbert & Ellice Islands & Ocean Island
VR2 ..... Fiji Islands
VR3 ..... Fanning & Christmas Islands
VR4 ..... Solomon Islands
VR5 ..... Tonga Islands
VR6 ..... Pitcairn Island
VS1 ..... Singapore
VS2 ..... Malaya
VS4 ..... Sarawak
VS5 ..... Brunei
VS6 ..... Hong Kong
VS9 ..... Aden & Socotra
VS9 ..... Maldive Islands
VS9 ..... Sultanate of Oman
VU2 ..... India
VU4 ..... Laccadive Islands
VU5 ..... Andaman and Nicobar Islands
XE, XF ..... Mexico
XE4 ..... Revilla Gigedo
XW8 ..... Laos
XZ2 ..... Burma
YA ..... Afghanistan
YI ..... Iraq
YJ ..... (See FU8)
YK ..... Syria
YN, YNØ ..... Nicaragua
YO ..... Roumania
YS ..... Salvador
YU ..... Yugoslavia
YV ..... Venezuela
YVØ ..... Avis Island
ZA ..... Albania
ZB1 ..... Malta
ZB2 ..... Gibraltar
ZC3 ..... Christmas Island
ZC4 ..... Cyprus
ZC5 ..... British North Borneo
ZC6 ..... Palestine
ZD1 ..... Sierra Leone
ZD2 ..... Nigeria
ZD3 ..... Gambia
ZD6 ..... Nyasaland
ZD7 ..... St. Helena
ZD8 ..... Ascension Island
ZD9 ..... Tristan da Cunha & Gough Islands
ZE ..... Southern Rhodesia
ZK1 ..... Cook Islands
ZK1 ..... Manihiki Islands
ZK2 ..... Niue
ZL ..... Chatham Islands
ZL ..... Kermadec Islands
ZL ..... New Zealand
ZL5 ..... (See CE9)
ZM6 ..... British Samoa
ZM7 ..... Tokelau (Union) Islands
ZP ..... Paraguay
ZS1, 2, 4, 5, 6 ..... Union of South Africa
ZS2 ..... Prince Edward & Marion Islands
ZS3 ..... Southwest Africa
ZS7 ..... Swaziland
ZS8 ..... Basutoland
ZS9 ..... Bechuanaland
3A ..... Monaco
3V8 ..... Tunisia
4S7 ..... Ceylon
4W1 ..... Yemen
4X4 ..... Israel
5A ..... Libya
7G1 ..... Republic of Guinea
9G1 ..... Ghana
9K2 ..... Kuwait
9N1 ..... Nepal
..... Aldabra Islands

Hints and Kinks For the Experimenter

PORTABLE ANTENNA MAST

THE 40-foot vertical mast shown in Fig. 1 is extremely simple to construct and lightweight, yet has sufficient strength when properly guyed to support almost any Field Day antenna. The mast is constructed of 3-inch o.d. aluminum irrigation pipe cut into three sections each, approximately 14 feet long. The pipe is available from Sears, Roebuck and Company in 20- and 30-foot lengths and in diameters of 2, 3 and 4 inches and can be found listed in the Sears Farm Equipment catalog. The pipe joints are made by cutting a ¼-inch slot lengthwise through two 3-foot sections. These slotted sections are then compressed until they will slide into the full-sized pipe at the two joints. Eight sheet-metal screws at each top joint hold the sections and sleeves together.

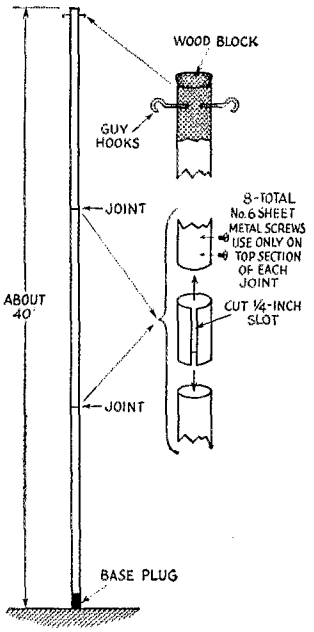


Fig. 1—K6QHZ's portable mast.

Ground support for the mast is provided by a 3-inch diameter section of treated fence post forced a few inches into the pipe. Of course, the mast can be placed on a flat board or hard surface instead. A wood insert is forced into the top section to provide mounting for four guy blocks which are screwed through the tubing and into the block.

After the mast is assembled on the ground, it can be swung into position by one man while assistants stake and place the guys. Disassembled, the tower can be made up into a simple bundle that can be tied to the side of a car. If the mast is going to be used for Field Day activities, the joints should be coated with vaseline to facilitate easy assembly and disassembly.

—*R. Bunce, K6QHZ*

USING DYNAMIC SPEAKERS

IF you have an old electrodynamic speaker in your junk box it can be put to good use as a shack speaker. All that's needed is a straight-

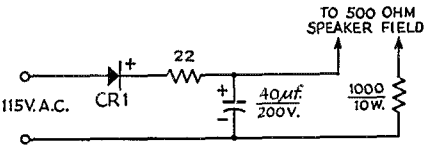


Fig. 2—Power supply suitable for use with dynamic speakers.

CR_1—150-ma. rectifier.

forward half-wave rectifier circuit to power the speaker field coil. Such a circuit is shown in Fig. 2. For safety reasons, care should be taken to isolate the circuit from ground and all leads should be insulated.

It is a good idea to check the d.c. resistance of these speakers since some of them were used with automobile broadcast receivers where the field coil was excited with the car's primary voltage. These car speakers will have a low-resistance coil and are not applicable for use with the circuit in Fig. 2.

—*John P. Stockes, KN8OIF*

USEFUL WASHERS

A HEAVY semihard rubber washer, ¾ inch thick, with one tapered side and one flat side (intended for closet-bowl drain use) makes a snug fit around two-inch pipe. It can be used to protect

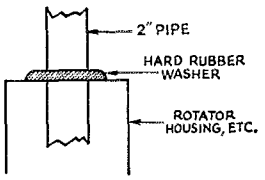


Fig. 3—Rubber washer protects rotator housing from moisture and dust.

antenna rotators or the like from moisture and dust (see Fig. 3). The washers can probably be obtained from most hardware or plumbing-supply stores.

—*Dr. George B. Bean, W5DVI/K5KUR*

INEXPENSIVE ANTENNA WIRE

ELECTRIC fence wire (Sears, Roebuck catalog No. HR 7795) is an inexpensive source of No. 18 copperweld antenna wire. About ten dollars will get you a ½-mile roll!

— *R. C. Bunce, K6QHZ*

ONE-TUBE CRYSTAL-V.F.O. INPUT CIRCUIT

THERE are several types of oscillator circuits which make good crystal oscillators, but when these circuits are used following a v.f.o. they become temperamental and sometimes unstable. The circuit shown in Fig. 4 is a crystal-oscillator, grounded-grid amplifier which, with the flick of a

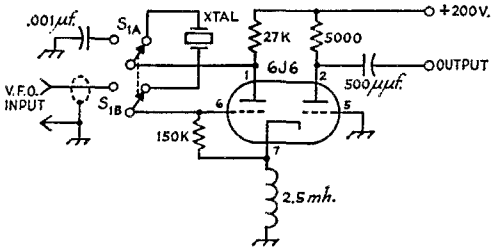


Fig. 4—Diagram of the crystal-v.f.o. circuit. Switch S_1 should be a low-loss type. Leads to the switch and crystal should be kept as short as possible.

switch, becomes a cathode-follower, grounded-grid amplifier for v.f.o. operation.

— *Patrick E. Hamel, K8DJK*

MORE SWEEP VOLTAGE FOR THE ELECTRONIC EYEBALL

THE article "The Electronic Eyeball" in *QST*, January 1959, stirred my desire to build a panoramic adapter. After building the unit, I found that I could not get enough sweep voltage from the 12AX7 tube for full linear horizontal deflection.

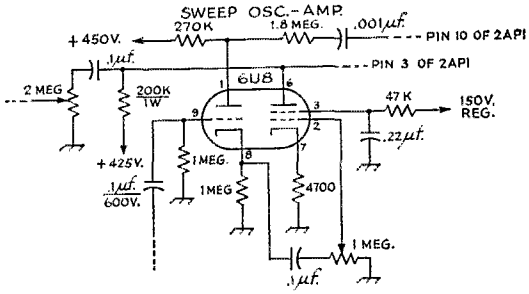


Fig. 5—Modified sweep circuit for the Electronic Eyeball All resistors are ½ watt unless otherwise specified.

I gave the problem some thought, thumbed through tube data and then decided to use a 6U8 in place of the 12AX7. The results were gratifying. I had almost twice the linear sweep voltage that I had before. The new circuit for the oscillator-amplifier is shown in Fig. 5. The only additional voltage required is 150 volts regulated for the screen of the pentode section.

— *Donald C. Hanna, VE2CD*

OSCILLOSCOPE CIRCUIT

MANY homemade oscilloscopes do not include *sweep, sync, or amplifier circuits*. Sometimes, however, these circuits are necessary for ham measurements, and they can be added readily to an existing scope which contains its own power supply. Fig. 6 shows a simple circuit that includes vertical- and horizontal-amplifier and sawtooth-oscillator circuits. The only power necessary other than heater is 300 and 400 volts at about 25 ma. — *C. O. Williamson, W8HQZ*

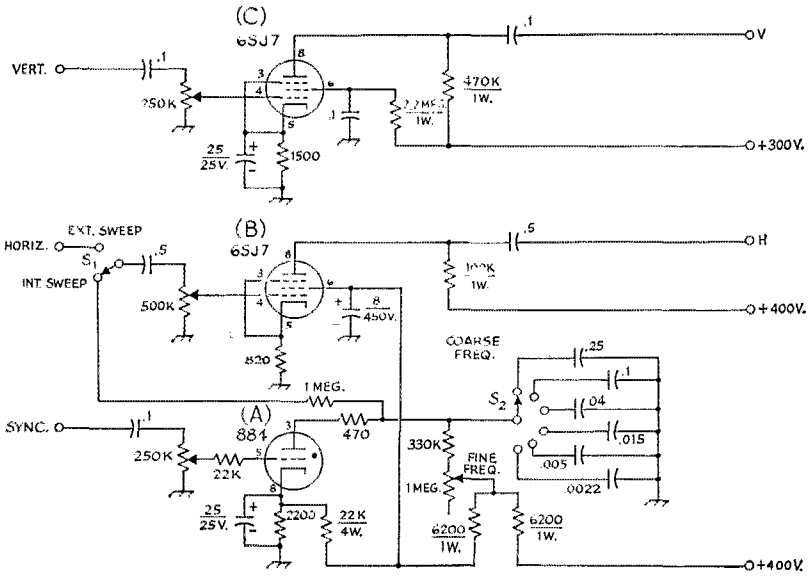


Fig. 6—Oscilloscope circuits—(A) sawtooth oscillator, (B) horizontal amplifier, and (C) vertical amplifier. All capacitances are in μf. Those marked with polarity are electrolytic. Resistors are ½ watt unless otherwise indicated. Terminals V and H are connected to the vertical and horizontal plates of the cathode-ray tube.

The author

Pertinent Factors and

Suggested Techniques

BY DONALD McCLENON,* W3EIS

So You Want to Win a Contest!

In this era of skyrocketing interest in contests, few experts are as qualified to discuss the subject as W3EIS. McClenon won seven of the last nine c.w. Sweepstakes awards in highly competitive Md.-Del.-D.C. Section, placing fourth nationally last year, and co-holds the all-time score/contact record among two-man Field Day portables. He is currently president of Washington's Potomac Valley Radio Club, possessors of a sizable stack of contest gavels. This article is an updated version of a talk delivered at the 1958 ARRL National Convention.

THERE are some regularly scheduled amateur radio contests which are so popular that nearly all other on-the-air activity ceases while they are in progress. These include ARRL's Sweepstakes, International DX Competition, and Field Day. It should be evident that these events develop operating proficiency, demonstrate desirable station improvements, and foster emergency preparedness. Probably the biggest attraction, however, is that contests are a lot of fun. The enjoyment to be derived will usually be greater if the participant is doing well, which usually means he is running up a good score. This discussion will deal with certain important techniques contributing to good scores in the three events mentioned, and will supplement the excellent recommendations given in W9IOP's article.[1]

The Sweepstakes

In the SS, an amateur located in any of the 73 ARRL Sections attempts to contact as many others in as many of these sections as possible in the 40 hours of operating time allowed him during the 66-hour contest period. Stations must exchange six elements of information to obtain points for the contact. These multiplied by the number of sections worked and the power multiplier (if applicable) give the score. Once a station has been worked he may not be reworked on any other band. A prime feature of the contest is the QSO serial number sent during each contact, which tells how many stations you have worked up to this point and likewise lets you know how the station contacted is doing. You may take time out whenever you like until you have used up the 40 on-the-air hours or the two week ends.

Just knowing someone's contact total does not appear to make possible the determination of his score, because his multiplier is unknown. This can be obtained with surprising accuracy with the technique to be described, an extension of which also helps plan future contest strategy.

The results of SS operation by thousands of amateurs have been tabulated in *QST*. When an operator's score is plotted against his total contacts, a smooth curve may be drawn through the area of greatest density of these points, with about as many on one side of the line as on the other. Such a line represents the performance of the average SSer, regardless of how well or poorly he does. Better performance simply moves him farther up the line. This is the typical score buildup of Fig. 1. Since we have found that the average participant with a given number of contacts must have a certain score, he must also have a corresponding number of sections as shown in the 'sections' scale of the figure.

Those who stay on one band for long periods or who work only the stronger signals will have lower than average scores for their contact totals and their results will appear below the line in the 'rag chewers' region. Those who spend a lot of

* 11310 Cedar Lane, Beltsville, Md.

[1] LeKashman, "Contest Operating," *QST*, September, 1958.

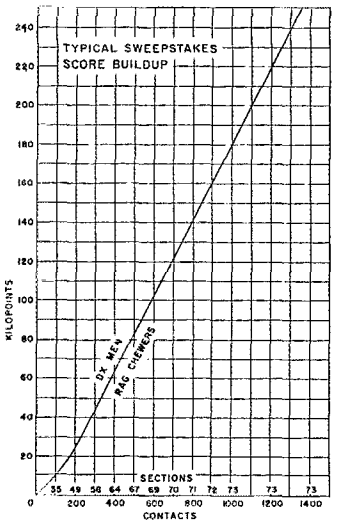


Fig. 1

time seeking out new sections and allow their contact totals to fall show up in the 'DX men' portion above the line. In this curve, all participants start at zero and the points spread farther and farther on each side of the line up to about 350 contacts, after which they converge again to the line at about 1000 QSOs, because anyone with this many is likely to have practically all the sections.

Fig. 1 is exponential up to about 200 contacts and essentially linear thereafter. This is true whether one takes the entire 40-hour period to make his 200 contacts or does it in the first five hours. Actual scores usually go in 'steps' when several new multipliers are obtained close together, but the scores alternate above and below the line of Fig. 1.

With the aid of Fig. 1, it is possible to estimate the final score of most of those worked. You determine the ratio of his number to yours when you work him. At the end of the contest you multiply your final number of contacts by this ratio to obtain his final contact total and read his final score from Fig. 1 using his QSO total. This technique applied to all club members enables the Potomac Valley Radio Club and the Frankford Radio Club to know who won the gavel for the highest scoring club a day after the contest is over, and thus avoids the six months of suspense while awaiting publication of the official word. The assumptions made in using this method are that (1) both stations have used about the same amount of time, (2) both follow a normal pattern in making contacts, (3) neither has any serious equipment breakdown, (4) the other fellow is in the 150-watts-or-less class, will operate the full 40 hours, and keep a fairly accurate duplicate check, (5) he sent a true consecutive number and (6) he will postmark his log by the mailing deadline. This method of prediction is inaccurate the first few hours because the other chap may have started late, or you might be off to a slow start, etc., in which case you can obtain the information from a friend who worked the same station later in the contest. Corrections must also be made if you finish several hours before the contest ends. The errors made on a large group of operators just about balance out, making their total reasonably close to the correct value.

As W1ZDP pointed out in the 1957 SS results (May 1958 *QST*), if you use some such system and have your hopes of winning a section certificate apparently dashed by receiving a high number, heed these words of caution: the guy might (1) have a kw. and be ineligible for the power multiplier, (2) be a multi-operator entry not competing for an award, (3) have more hours in than you, (4) be disqualified for rules violations or mail his log late or not submit one at all, or (5) be kidding by sending a number far above the correct one. Try not to be discouraged easily, but keep going. The turtle may not often win the race, but in this one you can surely do better than a fast-moving, prevaricating hare.

It should be expected that as time elapses the contacts-per-hour rate will drop. This is because you keep on hearing those previously worked and new stations become harder to find. Studies of a good many logs show that while the contact rate jumps around, it follows the typical smoothed pattern of Fig. 2. The solid line is for a 1000-QSO log and the dotted one for a 380-QSO entry. These assume that each op put in half-time (20 hours) the first week end. At the beginning of the

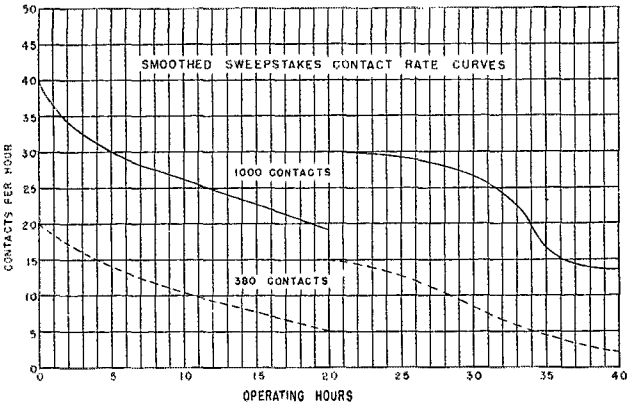


Fig. 2

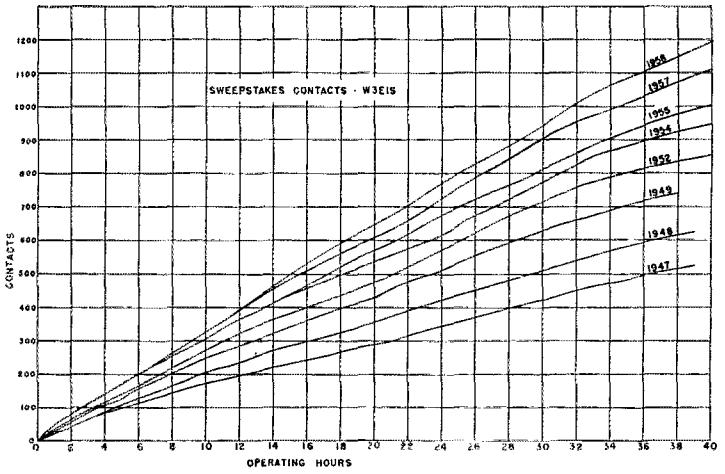


Fig. 3

second week end new stations appear, and the rate is much higher than at the close of the previous period. However, it again drops with time to well below the previous low point for the last several hours. Studying these curves should suggest strategy for improving next year's score. It would be better to put in more than half the ime in the first weekend, for example.

Most SSers — especially beginners — have no expectation of being section winners but would like to do better than the last time. Since this is primarily a matter of making more contacts in the same time, the best how'm-I-doing? yardstick is a chart of QSOs plotted against operating hours for the previous effort, on which this time's results are posted as they occur. Fig. 3 is such a measure drawn by the author for typical years over the past decade, this showing continuous improvement. Some of this is due to station equipment and layout changes, some to improvement in operator skill, some to the fact that there are more people to work each year. The ham population is growing and once anyone tries the SS he is bound to enjoy it and be on in the future. He's hooked!

One of the most frequently asked questions is "How long should I wait for a new section?" The answer depends on when you ask. At the beginning you shouldn't ordinarily wait at all because anything worked will be new. At the end you can't wait as your time has expired. Assume that you have tried reasonably hard to raise most of the sections for 38 hours, but still don't have them all. Your contact rate has followed the pattern of Fig. 2, so you can predict what your score will be for the remaining two hours if you don't get a new multiplier. Now assume you hear a new one and stand in line, eventually landing him. If the new number of contacts (one more) times the new multiplier (one more) is set equal to an unknown number of QSOs times the old multiplier, we can solve for the unknown to see how many contacts the new multiplier is worth. W1YYM discussed this in an article emphasizing that the calculation can be made at any point in the contest.[2] This is true but not helpful (or significant), and the QSO rate is then higher than it will become later. The number of contacts so determined divided by the present contact rate gives the fraction of an hour which makes the two scores the same. Getting the multiplier faster shows a profit, a story shown in Fig. 4. The interesting result is that the additional section is worth one hour of your

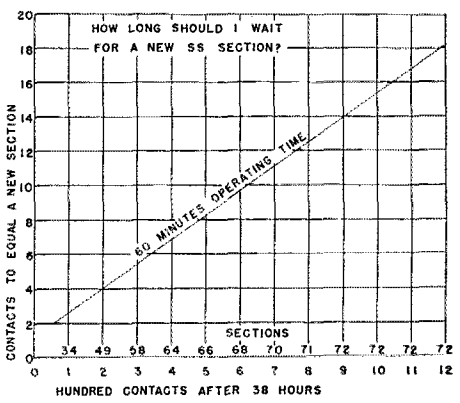


Fig. 4

time regardless of how hot or cold an operator you may be, though there are fallacies to this line of reasoning. You might have gotten the multiplier later with no waiting and be better off. Also, if you need Vermont after 38 hours, all the Vermont boys may already have their time in and have quit by then. You should know which sections are rare and get them salted away earlier. Do the waiting when you hear them because it may not be possible later. Be on the bands where they are most likely to be found as a result of propagation conditions.

A week prior to the 1958 SS, I became concerned about the probable scarcity of KZ5s and worked three of them before one could be per-

[2] White, "Contacts *vs.* Multipliers," *QST*, November, 1955.

suaded to sked me at starting time. My beam could be rotated only after a trip to the back yard to walk it around with a rope, so it was aimed south when the SS began. After several fruitless calls to him, I settled down to work a few of the Florida and Georgia contestants, but decided the contact rate would be better if the beam was aimed west. A quick dash out back, a yank on the rope, a rush back to the shack, and there was a pile-up calling the KZ5! The second trip to the yard and the return of the beam south was much faster than the first, to say nothing of the return sprint to the rig—when he was calling me! I worked him and then ran out to put the beam west again.

Fortunately, not all multipliers come this hard. What is scarce in one part of the country may be plentiful in another. From my QTH (besides Canal Zone), it is always nice to raise Vermont, Idaho, Utah, Wyoming, West Indies, KL7, and VE5. For me, any of these are worth waiting for whenever they are new.

The International DX Competition

This is an event in which W/K/VE/VO stations attempt to work as many DX countries on as many bands as possible for the multiplier, and on c.w. there is a limit (quota) to how many are workable on each band. This puts a premium on multiband operation, good antennas, propagation knowledge, and operating experience. The total operating period is 96 hours in two week ends with no time-outs. Ability to forgo sleep thus becomes a plus factor.

Universal DX Contest score-*versus*-contact curves centered on *QST*-published phone and c.w. scores were constructed in the same manner as those described for the Sweepstakes. The c.w. scores run higher for a given number of contacts because the quota system prevents making many QSOs in any one country, while any number are permitted on phone. C.w. scores rise exponentially up to about 550 contacts and phone scores to about 700, after which they become essentially linear (multipliers become harder to come by!).

To illustrate how typical c.w. scores increase with time, several medium-to-high scorers' logs were examined and their scores calculated for each hour of the 96-hour contest. Each curve in Fig. 5 represents one of these operators. To avoid possible embarrassment, they are not identified by call. It will be seen that they all follow a pattern, even to the horizontal portions which indicate sleeping or other time-outs. (Let's hope none of them were for correcting TVI complaints!) The man who placed fourth in this group tried running straight through the first night and all the next day with essentially no time off. He was in third place for a while, and then hit the sack at 1 A.M. the second night for about nine hours, sleeping his way back to fourth place. The dotted lines for the third-place man are to facilitate following him through the crossovers. The first-place "iron man" did not appear to require any sleep! A point of interest to club statisticians is that most DX Contest scores

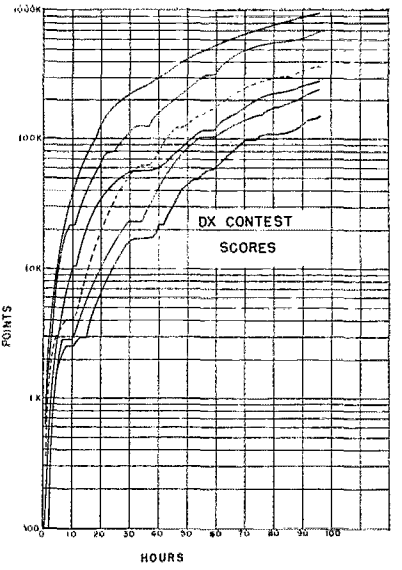


Fig. 5

(where the operator is on most of the time with the same setup and conditions) at the end of the first week end are about one-third of their final value.

In following the same procedure as used for the SS to determine how many contacts are worth a new multiplier, the curve of Fig. 6 is obtained. This varies slowly about a value of three for everyone: thus the better you are doing the less time you can afford to spend in pile-ups for a new one (but then if you are doing well you evidently don't have to wait long for most of them!). An hour wait for a new one is worthwhile if your final contact total is below 300, and this drops to a little over a half hour if your total is 900. The experts all agree that waiting does not

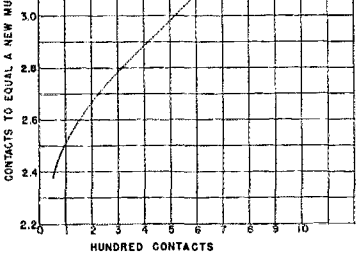


Fig. 6

pay. You should move on if you aren't getting to that station. Maybe propagation will favor you later on. In the meantime you can be scoring

elsewhere. Good judgment is required to decide whether multipliers can be obtained faster by joining the pile-ups, going after more contacts, or trying another band. Top scorers seldom stay on the same band for as long as an hour — they keep hopping between bands so as not to miss new multipliers that pop up, and profit by rapidly changing band conditions.

This contest is likely to be a disappointing experience to those in the U. S. and Canada not well equipped for such an affair. Those who run less than 150 watts input or who do not have beams for 14 Mc. and above may be able to work a lot of DX and get well up in the DXCC lists when a contest is not in progress, but they may find themselves "also rans" during one. The competition for the rarer multipliers is terrific. Those with the best punch usually get there first unless they are lacking in operating skill, which most of them are not.

Field Day

This is an activity devoted to the demonstration of emergency preparedness, with an outdoor atmosphere and good contest techniques required to place high in the standings. Several different categories of participation are available. These include club or nonclub groups using various numbers of simultaneously operated stations, unit or individual portables, mobiles, and home stations. Multipliers are based on degree of independence of commercial power and on power input. Completely independent power and under 30 watts input are required to place well in the competitive classes. There are no *operating* multipliers, so the score is essentially proportional to the total contacts made. General operating procedure is the same as in the SS, except that the time period is 24 hours and there are no time-outs. The same station may be reworked on phone and c.w. on each band. The information sent is much less than in the SS and no sequential numbers are used.

The high score in each entry class throughout Field Day history is plotted in the solid line of Fig. 7, where Class C represents mobiles, Class B

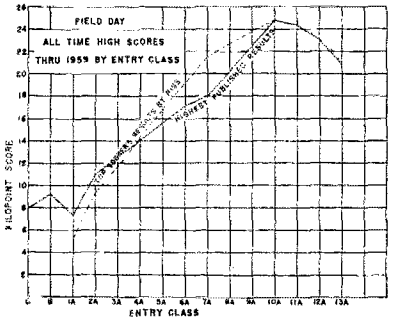


Fig. 7

one portable rig with one or two operators, and Class A clubs and groups with the number of simultaneously-operated transmitters indicated. The dotted line of Fig. 7 breaks down the all-time high score made with ten transmitters. This shows the best scoring one, best two, best three, etc. of the group's rigs, which beat all other groups in the three to nine transmitter classes.

Which class to enter? Except for numbers greater than ten, the six and seven transmitter classes seem to have been least exploited and appear to be the best bets for a well organized club wanting to be tops in its category. Class 1A is probably the most competitive of them all — Frankford Radio Club's W3BES/3 set twin records of 816 QSOs and 7383 points there in 1957, rugged targets for future challengers. Some hotshots might be interested in bettering the all-time score highs of K6QEH/6, 10,863 points in Class 2A in 1959 and W4FU/8, 12,096 points in 3A in 1959.

After the author's two decades of Field Day experience in several classes, usually with improved results each time, and in order to reduce the effects of Murphy's Law,[3] the following are recommended: Stay in the 30-watt class with well engineered equipment free from key clicks, modulation splatter, and excessive harmonics. Employ a foot-switching t.r. arrangement. Obtain a reliable radio noise-free power source. Perform antenna design and fabrication well ahead of time, so only installation is required on FD. Use antennas suited for the job: horizontal dipoles on 1.8, 3.5, and 7 Mc. and horizontal beams on other bands. Have good operators who are familiar with the rigs, and get in some practice time before zero hour. Develop a foolproof logging and duplicate checking system and be sure all operators know how to use it. Arrange for physical comforts such as housing, lights, mosquito control, chairs, and good food.

When you have all those factors under control and, from past experience, plan to keep the contact rate above 25-per-hour throughout, then you will be hit by a terrific aurora storm and nothing you can do will maintain the expected average. This is like a horse race on a muddy track — there is still a winner even though no track records are made.

Despite every adversity, *always keep plugging*! In ham radio contests when the going gets rough, the winner will be the one who is best prepared and who gave his best all the way. QST

[3] Occasionally quoted in *QST* as "if anything can possibly go wrong, it will."

Strays

K6HCY is a ham with the proper initials — C.W. and C.Q. His name is Charles W. Quesnel, sr.

—···—

And speaking of odd modes of communication — K4LHB, a tuba player, reports that he QSO'd trumpet player W4DHO across a football field . . . while K3BWI and K3CHD hold nightly conversations by tapping on the radiators of a Penn State dormitory — to the indignation of other residents.

January 31 through February 15

Annual ARRL Novice Roundup Competition

NR = BFO. What, you've never seen this well-known formula in your physics book? This is the Novice Roundup formula, which substitution shows to mean: The *N*ovice *R*oundup equals a *B*arrel of *F*un *O*perating. Yes, sir, the Ninth Annual ARRL Novice Roundup Competition is about to step into the limelight for 1960. It's easy to enter — has few rules. The idea is for Novices to contact as many other Novices, and also non-Novices, as possible, exchanging QSO number and section. Operating, listening, and logging time must not exceed 40 hours. How about having your station prove the Novice Roundup formula NR = BFO?

ROUNDUP PERIOD

Starts	*Ends*
Jan. 31	Feb. 15
6:00 P.M.	9:00 P.M.
Local Time	Local Time

Scoring

To obtain the final score simply add the total number of your NR QSOs to the highest w.p.m. from your Code Proficiency certificate. Multiply this sum by the number of *different* ARRL sections (page 6) worked during the contest. A check of last year's scores shows that the possession of a CP award determined in some cases who was a section winner, as the scores came that close. So let a word to the wise be sufficient. Besides, what an excellent way to get that code speed up.

Novices should keep an eagle eye out just above and below the Novice frequencies (3700–3750 Kc.; 7150–7200 kc.; 21,100–21,250 kc.; 145–147 Mc.) for the higher power Generals who will be calling outside the Novice bands to help alleviate the sure-to-be QRM.

How To Participate

WV2BEX in the Western New York section hears KN5SPD in the South Texas section calling CQ NR. A correctly negotiated QSO would go something like this:

CQ NR CQ NR CQ NR DE KN5SPD KN5SPD KN5SPD K

KN5SPD KN5SPD DE WV2BEX WV2BEX WV2BEX AR

WV2BEX DE KN5SPD R HR NR 2 STEX BK

KN5SPD DE WV2BEX R HR NR 6 WNY BK

WV2BEX DE KN5SPD R TNX ES 73 SK DE KN5SPD

That's all there is to it — another point and possibly another section added to your score.

Get that rig in tip-top shape, *study the rules carefully*, and drop a line to the ARRL Communications Department requesting the official log forms. Good luck and CU in NR. Prove, as many others have done, that NR = BFO!

Rules

1) *Eligibility:* The contest is open to all radio amateurs in the ARRL sections listed on page 6 of this *QST*.

2) *Time:* All contacts must be made during the contest time indicated elsewhere in this announcement. Time may be divided as desired but must not exceed 40 hours total.

3) *QSOs:* Contacts must include certain information sent in the form as shown in the example. QSOs must take place on the 80- 40- 15- or 2-meter bands. Crossband contacts are not permitted. C.w. to phone, c.w. to c.w., phone to phone, phone to c.w. contacts are permitted. Valid points can be scored by contacting stations not working in the contest, upon acceptance of your number and section and receipt of a number and section.

4) *Scoring:* Each exchange counts one point. Only one point may be earned by contacting any one station, regardless of the frequency band. The total number of ARRL sections (see page 6 of this *QST*) worked during the contest is the "section multiplier." A fixed scoring credit may be earned by entrants who hold ARRL Code Proficiency certificates. If an entrant does not hold a CP award he can apply for credit by attaching to his Roundup report a copy of qualifying run from W6OWP, January 7 or February 3, or from W1AW, January 15 or February 15. CP credit equals the w.p.m. speed indicated on the latest certificate or sticker held by the entrant. The final score equals the "total points" plus "Code Proficiency credit" multiplied by the "section multiplier."

(*Continued on page 156*)

Sample log form that must be used by all contestants.

STATION WV2BEX — SUMMARY OF CONTACTS
NOVICE ROUNDUP

Band	*Time on or off air*	*Date, Time of Contact*	*My NR Sent*	*My Section*	*His NR Rcvd*	*His Call*	*His Section*	*Number of each new Section as worked*
80	1801	Jan. 31 1807	1	W. N. Y.	1	KN5SPD	S. Tex.	1
		1820	2	"	1	KN8LJU	Mich.	2
	1902	1850	3	"	9	W1FGF	Conn.	3
40	1915	1920	4	"	6	WV2BLK	N. N. J.	4
		1930	5	"	5	K8HZO	Ohio	5
	2020	2005	6	"	2	KN7GQH	Wash.	6
15	1200	Feb. 1 1215	7	"	8	W1TUW	Conn.	—
		1232	8	"	12	W7CLA	Ariz.	7
		1240	9	"	4	KN9PGQ	Ill.	8
		1258	10	"	4	KN9PFV	Kans.	9

Total operating time: 3 hours 18 min.
Bands used: 80, 40 and 15

No. contacts: 10
CP credit: 10
No. sections: 9

Claimed score: 10 contacts plus 10 CP = 20 × 9 (sections) = 180
I have observed all competition rules as well as all regulations established for amateur radio in my country. My report is true and correct to the best of my knowledge.

Signature: .....

Address: .....

Happenings of the Month

Report from Geneva
Election Results
Examination Schedule

GENEVA REPORT

The one-month period just previous to our copy deadline for this issue (late November) has been a very quiet one at the Geneva radio conference insofar as amateur radio allocations matters are concerned. Much of the time of the various working groups was spent dealing with specialized matters such as assignments to radio astronomy and for earth-space communications. Such problems were being solved without any adverse effect — at least, so far — on the amateur bands. Another delaying factor was the opening, on October 17, of the Plenipotentiary Conference — having no direct effect on amateur matters but sometimes competing with the radio conference for meeting room space and translating services — and for delegates' time in the cases of smaller countries.

Recommendations of lower-level working groups, in every single instance favorable to amateur bands as they exist in Region II (North and South America), began their progression through parent subcommittees and thence to main Allocations Committee 4. The latter group, at our copy deadline, had worked its way up the spectrum as far as 4000 kc., meanwhile giving its approval to retention of the present arrangements for 1800–2000 and 3500–4000 kc. in this hemisphere. This and future Committee 4 decisions then must go to the plenary sessions for final adoption, and *no action of the conference is final until it has received plenary approval* — so it may be nearly middle December before anyone can know with certainty what the results of the conference will be. For example, one of the most serious threats to the amateur bands (and to other communications services as well) has yet to be settled finally by the conference — the possible expansion of international high-frequency broadcasting. We can say again, however, that IF the final acts of the conference are the same as the recommendations of lower-level working groups, the amateur bands will be *status quo* in our portion of the world. This is no accident — the United States appears to be achieving the objectives which were carefully worked out in an extensive series of preparatory meetings held during the three years beginning in late 1956, and at which the League was the sole representative of the amateur radio service.

Assistant General Manager Huntoon returned to Hq. in middle November. General Manager Budlong is remaining in Geneva until the conference has made its final decisions — estimated to occur early in December.

ELECTION RESULTS

Balloting in the 1959 ARRL elections has resulted in the re-election of one director, "promotion" of two vice-directors to the top spot, re-election of one vice-director and election of two new vice-directors. Uncontested candidates for the remainder of the sixteen posts were previously declared elected, as reported in this department of the November issue.

Gilbert L. Crossley, W3YA/W3DKN, starts his fourth term as director of the Atlantic Division after defeating John W. Gore, W3PRL, by 3118 to 1043 votes. **Thomas M. Moss, W4HYW,** won a third term as vice-director of the Southeastern Division with 1088 votes to 733 votes for Arthur H. Benzee, W4FE.

In the Delta Division, an unusual situation developed: shortly after ballots were mailed to all Full Members of the division, one of the two candidates, William G. Davaul, W5FQX, withdrew his name. Therefore, the Executive Committee declared **Sanford B. DeHart, W4RRV,** of Oak

Fifty-two amateurs, representing some 15 government delegations, or otherwise participating in the international radio conference at Geneva, attended a dinner sponsored by the ARRL in late October. League president Dosland, WØTSN, acted as host, but there were few formalities and no speeches — just a pleasant evening of international fraternalism in the best amateur tradition. The facing diagram identifies individuals by calls, all that space permits.

Ridge, Tennessee elected, as the only eligible candidate. "Dee" has just completed a term as vice-director of the Delta Division. He is a supervisor in the instrument and controls division at Oak Ridge National Laboratory. He serves as Section Emergency Coordination for Tennessee, and has put in two terms as president of Oak Ridge Radio Operators Club.

Winding up a term as vice-director, **Dana E. Cartwright, W8UPB,** moves up to the directorship of the Great Lakes Division, polling 2226 votes against 1087 for Ralph C. Charbeneau, W8OLJ. "Carty" is plant engineer for the Stearns and Foster Company of Cincinnati. He has been radio consultant to the State of Ohio Civil Defense Communications Committee since 1951, and Ohio Section Emergency Coordinator since 1947. He also serves as trustee for Red Cross club stations W8VVL and W8VND. A long-time ham, he built his first spark transmitter in 1912.

In the Atlantic Division vice-director contest, **Edwin S. Van Deusen, W3ECP,** won over Phil D. Boardman, W3LEZ, 2416 votes to 1733 votes. Van has been an assistant director of the Atlantic Division for the past three years. He is a past president of the Mike and Key Club of Baltimore, the Yeadon (Pa.) Amateur Radio Club, the Washington Radio Club and the Foundation of Radio Amateur Clubs, Inc. He also served as chairman during the formation of the Foundation, and currently is its second vice president. Now retired from the U. S. Army with the rank of Colonel, Van takes an active part in MARS-Army, serving as state NCS and state director for Maryland and the District of Columbia. He is an Emergency Coordinator and Route Manager and holds an appointment as ORS and a membership in the A-1 Operators Club.

Canadian hams cast 982 ballots for **Noel B. Eaton, VE3CJ,** and 543 for William R. Savage, VE6EO, in the election for vice-director. Now retired, Noel ran his own business, The Eaton Knitting Company, Ltd., until a year ago. He is a past president of the Hamilton Amateur Radio Club, and has been president of the Ontario Amateur Radio Federation, Inc., for the past three years. Noel is perhaps better known to the DX fraternity as VP5BP in the Cayman Islands. A former Wing Commander in the telecommunications branch of RCAF, VE3CJ also is a member of AREC.

Robert B. Cooper, W8AQA, won the support of 2217 of the Great Lakes members to become vice-director of that division; Richard L. Alexander, W9TWO, had 1061 votes. Bob works for Consumers Power Company in Grand Rapids as a supervisor in the general meter and laboratory section. He is a director of the Kent Radio Club, and is a past president, past vice-president past secretary and past treasurer of the Grand Rapids Amateur Radio Association. Bob has served as an assistant director of the Great Lakes Division for ten years, and was Section Communications Manager of Michigan from 1949 to 1951. He holds PAM and ORS appointments.

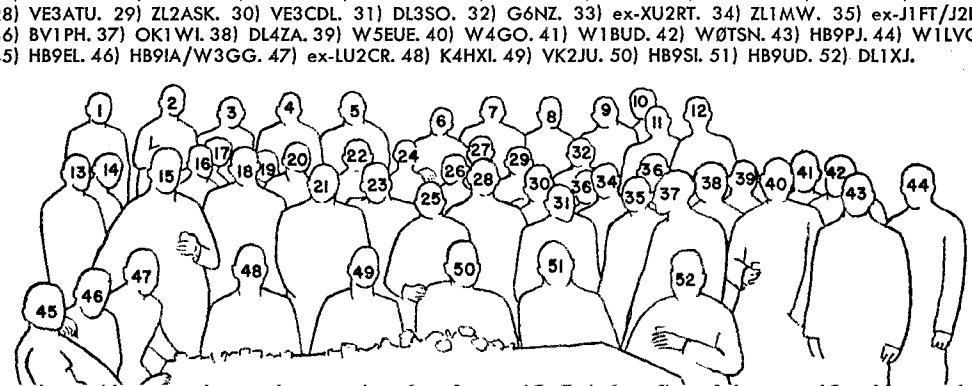
The two-year term of office for these elected officials begins at noon on January 1, 1960.

EXAMINATION SCHEDULE

The Federal Communications Commission will give Extra and General Class amateur examinations during the first half of 1960 on the following schedule. Remember this list when you need to know when and where examinations will occur. Where exact dates or places are not shown below, information may be obtained, as the date approaches, from the Engineer-in-Charge of the district. *Even stated dates are tentative and should be verified with the Engineer as the date approaches.* No examinations are given on legal holidays. All examinations begin promptly at 9 A.M. except as noted.

Albuquerque, N. M.: April 9 at 11:00 A.M.
Anchorage, Alaska, 53 U. S. Post office Bldg.: By appointment.
Atlanta, Georgia, 718 Atlanta National Bldg., 50 Whitehall St., S.W.: Tuesday and Friday at 8:30 A.M.
Bakersfield, Calif: Sometime in May.
Baltimore 2, Md., 400 McCawley Bldg.: Monday and Friday, 8:30–10:00 A.M. and by appointment.
Bangor, Me.: May 11.
Beaumont, Texas, 301 P. O. Bldg.: By appointment only.
Billings, Montana: Sometime in May.
Birminghma, Ala.: March 2, June 1.
Boise, Idaho: Sometime in April.
Boston, Mass., 1600 Customhouse: Wednesday through Friday 9:00 A.M. to 10 A.M.
Buffalo, N. Y., 328 P. O. Bldg.: 1st and 3rd Fridays.
Charleston, W. Va.: Sometime in March and June.
Chicago, Ill. 826 U. S. Courthouse: Friday.
Cincinnati, Ohio: Sometime in February and May.
Cleveland, Ohio: Sometime in March and June.
Columbus, Ohio: Sometime in January and April.
Corpus Christi, Texas: March 3, June 2.
Dallas, Texas, 401 States General Life Insurance Bldg.: Tuesday.
Davenport, Iowa: Sometime in January and April.
Denver, Colo., 521 New Customhouse: 1st and 2nd Thursdays, 8 A.M.

1) TG9AA. 2) OE1AD. 3) W2SLR. 4) VK3KH. 5) W2YEJ. 6) VE3AC. 7) HZ1HZ. 8) HB9GM. 9) ex-"AC". 10) W3IRB. 11) ZL2CH. 12) K3BGX. 13) ex-W9YUO. 14) DL2AA. 15) VE3JK. 16) ZL2AV. 17) ex-W9PUM. 18) W4NDK. 19) W2OGK. 20) LU9DL. 21) VE3ZU. 22) ex-W2AIP. 23) DL3DU. 24) LU3AF. 25) PY1AFH. 26) ZS6FE. 27) G3AAE. 28) VE3ATU. 29) ZL2ASK. 30) VE3CDL. 31) DL3SO. 32) G6NZ. 33) ex-XU2RT. 34) ZL1MW. 35) ex-J1FT/J2IJ. 36) BV1PH. 37) OK1WL 38) DL4ZA. 39) W5EUE. 40) W4GO. 41) W1BUD. 42) WØTSN. 43) HB9PJ. 44) W1LVQ. 45) HB9EL. 46) HB9IA/W3GG. 47) ex-LU2CR. 48) K4HXI. 49) VK2JU. 50) HB9SI. 51) HB9UD. 52) DL1XJ.



Des Moines, Iowa: Sometime in March and June.
Detroit, Mich., 1029 Federal Bldg.: Wednesday and Friday.
El Paso, Texas: June 16.
Fairbanks, Alaska: Sometime in May.
Fort Wayne, Ind.: Sometime in February and May.
Fresno, Calif.: Sometime in March and June.
Grand Rapids, Mich.: Sometime in January and April.
Hartford, Conn.: March 9.
Honolulu, T. H., 502 Federal Bldg.: Monday through Friday.
Houston, Texas, 326 U. S. Appraisers Bldg.: Tuesday and Friday.
Indianapolis, Ind.: Sometime in February and May.
Jackson, Miss.: June 1.
Jacksonville, Fla: April 23.
Juneau, Alaska, 6 Shattuck Bldg.: By appointment.
Kansas City, Mo., 3100 Federal Office Bldg.: Thursday and Friday, 8:30 A.M. to 1:00 P.M.
Klamath Falls, Ore.: Sometime in May.
Knoxville, Tenn.: March 16, June 15.
Little Rock, Ark.: February 3, May 4, 1:00 P.M.
Los Angeles, Calif., 849 So. Broadway: Wednesday, 9:00 A.M. and 1:00 P.M.
Louisville, Kentucky: Sometime in February and May.
Marquette, Mich.: May 11, 10 A.M.
Memphis, Tenn.: January 7, April 7.
Miami, Fla., 312 Federal Bldg.: Thursday.
Milwaukee, Wisc.: Sometime in January and April.
Mobile, Ala., 419 U. S. Courthouse and Customhouse: Wednesday by appointment.
Nashville, Tenn.: February 3, May 4.
New Orleans, La., 608 Federal Bldg., 600 South St.: Monday through Wednesday; code tests Monday at 8:30 A.M.
New York, N. Y., 748 Federal Bldg., 641 Washington St.: Tuesday through Friday mornings.
Norfolk, Va., 402 Federal Bldg.: Monday through Friday except Friday only when code test required.
Oklahoma City, Okla.: January 13, April 13.
Omaha, Nebr.: Sometime in January and April.
Philadelphia, Pa., 1005 New U. S. Customhouse: Monday through Wednesday, code tests 8:30–10:00 A.M.
Phoenix, Ariz.: Sometime in January and April.
Pittsburgh, Pa.: Sometime in February and May.
Portland, Maine: April 12.
Portland, Ore., 201 U. S. Courthouse: Friday, 8:30 A.M.
Rapid City, S. D.: May 14, 8 A.M.
Roanoke, Va.: Sometime in April.
St. Louis, Mo.: Sometime in February and May.
St. Paul, Minn., 208 Federal Courts Bldg.: Fri., 8:45 A.M.
Salt Lake City, Utah: March 11, June 10, 1:00 P.M.
San Antonio, Texas: February 4–5, May 5–6.
San Diego, Calif., Fox Theater Bldg.: Wednesday, by appointment.
San Francisco, Calif., 323-A Customhouse: Friday.
San Juan, P. R., 323 Federal Bldg.: Friday.
Savannah, Ga., 214 P. O. Bldg.: By appointment.
Schenectady, N. Y.: March 9–10, June 8–9.
Seattle, Wash., 802 Federal Office Bldg.: Friday.
Sioux Falls, S. D.: March 8, June 14, 10 A.M.
Spokane, Wash.: Sometime in April.
Syracuse, N. Y.: Sometime in January and April.
Tampa, Fla., 410 P. O. Bldg.: By appointment.
Tucson, Ariz.: Sometime in April.
Tulsa, Okla.: February 18, May 19.
Washington, D. C., 718 Jackson Place, N.W.: Tuesday and Friday, 8:30 A.M. to 5 P.M., Code tests 9:30 A.M. and 1 P.M.
Wichita, Kansas: Sometime in March.
Williamsport, Pa.: Sometime in March and June.
Wilmington, N. C.: Sometime in June.
Winston-Salem, N. C.: Sometime in February and May.

NOTE: Only General Class and Amateur Extra Class license examinations are given at FCC offices and examining points listed above. All examinations for Novice, Technician and Conditional Class licenses are conducted by volunteer supervisors.

MINUTES OF EXECUTIVE COMMITTEE MEETING

No. 271

November 20, 1959

Pursuant to due notice, the Executive Committee of The American Radio Relay League, Inc., met at the Headquarters office of the League in West Hartford, Connecticut, at 9:22 A.M., November 20, 1959. Present: President Goodwin L. Dosland, in the chair; Vice-Presidents Percy C. Noble and F. E. Handy; Directors Milton E. Chaffee, John G. Doyle and Morton B. Kahn; Treasurer David H. Houghton. Also present were Directors John H. Brabb and Robert W. Denniston, and Assistant General Manager John Huntoon.

The Committee was in receipt of a letter from William G. Davaul, W5FQX, transmitted subsequent to the mailing of ballots in the current director elections, withdrawing as a candidate for director from the Delta Division. On motion of Mr. Chaffee, it was unanimously VOTED to accept Mr. Davaul's withdrawal as a candidate. On motion of Mr. Noble, it was unanimously VOTED that Sanford B. DeHart, W4RRV, being the only eligible nominee, is declared, pursuant to the By-Laws, to be duly elected as Director of the Delta Division for the 1960–1961 term without the need for membership balloting.

The Committee was in recess from 9:28 A.M. until 4:10 P.M. while the Committee of Tellers counted ballots in the current League elections.

On motion of Mr. Doyle, it was unanimously VOTED to approve the holding of a Michigan State Convention in Saginaw on March 18–19, 1960; a New England Division Convention at Swampscott, Mass., on May 1, 1960; and a North Dakota State Convention at Minot on July 30–31, 1960.

On motion of Mr. Kahn, affiliation was unanimously GRANTED to the following societies:

Bedford County Amateur Radio Society ..... Everett, Pa.
The Bronx High School of Science Amateur Radio Club ..... Bronx, N. Y.
Center Radio Club ..... Glenham, N. Y.
Coronado Trail Amateur Radio Club ..... Clifton, Ariz.
Hollywood Amateur Radio Club, Inc. ..... Hollywood, Fla.
Jackson County Amateur Radio Club ..... Altus, Okla.
Lincoln MARS Club, Inc. ..... Lincoln, Nebr.
Ogdensburg Amateur Radio Club ..... Ogdensburg, N. Y.
Peotone High School Amateur Radio Club ..... Peotone, Ill.
Plainview Amateur Radio Club ..... Plainview, L. I., N. Y.
The Radio Club of Georgia Military College, High School Division ..... Milledgeville, Ga.
Shelby Radio Club ..... Shelby, N. C.

There ensued extended discussion, without formal action, on various League and general amateur matters such as the Geneva conference, future coordination with amateur societies in other countries, and general public relations activities.

There being no further business, the Committee adjourned at 6:55 P.M.

JOHN HUNTOON
Secretary of the Meeting

VENEZUELAN THIRD-PARTY TRAFFIC

As of December 12, add Venezuela to the growing list of South American countries where third-party traffic handling with U. S. amateurs is permissible. The bilateral agreement contains the usual broad restrictions limiting conversations or messages to purely personal and relatively unimportant matters — except, of course, in the event of emergency. The full list of countries where amateurs may freely handle such personal, unimportant traffic internationally is: Canada, Chile, Costa Rica, Cuba, Ecuador, Liberia, Mexico, Nicaragua, Panama, Peru and Venezuela.

Strays

Are there any students of Dr. Rhine in the house? W9ZYD (5522 South Everett Ave., Chicago 37, Ill.) would like to hear from any hams interested in running radio-coordinated tests of extra-sensory perception (ESP). He believes that these will be the first tests of ESP conducted under such conditions.

Quist Quiz

In his campaign to take Quist Quiz away from the engineers and give it back to the DX men, David Ware, W2OKG of Westwood, N. J., has this to say:

A certain DX hound was delighted one night when he worked five new countries in a row. His delight turned to chagrin, however, when he discovered that in his haste to QSL he had sent out the cards in the wrong envelopes. Each DX station received a QSL card but not the one intended for him.

The first contact received the card intended for the second contact, while the latter found in his mail a QSL intended for Mr. Green. Mr. Blue received a card for the third contact. Mr. Black's card was sent to Burma; the QSL that should have gone there was sent to Niue.

Mr. Brown received the card intended for Oman. The card for the fourth contact was sent to Nepal. Mr. White had Mr. Brown's card. The fourth man received the QSL for the man from Gambia, while in Gambia the QSL for the fifth contact was received.

Problem: Place each operator in his country and figure out the order in which they were worked. (W2OKG doesn't say if the certain DX hound sent another set of cards. But we know, don't we?) —•••—

If you redrew last month's resistor network correctly, you saw that only R_1, R_2, R_3, R_4 and R_5 were active; the remaining 11 resistors are effectively out of the circuit. The answer: 500 ohms.

Silent Keys

IT is with deep regret that we record the passing of these amateurs:

W1TYU, Stuart H. Briggs, East Weymouth, Mass.
W1UKO, H. Douglas Smith, Natick, Mass.
W2BBZ, Lyman A. Cole, East Syracuse, N. Y.
W2CS, Gustave A. Lux, Astoria, L. I., N. Y.
K2GH, William Chester Moore, Buffalo, N. Y.
K2LKM, Charles E. Dickey, Cranford, N. J.
ex-2QK, Art K. Ransom, Fort Monmouth, N. J.
W2RCE, John E. Curtin, Bronx, N. Y.
W2ZDR, Harold A. Harlow, North Haledon, N. J.
W3CSL, Ernest Dills, Monongahela, Pa.
W3DGL, Zachariah E. Forester, Monessen, Pa.
W4AM, Marvin M. Roddey, Knoxville, Tenn.
W4CRA, Dexter W. Phillips, Tampa, Fla.
W4DN, John C. Bane, Largo, Fla.
W4RRU, Joe E. Guthrie, Harlan, Ky.
W5AK, Day E. Slingerland, Hagerman, N. Mex.
ex-W5DRY, Delbert M. Bergenstal, Siloam Springs, Ark.
WV6EHJ, Leon C. Hauck, sr. South Pasadena, Calif.
K6FJ, Lyndon Farwell, Los Gatos, Calif.
K6HYX, Victor P. Porter, Salinas, Calif.
W6JM, Arthur H. Huotari, Los Angeles, Calif.
K7ELZ, Ivor C. Lindsay, Tucson, Ariz.
W8TQC, Roland R. Johnson, Dayton, Ohio
W9BWQ, Lee Van Graves, Kingman, Ind.
W9HIA, Cecil L. Alderman, Prairie du Chien, Wis.
WØCCX, Howard O. Kelly, Minneapolis, Minn.
WØDKE, KØJOL, Ralph Gordon Shaeffer, Balaton, Minn.
WØDWX, Wingfield A. Pettit, Lexington, Mo.
WØTIS, Hiram P. Williams, Monett, Mo.
ex-CO8MP, James A. Pepper, Hempstead, L. I., N. Y.
G5MU, W. J. Titterington, Dorchester, Dorsetshire, England
KH6CY, George T. Ishida, Honolulu, Oahu, Hawaii
VE3NS, J. Earl Bain, Gueiph, Ont., Canada
VO1DZ, Ernest V. Jerrett, Brigus, Newfoundland, Canada

Strays

RUSSIAN AMATEUR BAND CHANGES

Several frequency and power changes have gone into effect for Russian amateurs. Most of the changes, effective as of August 1, 1959, affected the beginning class of amateurs but several v.h.f. bands are now lost to all hams.

Beginners no longer have 1.715 — 1.8 Mc. Instead, they have been granted 7.0 — 7.1 Mc. in the 40-meter band. The 80-meter band has likewise been extended from the former 3.5 — 3.6 Mc. to 3.5 — 3.65 Mc.

Beginners have also lost the very popular 38 — 40-Mc. band but they have gained 28.0 — 29.7 Mc. The 420-Mc. band has been extended from the former 420 — 425 Mc. to include a full 15 Mc., 420—435 Mc.

Frequency tolerance must still be maintained at better than 0.1 per cent. Power limitations run a maximum of 200 watts with the various exceptions as stipulated. For example, in the 28 — 29.7 Mc. band, beginning operating stations of the III category are allowed a maximum of 10 watts operating power. Stations of the II category are allowed 40 watts, and stations of the I category, 50 watts. Only 5 watts are permitted in the 144 — 146 Mc. and 420 — 435 Mc. bands.

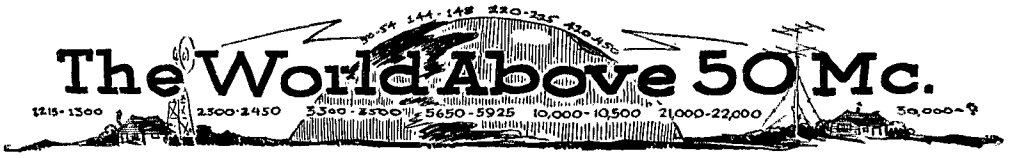
Not only has the 38 — 40 Mc. band been withdrawn, but the hams also lose 1170 — 1520 Mc. and 5650 — 5850 Mc. The Russian v.h.f. bands now are as follows: 28.0 — 29.7, 144 — 146, and 420 — 435 Mc. — *W8FAZ*

—•••—

Hams took a hand in Philippine elections recently. The *Manila Times* reported that radio stations were set up in 27 villages and two cities to pick up news and instructions and send returns to Police Headquarters.

—•••—

W9ZOS made his first 6-meter QSO with K9EWV. One year later, to the day, he made his first Texas contact on 6. Guess who? Yep, K5EWV.



CONDUCTED BY EDWARD P. TILTON,* W1HDQ

IN the more than thirty years that amateurs have used the frequencies in the v.h.f. range and higher our pioneering has resulted in a good many worthwhile contributions to wave-propagation knowledge. With the exception of moon-bounce and ionospheric scatter, all known forms of long-distance v.h.f. propagation were discovered and first employed by amateurs.

Our usefulness in this way has done much to establish the basic worth of amateur radio, as a user of the radio spectrum operating in the public interest. Our record is a source of pride, but there are some who question whether we can long continue to add to it. With all the research now being conducted in ionospheric physics and the exploration of space, can the amateur continue to serve useful ends in the propagation field?

Perhaps the best answer lies in the considerable number of question marks still appearing in scientific literature devoted to the v.h.f. region. While there are still unexplained or only partially explained v.h.f. propagation phenomena, the alert amateur is still in a position to help. In support of this we cite the inclusion of two papers by amateurs, about amateur work, in the program of the 1959 Fall Meeting of the International Scientific Radio Union, held in San Diego in October. One by John Chambers, W6NLZ, reported the work on 144 and 220 Mc. across the Pacific with KH6UK in detail. Their tropospheric DX contacts have been without parallel in the world of science, thus far. The other, by Mason Southworth, W1VLH, covered data on trans-equatorial propagation, gathered by the ARRL Propagation Research Project. *TE* propagation, discussed at length in December *QST* by ZE2JV, is one of the outstanding amateur propagation discoveries of all time.

Elsewhere in this issue is a brief report on the v.h.f. work at KG1FN that may open up still another field for study: 50-Mc. propagation *through* the auroral zone. The possibility of this propagation has been suggested by far-north ionospheric soundings, and by studies of the aurora, but if actual v.h.f. communication by this medium has been mentioned previously it escaped notice of this propagation-minded reporter. Certainly 50-Mc. communication over distances of more than 2000 miles, at night, and in neither the F_2 nor the sporadic-*E* seasons, fits into none of the accepted v.h.f. propagation pigeonholes.

The characteristics of the signals and the time of the contacts suggest a similarity to a kind of auroral propagation experienced occasionally on east-west paths in the north-eastern part of the country. At times (but during only a small percentage of aurora occurrences) strong and fairly steady signals are heard between New England and the Dakotas, Minnesota and Wisconsin. Usually the more common distorted signals are heard at the same time, but only from shorter distances, and on more northerly headings. As the east-west distance increases the speed of flutter and degree of distortion decreases, and the antenna heading for maximum signal more closely approaches the direct great-circle route.

The greatest distance reported for the mode we're talking about is New England to Winnipeg Manitoba, about 1400 miles. This looks like a long sporadic-*E* hop, but the relatively few instances of it have always come during auroras, and at times of the year when sporadic-*E* propagation is quite rare. It has seemed to be associated with overhead aurora, or at least with auroras that extend considerably farther south than normal.

The work at KG1FN, and the similarity of the propagation to that we mention here suggest several new v.h.f. ideas. The short operating period at T3 produced contacts over only a limited geographical area, but alert operating by U. S. and Canadian 50-Mc. men might well stretch the potential coverage to a considerable degree. If more amateurs living or working in the far North can be interested in 50-Mc. DX tests, rather than in endless traffic with the home folks, there might be a lot more opportunities for v.h.f. DX than we have realized heretofore. For our part, it is quite possible that the 1400-mile limit we have ascribed to our 50-Mc. auroral DX might

V. H. F. Editor, *QST*.

3447 QS-1 (309–321) P. 309

50 Mc. WAS

1 WØZJB	19 W3OJU	38 W7ILL	57 W1SUZ
2 WØBJV	22 W6TMI**	39 WØDDX	58 W1AEP*
3 WØGJS	21 K6EDX	30 WØDO	59 W5LFH
4 W5AJG	22 W5SFW*	41 K9DXT	60 W6NLZ
5 W9ZHL	23 WØORE	42 W6ABN	61 W7MAH
6 W9OCA	24 W9ALU	43 W6BAZ	62 W8ESZ
7 W6OB	25 W8CMS*	44 VE3AET	63 W2BYM
8 WØINI	26 WØMVG	45 W9JFP	64 W7ACD
9 W1HDQ	27 WØCNM	46 WØQIN	65 K6PYH*
10 W5MJD	28 W1VNH	47 WØWWN	66 W4HOB
11 W2IDZ	29 WØOLY	48 K9ETD	67 KØJJA
12 W1LLL	30 W7HEA	49 WØFKY	68 K6RNQ**
13 WØDZM	31 KØGOG	50 W8LPD	69 W9QWT*
14 WØHVW	32 W7FFE	51 WØZTW	70 W6EDC*
15 WØWKB	33 WØPFP	52 W6GCG	71 K6VLM**
16 WØSMJ	34 W6BJI**	53 W2RGV	72 K6GOX**
17 WØOGW	35 W2MEU	54 W1DEI	73 WØEDM
18 W7ERA	36 W1CLS	55 W1HOY	74 W9JCI*
	37 W6PUZ	56 W6ANN	75 WØLLU

*49 states **50 states

VE7CN	45	VE4HS	41	LU9MA	26	LA7Y	20
KL7AUV	44	SM6ANR	30	ZS3G	26	VQ2PL	18
VE1EF	42	CO2ZX	30	CT1CO	24	JA8AO	18
XE1GE	39	SM7ZN	29	CO6WW	21	JA8BU	17
VE2AOM	38	PZ1AE	28	LA9T	21	JA1AAT	17
ZH6UK	37	SM6BTT	28	LU3DCA	20	JA1AUH	16
EI2W	37	ZE2JV	26	SM5CHH	20	VP5FP	7

only be evidence of the limit of activity at the western end. And though the phenomenon has been observed on 50 Mc., but not on 144, it should not be taken as firm evidence that it is not possible on the higher band, particularly as a weak-signal c.w. mode, with high power and large antenna arrays.

One thing is sure: we need, as much as ever, to take nothing for granted in our v.h.f. work. Letting our operating habits fall into patterns that fit preconceived notions of what is or is not possible can be disastrous. Surely a lot of us missed making contact with KG1FN because we were not looking in the right direction at the right time, or with sufficient care. How many other interesting possibilities have we missed, for the same laxity, all too common in today's v.h.f. picture?

50-Mc. DX News

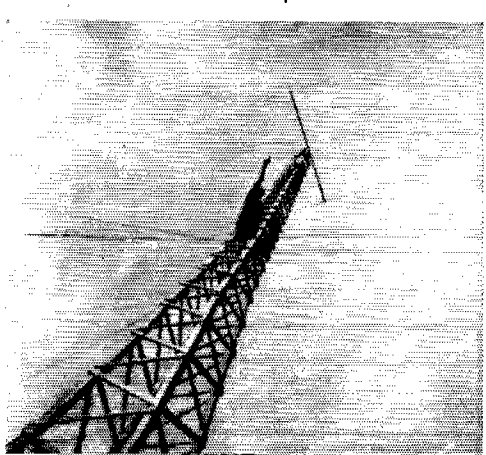
Conditions on 50 Mc. in November were a far cry from those of the same month of the past three years, but there was still life left in the band. Most of the DX heard or worked was in the lower latitudes. The North Atlantic path showed only occasional indications of high m.u.f., and no amateur 50-Mc. work with Europe had been reported as this summary was compiled late in the month. There were fairly frequent openings to South America, and occasional ones between the East and West Coats, and between western states and Hawaii.

The first transcontinental contacts of the fall were made Nov. 1. W6BJI, Fresno, Cal., raised W4FT, Wilmington, N. C., at 0820 PST. Soon after, Florida stations broke through, and following them New Jersey, but it was all over by 0955.

W6FZA, Porterville, heard backscatter from the southwest, and teletype signals from the Pacific between 1000 and 1400, Nov. 1. At about 1500 Alan heard weak signals above 51 Mc., indicating an opening to New Zealand. At 1530 ZL1BJ was worked on c.w., and each heard the other for about 20 minutes thereafter. Just a reminder: ZLs are confined to the portion of the band above 51 Mc.

A Nov. 1 opening to Hawaii was observed over quite an area. W7RT, Seattle, worked W9KVV/KH6 at 1315 PST. K7ALE and K7ALF, Tucson, enjoyed 2½ hours of work with the KH6s, but heard no other DX on 6 in November until the opening to the East on the 17th. By comparison, last year they had been working VE1 almost daily for three weeks by mid-November, and had found the band open often to most of Eastern U. S., Hawaii, Alaska and Japan, at frequent intervals.

This 75-foot wooden tower was the work of K1AUD, Westport, Conn., and four other v.h.f. enthusiasts, all 17 years of age or under. Built in its entirety on the ground, it was raised with the help of a tow-car winch. Shown halfway up is one of the construction crew, K1DDQ. The proud owner, K1AUD, rests at the 5-foot square base. Antenna is a 5-element 6-meter beam. Total weight: more than 1300 pounds.



V.H.F. Sweepstakes, January 9–10

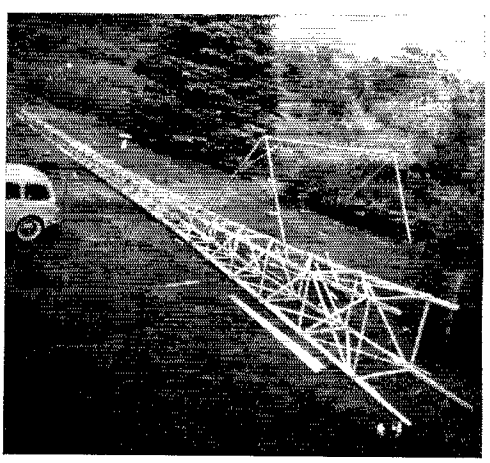
Everybody out for the big week-end event of the year on the v.h.f. man's calendar! It's the 13th V.H.F. Sweepstakes, Jan. 9 and 10. From all indications this should be the hottest contest in v.h.f. history. Get set for a week end of competitive thrills and valuable operating experience, on your own, and for your local club. Rules in December *QST*, page 54. Reporting forms (they make it easier for you and us) are yours for the asking, from ARRL Headquarters.

If things have been relatively quiet in this country, our friends in South America have had enough activity to make up. LU3DCA writes that FF8AP, Dakar, French West Africa, was in almost daily for three weeks, after his first appearance Oct. 5, working LU, PY, CX and HC. Mike says that HR2DK and VP5FP brought his 6-meter country total to 29. For W4FNR's benefit, he has worked 21 different KP4s and is gunning for 25, in the hope of qualifying for the first KP4 certificate on 50 Mc. LU3DCA states that quite a few South Americans have QSL trouble on 6. One KH6 has confirmed no South American contacts. PY1XW has worked only one U. S. station on 6, and can get no card. These are just a few isolated examples, Mike claims.

LU3EX lists 16 countries worked or heard on 6 during October in his PRP report. These include VP6PV FF8AP CT3AE T12CV HK1GF PZ1AE ZP9AY PJ2AN and many others. He says the band opens to Puerto Rico as early as 1430, and stays open regularly until after midnight. On Oct. 7 it was still open at 0400!

The ZE2JV-ZC4WR circuit also worked with clock-like regularity through October. Crossband contacts were made daily except on Oct. 9 and 12, and in the period Oct. 5–7, when ZE2JV was off the air due to a fire in the shack. The *TE* circuits between Australia and Japan were running solid in October, according to the PRP reports of VK9XK, VK4NG and others.

Hawaiian openings brought on a rash of claims for the first 50–50 WAS. At least three 49-staters added No. 50 on Oct. 25. From a check on contact times it now appears that the honor for the first goes to K6GOX, Fresno, whose



QSO with KH6CNI was made at 1120 PST. W6TMI, Oxnard, who made the first 49-state 50-Mc. WAS, narrowly missed first 50-state honors. His QSO with KH6CNI came 18 minutes after that of K6GOX. K6RNQ, Oakland, was even closer. Bob worked two KH6s, beginning at 1130 PST.

Conditions peaked on Nov. 17 again. K2RRG, Northern New Jersey, reported the BBC audio on 48.25 Mc. in with the best signal to date at 1030 to 2130 EST, and at 1205 heard K7ALF, Tucson, Ariz., working a K1. W6BJI, K6GOX and W6JRR were worked in a brief flurry starting at 1225. The latitude effect shows here to a marked degree; note the appearance of Tucson, probably the southernmost F_2 path in the country from New Jersey, before the California stations, despite the considerably longer skip to the latter. VE3CRA, Ottawa, wired the writer on the 17th to say that the m.u.f. observed at the DRTE station at Shirley Bay (to London) had risen above 48 Mc. for the first time this season, peaking at 0905 EST.

Two DX reports worthy of note, but not guaranteed, because they did not come direct from the principals: K2LTW is reported to have worked ZS3G Nov. 12. KL7-CDG is said to have been heard in the Washington area Nov. 6.

Here and There

Tropospheric propagation varies markedly with terrain. Where there is open country, or only mildly rolling terrain, stable weather patterns can build up over very large areas at a time. Thus the Middle West and the southern Mississippi Valley and adjacent areas are blessed with tropospheric DX on the v.h.f. bands that is greater in extent than almost anywhere else in the country. Coastal plains provide fine summer and early-fall inversions. This is the East Coast's specialty. Combinations of inland hot country and cool offshore ocean currents work wonders for the California coastline, from about Santa Barbara down.

Where does this leave the Pacific Northwest? Out in the cold, says W7LHL, Kirkland, Wash., and he shows typical weather maps to prove it. Ernie points out that fronts move in from the Northwest, off the Pacific, giving a line of favorable propagation into Western Canada, where there is little v.h.f. activity, and out over the ocean, where there is none. Good propagation is experienced along the coastal area as far down as Southern Oregon, but here the Siskiyou Mountains break up inversions going south. Similarly, the Cascades effectively block the formation of stable patterns to the east. Tropospheric DX may occur in these directions, but is much less likely than in more open coastal areas. Thus, as in much of California, working over long paths on the v.h.f. bands must depend more on tropospheric scatter, knife-edge refraction and reflections from high peaks, than on favorable air-mass boundary bending.

From K2ILO we have final results of the 1959 Big Blow. Whazzat, you say? Two-meter men of the Northeast know the Big Blow as an annual fall event of the Windblowers V.H.F. Society of Northern New Jersey. Member-operated stations are sent out to high spots in Connecticut, New York, New Jersey and Pennsylvania. Any 2-meter operator who works all four gets a Big Blow certificate.

This year's Blow was held Sept. 25, with stations at Redding, Conn., Sam's Point, N. Y., Lake Arcadia, N. J., and High Knob, Pa., making a total of about 900 contacts. This resulted in the awarding of 152 certificates, and lots of fun all around.

Want Kansas m.s. skeds on 144 Mc.? Try WØJAS at Salina. Buz has a pair of 4X150As, delivering 740 watts to stacked 10-element Yagis, a 417A converter into a 51J receiver, automatic keying and a 30-second sequencer — the works for efficient m.s. operation.

V.h.f. history is beginning to repeat itself. (We've been at this game too long!) K7ALE, Tucson, Ariz., reports regular work on 6 with W7YKK, Phoenix. This is a rough 105-mile path that many say is "impossible" for v.h.f. communication. Morgan has found this a challenge — something to keep the band interesting in the period when there was not much DX to work — but perhaps this generation of Tucson-Phoenix signals was following the path gouged out in 1940 by W6OVK, Tucson, and W6QLZ, Phoenix, who showed a skeptical world that it could be done, on both 56 and 112 Mc.!

Here's another for the certificate collectors. You can become a member of the "Exclusive No'west Club" by working 7 Western Washington stations on 50 Mc. No more than 2 of these can be in Seattle. Send your list of contacts, with time, date and town to W7CYQ, 11140 Luther Ave. South, Seattle 88, Wash. The certificate is in the form of a decorated map of Western Washington, printed on parchment.

Attention amateurs north of the aurora belt: The Saskatoon Amateur Radio Club, VE5AA, has taken on an auroral research project in conjunction with the University of Saskatchewan. They would like to find amateurs who can work on 50 Mc. in areas north of the aurora belt, in spots like Churchill, Uranium City, Great Slave Lake and Jasper, Alberta. More information from SARC, Box 801, Saskatoon.

Not everyone who embarks on a v.h.f. antenna project begins by ordering a manufactured tower. The beautiful 75-foot structure shown in our pictures was the work of a 5-man team, the oldest member being 17 years of age. When K1AUD, Westport, Conn., started on 6 last spring he quickly found out that the antenna is all-important in developing good coverage in v.h.f. work. When summer

2-METER STANDINGS

Figures are states, U.S. call areas, and mileage to most distant station worked

W1REZ	32	8	1300	W5VY	10	3	1200
W1AZK	26	7	1205	W5SWV	10	3	600
W1KCS	24	7	1150	W5YYO	5	3	1330
W1RFU	23	7	1120				
W1AJR	23	7	1130	W6WSQ	14	5	1390
W1HDQ	21	6	1020	W6NLZ	12	5	2540
W1MMN	20	6	900	W6DNG	9	5	1040
W1IZY	19	6	875	W6AJF	6	3	800
K1CRQ	19	6	800	W6ZL	5	3	1400
W1APO	17	6	920	W6MMU	3	2	950
W1AFR	17	6	675				
W1CLH	17	5	450	W7VMP	15	5	1280
				W7JRG	10	4	1040
W2NLY	37	8	1390	W7CJM	5	2	670
W2CXY	37	8	1360	W7LHL	4	2	1050
W2ORI	37	8	1320	W7JIP	4	2	900
K2GQI	32	8	1200	W7JU	4	2	353
W2AZL	29	8	1050				
W2BLV	27	8	1020	W8KAY	38	8	1020
K2IEJ	25	7	1060	W8SDJ	35	8	990
W2AMJ	25	6	960	W8PP	34	8	985
W2DWJ	23	6	860	W8IFX	34	8	980
K2HOD	23	7	950	W8LOE	33	8	1060
W2PAU	23	6	753	W8KMH	32	6	910
W2SMX	22	6	940	W8SVI	30	8	1080
K2UFH	22	8	910	W8SFG	30	8	1000
W2LWI	21	6	700	W8EHW	29	8	860
W2RXG	20	6	700	W8UPD	29	8	850
W2UTH	19	6	880	W8WRN	28	8	680
W2RGV	19	6	720	W8BAX	28	8	960
W2WZR	18	7	1040	W8NOH	26	8	975
W2ESK	18	5	850	W8DX	26	8	720
K2RLG	17	6	980	W8ILC	25	8	800
				W8JWV	25	8	940
W3RUE	30	8	975	K8AXU	24	8	960
W3TDF	29	8	1050	W8GFN	23	8	540
W3GKP	29	8	1020	W8LCY	21	7	610
W3KCA	28	8	1110	W8BLN	21	7	610
W3SGA	26	7	700	W8GTK	17	7	550
W3EPH	22	8	1000	W8NRM	17	7	550
W3BYF	22	6	660				
W3LNA	21	7	720	W9KLR	41	9	1160
W3NKM	20	7	730	W9WOK	40	9	1150
W3LZD	20	7	650	W9GAB	34	9	1075
				W9AYC	32	8	1050
W4HJQ	38	8	1150	W9RRM	31	8	850
W4HHK	35	9	1280	W9ZHL	30	8	830
W4ZXL	34	8	950	W9LVC	27	8	950
W4AO	30	8	1120	W9EQC	27	8	820
W4LTU	29	8	1160	W9ZHL	25	8	700
W4MKJ	28	8	850	W9BPV	25	7	1030
W4UMF	28	8	1110	K9AQP	24	7	900
W4VLA	26	8	1000	W9PBP	24	8	820
W4EQM	25	8	1040	W9OJI	23	8	850
W4WNH	24	8	850	W9LF	22	7	825
K4EUS	24	6	765	W9KPS	22	7	690
W4JCJ	23	6	725	W9CITY	21	7	800
W4VVE	21	6	720	W9PMN	19	6	800
W4TLV	20	7	1000	W9ALU	18	7	800
W4IKZ	20	6	720				
W4OLK	20	6	720	W0SMJ	29	9	1075
W4AIB	19	7	840	W0THD	27	7	890
W4RMU	18	7	1080	W0RRB	27	8	1060
W4CPZ	18	6	650	W0QDH	24	9	1300
W4RFR	18	7	820	W0RUF	23	7	900
W4MDA	17	6	750	W0INT	21	6	830
K4YUX	16	8	830	W0UOP	21	7	900
W4LNG	15	6	1080	W0FHC	11	7	875
				W0KYG	20	8	925
W5RCI	34	9	1215	W0IC	16	7	1240
W5DFU	25	9	1300	W0IFS	16	6	110
W5AJG	25	8	1360				
W5LPG	25	7	1000	VE3DIR	30	8	1330
W5PZ	23	8	1300	VE3AIB	27	8	1340
W5KTD	23	8	1200	VE3BQN	19	7	790
W5JWL	21	7	1150	VE3DER	17	8	1340
W5VKH	15	5	720	VE3AQG	17	7	1200
W5ML	12	5	700	VE3HW	15	7	1350
W5FSC	12	5	1390	VE2AOK	13	5	550
W5HGZ	12	5	1250	VE3BPB	14	6	715
W5FYZ	12	3	735	VE7FJ	2	1	365
W5CVW	11	5	1180				
W5NDE	11	5	625	KH6UK	1	2	2540

came he started the tower project, with the help of K1CVF, 16, K1DDQ, 15, W1ICQ, 17, and K1GBL, 17. Wayne is 17.

First the four sides, 75 feet long, were made by fastening 2 by 3s together to make 4 × 3-inch stock. Cross and sway bracing was done with 1 × 2- and 1 × 3-inch stock. The tower was built with a 5-foot square base, tapering to 1 foot square at the top. Complete, it weighed 1300 pounds.

Raising the monster was accomplished with the aid of a tow truck owned by K1GBL's father. The tower was butted against the base, and a steel cable run to a pulley 40 feet up in a large tree, and down to the wrecker winch.

With a 5-element beam more than 75 feet up, going was great on 6 — for a while — until town officials took a dim view of the project and made the boys take the tower down. Nothing was wrong with the design, except that it violated zoning regulations. The top 50 feet will be back up soon.

Six-meter operators of the New Orleans area, including some 15 regulars, join in the operation of the Jefferson Six-Meter Net, each Tuesday at 2000 CST. Frequency has been 50.1, but moving to 50.4 is in view. This will enable integration with a CD net on that frequency. This information from W5UQR.

Anyone work any 2-meter DX around Nov. 18? W1SCO, who recently worked on the installation of a commercial station atop Mt. Washington, N. H., says that the 151.5-Mc. signal was heard in Minneapolis in mid-afternoon. He promises more details soon.

220 and Up

A nice silver-plated tank circuit for use with 2C39 tubes, easily convertible to 420-Mc. service, is available in the Navy *MAR* unit, now on surplus, according to W6NLZ. John says that these are sold at 10 to 12 dollars in the Los Angeles area, and the price is likely to stay low because the rest of the unit is of little value. These *MAR* units are also getting a play on 220. K6JTC, Sunnyvale, sends us a list of twelve calls of stations running these units on 220 Mc. in the Santa Clara Valley.

Good tropospheric propagation can be encountered at any season, but it develops less frequently in the winter months. There is enough occupancy of the 50- and 144-Mc. bands in many areas so that conditions do not have too much effect on nightly interest, but on 220 and 420, occupancy is likely to drop off badly, once band openings become less frequent. The best antidote for this is regular schedules, kept religiously during the winter months. A good example is the nightly 225-mile workout between K2CBA, 220.005 Mc., and W3FEY, 220.14 Mc. They expect to continue through the winter, and they will work other stations at the conclusion of their 2130 schedule. Both are on the lookout for good conditions; particularly aurora.

Another schedule is being kept regularly over the rough path from Pittsburgh to near Washington, D. C., by W3RUE and W3UJG. This is just short of the W3FEY-K2CBA distance, apparently quite similar in character. W3RUE reports 41 contacts between Sept. 1 and Nov. 10. Ted heard W1AZK, 480 miles, via aurora Oct. 4.

W2SCG, West Babylon, N. Y., is working on 432 Mc. the hard way. Harold mixes a 28-Mc. s.s.b. signal with 460.6 Mc. in a 5894, the result being a 1-watt s.s.b. signal on 432. A high-Q coaxial tank is used on the output to remove spurious products. Results have been uniformly good, and contacts have been made at distances up to 40 miles.

W2KDZ, Ridgewood, N. J., says that 432-Mc. operators in the New York area make it easy to find one another by the simple expedient of checking on the hour, between 2000 and 2300, when they have operating time available. Jim's reliable working radius, with a 2C39 transmitter, a Centimeg converter and a 13-element Yagi, seems to be about 45 miles. This can take in quite a few stations in a densely populated area like New York and Northern New Jersey, but even so there can be a lot of wasted effort without some time coordination between interested parties.

Cold weather has brought the poorest conditions for 432-Mc. work that newcomers to the band have yet encountered, according to K2UUR, Parlin, N. J. On Nov. 16 he found that W2OTA, Wantagh, N. Y., normally a good S7, was fading into the noise, and peaking only S3. Average signal level is lower than during the summer and early fall, but there are good nights, too; they merely come less frequently in the winter.

The San Bernardino Microwave Society continues to do good work on bands that many hams have never even heard of. Weekly skeds on 3500 Mc. are kept at 2000 Sundays.

220- and 420-Mc. STANDINGS

220 Mc.

W1AZK	9	3	412	W4UBY	7	5	320
W1HDQ	11	5	450	W4UMF	11	5	420
W1OOP	12	4	400	W5RCI	8	5	700
W1RFU	11	5	480	W6NLZ	3	2	2540
W1UHE	11	4	385	K6GTG	2	2	240
W2AOC	13	5	450	W6MMU	2	2	325
K2AXQ	8	3	230	K8AXU	8	5	680
K2CBA	9	4	325	W8IJG	9	5	475
K2DIG	4	3	140	W8LPD	6	4	480
W2DWJ	14	6	740	W8NRM	8	4	390
W2DZA	12	5	410	W8PT	8	4	550
W2NTY	8	4	200	W8SVL	6	4	520
W3AHQ	4	3	180	W9ZQC	8	4	740
W3FEY	8	4	296	W9JCS	5	2	340
W3LGC	8	5	300	W9JFP	9	4	540
W3LZD	15	5	425	W9OVL	5	2	290
W3RUE	6	4	225	W9UED	4	4	605
W3UJG	11	5	400	W9ZIH	5	2	270
W3ZRF	5	4	112	KH6UK	1	1	2540
K4TFU	8	4	400	VE3AIB	7	4	450

420 Mc.

W1HDQ	8	3	210	K2UUR	5	2	110
W1RFU	8	4	410	K3EOF	6	3	350
W1OOP	9	3	390	W3FEY	5	2	225
W1UHE	3	2	130	W3HHK	3	3	520
W2AOD	6	4	290	W4VVE	6	4	470
W2BLV	11	5	360	W5RCI	5	3	600
W2DWJ	6	4	196	W7LHL	2	1	180
K2CBA	5	3	225	W8HCC	3	2	355
W2DZA	5	3	150	W8NRM	3	2	390
W2NTY	3	2	100	W9GAB	7	4	600
W2OTA	5	3	150				

Liaison is done on 146.25 Mc., when required, though contacts are usually made on the microwave equipment initially. K6MBL and W6VIX are at the Pomona-Ontario end of the circuit, and W6SDE W6IFE and W6OYJ hold down the Corona end.

The Corona-Ontario circuit shows strong signals, but K6MBL and W6IFE have terrain problems. W6IFE lives in a valley, with mountains on all sides, and for two years had been unable to hear any microwave signals at his home location. Recently he mounted his 30-inch parabola atop a 35-foot tower, and now he copies W6OYJ on 3535 Mc. This involves a 90-degree bounce off a ridge in the Santa Ana Mountains, south of Corona, but searching the ridge with binoculars has thus far failed to reveal any object that might be causing the critical reflection. Distance between the stations is 6 miles, but the microwave path is about 9. W6IFE has also copied W6VIX, 18 miles away, over a direct path that includes at least one good-sized obstacle.

W6BGK and K6MBL, both in Pomona, had been unable to work via the microwaves because of obstructions, but encouraged by W6IFE's results they looked for reflection paths. They found three; one off Mt. Baldy, and two more from adjacent peaks.

In an effort to improve signal-to-noise ratio these microwave enthusiasts are working on stabilizing the transmitters, in order to use narrowband techniques, in place of the present i.f. systems which have radar-type bandwidth.

OES Notes

W1HDQ, Canton, Conn. — BBC video on 51.75 Mc. heard briefly around noon Nov. 21. Sound on 48.25 Mc. heard most days, but too weakly to indicate transatlantic 50-Mc. opening.

K2AZT, Baldwin, L. I. — HC1JW and HC1FS heard with S9 signals Nov. 1, 0900 to 0945 EST.

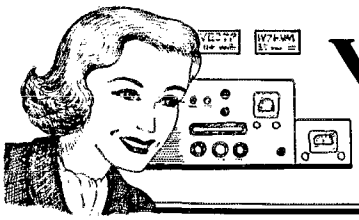
W3FEY, Lancaster, Pa. — Nightly 220-Mc. skeds with K2CBA, Troy, N. Y., at 2130 EST continue, despite lower signal levels of late fall. Interference from TV oscillators and radar signals often makes going rough.

W4GSH, Louisville, Ky. — Need more Kentucky activity on 6 and 2. Hear and work many out-of-state stations, but few in Kentucky, outside Louisville area.

W8PT, Benton Harbor, Mich. — Transmit Official Bulletins on 220.16 Mc. at 2030 EST, Monday, Wednesday and Friday, beamed on Detroit. Would like 144-Mc. m.s. skeds with stations in Maine, South Carolina, Texas and New Mexico, and 220-Mc. skeds with Wis.

W9GAB, Beloit, Wis. — Nightly skeds on 432 Mc. with W9OJI, Wheaton, Ill., show conditions paralleling those on 144 Mc. most of the time, though occasionally 432-Mc. signals are up when 144 is poor.

Have two parametric amplifiers working on 432 Mc., with noise figure of 1 db., using Hughes diodes. QST



YL NEWS AND VIEWS

CONDUCTED BY ELEANOR WILSON,* W1QON

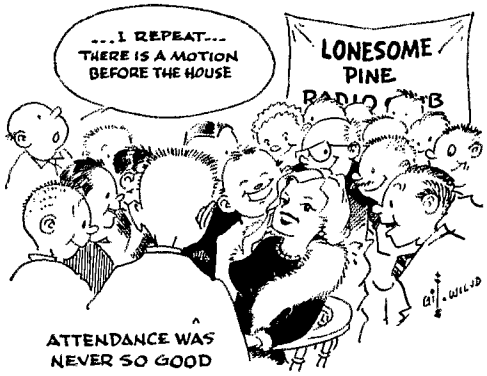
BEFORE plunging into a new year, and a new decade as well, let's pause for one look backward at the state of YL hamdom in the year which closed the fifth decade of the twentieth century.

The news is good; the picture is rosy. YL activity in 1959 seemed abundant, organized, and constructive.

Celebrating the twentieth anniversary of its birth date in 1939, the Young Ladies Radio League chalked up another successful year. Membership hit a new high — approximately 900 licensed YLs, including a growing number of DX YLs. Custodians for the WAS/YL, WAC/YL, DX/YL, and the YL Century Certificates were kept busy issuing awards and endorsements to eager certificate seekers, YL and OM. The club's revised constitution became effective Jan. 1, and among other changes it provided that those YL clubs with fifty per cent of their members belonging to the YLRL are eligible for national YLRL affiliation. Participation in the club's two annual contests, the Anniversary Party and the YL-OM contest, again broke records, and a new contest "Howdy Week" was tried for the first time.

Feminine statistics guessers could be grateful to the YLRL for conducting a survey and coming up with a reliable point of reference in the eternal question "how many licensed YLs are there?" Survey captains K6BUS and W8OTK concluded that there were better than 4000 licensed YLs in the U.S., with an additional few hundred DX YLs.

The joys of single sideband operation were discovered by more YLs thanks to the crusading spirit of such "sidebanders in skirts" as K2MIGE, K5BJU, W2TEX, W8SPU, K8IGG, W6NAZ, and OQ5IE, to mention but a few. Interest warranted the start of a YL s.s.b. net on 20 meters conducted by K5BJU.



In the January 1959 column we noted that W2KEB, W3CUL, and WØLGG made the Brass Pounders League in each month in 1958 and that either W2KEB or W3CUL or both placed within the top three positions each month. The identical statement can again be applied to the records of the same three YL traffic handlers extraordinaire for each month in 1959 as well. Slightly fabulous, is it not? Other 1959 BPL winners are WØKQD, W2RUF, W4RLG, KL7BJD, and K6OWQ, most of whom have been BPL winners in previous years also. There's real public service through ham radio in the records of these persistent BPLers.

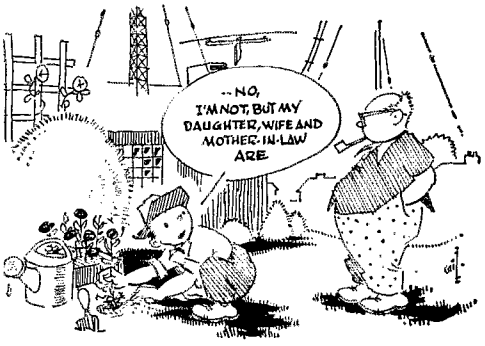
For the eighth year YLs assisted in the annual All Woman Transcontinental Air Race in July. Amateur radio chairman W3GTC deemed this year's net activities the most successful yet.

Get-togethers were numerous, with the YL meeting at the ARRL National Convention in Galveston, Texas, the most prominent. Those lucky enough to attend the Galveston affair appreciated the excellence of the YL program, arranged by members of the Gulf Area YL Amateur Radio Klub.

A busy year ended with plans already well under for a third international convention of the YLRL in 1960. Scheduled for June 17–19 at Boston, Mass., extensive publicity was pushed early with the hope of attracting the greatest number of YLs ever assembled at a ham convention.

Thus a busy year and a busy decade ended with a feeling of "good show" for the past and an optimistic "what's next?" for the future!

*YL Editor, *QST*: Please send all news notes to W1QON's home address: 318 Fisher St., Walpole, Mass.



A Very Happy New Year to All

— W1QON

HOWDY WEEK RESULTS

A list of YLRL members who participated in the new "Howdy Week" contest in October conducted for the first time this year follows:

Station	*Score*	*Station*	*Score*
W6QGX	176	W1ZEN	55
K5BNQ	136	K1IZT	50
K4RNS	131	K6ZCR	38
K9QGR	106	K6OQD	34
K1ADY	87	W8OTK	34
W8ATB	77	W8LGY	26
K6UTO	77	W7GGV	18
W5JCY	76	W2OWL	18
K5IMD	65	W7NJS	18
W9YWH	59	K6ANG	12
K6KCI	56	K8MQB	7
		W3TSC	7

Eighty-nine non-YLRL members were contacted.

WRONE Certificate Rules

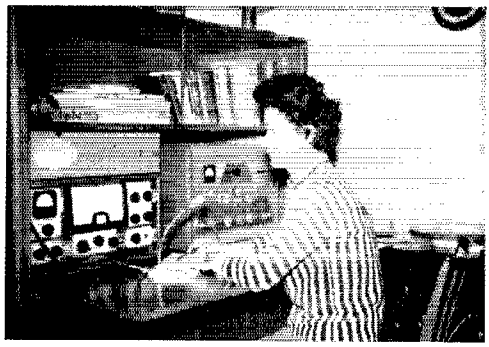
A further explanation of the rules for this new certificate offered by the Women Radio Operators of New England has been requested.

In order to qualify for the certificate an amateur must work six WRONE members after May 1, 1959, on any band, in three of the six New England states in any combination. After qualifying for the certificate if WRONE members are worked in all three of the other states *not* worked for the certificate originally, then a sticker will be issued. It is not necessary to qualify for a sticker at the time the certificate is initially issued, but when both the certificate and the sticker have been earned, the applicant will have worked nine WRONE members in all six N. E. states. Contacts should not be made during a WRONE net. QSL cards should be mailed to custodian Isabel Bunney, K1EAV, 47 Pine St., No. Billerica, Mass., accompanied by a self-addressed envelope with sufficient postage to cover their return and ten cents to cover cost of mailing the certificate.

COMING YL GET-TOGETHERS

Midwest YL Convention — The tenth annual will be held in Indianapolis, Ind. May 20–21, 1960. Pre-registration is $2.00. W9RTH is chairman; K9IXD, co-chairman.

YLRL International Convention — June 17–19, 1960, at the Hotel Commander near Boston, Mass. WRONE is hostess club. Co-chairmen are W1ZEN and W1SVN.



German YL on single sideband is DL6VM, Ella Jacobs, of Munich. According to K2MGE, who supplied the photo, Ella has an impressive collection of certificates and awards to show for her on-the-air time.

As a KW6, K6QPG says that her popularity rating has never been so high. To better than 90% of her many contacts, Mary Garlow is the first KW6 and often the first YL worked. Mary and her OM KW6CQ have been on Wake Island for a year and will remain until March. On 10 and 15 phone and c.w. and 20 c.w. at all hours, Mary looks especially for stateside YLs.

Six months in the year Meg Hennon, K4HSC, hams from her log cabin high in the mountains in Hiawassee, Georgia. The remainder of the year finds her on the air from Coral Gables, Florida. Meg is currently Publicity Chairman for the Georgia Peaches Net.

This looks to us like the ultimate in rig installations in the kitchen. It's hard to believe but this deluxe set-up is right in the midst of all of the accouterments usually found in the busiest room of any house. W4HLF has five harmonics too, so background QRM is a constant in Arlie's operating. Hubbub notwithstanding, she has made some enviable records in the nine years she has been licensed. A top scorer in several of the YL-OM and AP contests, the girl from Orange, Virginia is also foreign correspondent for the YLRL and in that capacity corresponds with over a hundred DX YLs each year.

How's DX?

CONDUCTED BY ROD NEWKIRK,* W9BRD

How?

As 1959 sinks slowly into the west we set sail for the fair shores of 1960 in the good ship *DX*, and a promising year it is! Our file of accumulated informational odds and ends gets its annual shake-out at this time preparatory to fresh attack. Pausing en route File Room 29 we spot a few fragments that seem worth noting here. For example, via GC2RS comes this woeful little eyeful from a recent *RSGB Bulletin:*

Poor Outlook for DXers?

An article in *British Communications and Electronics* (May 1958) paints a gloomy picture for DX work in the coming years. It points out that there appears to be a tendency for a series of high maximum sunspot cycles to be followed by a series of cycles having low maxima. It is not improbable, the article states, that the maxima of the next one or two cycles will be considerably lower than that of the present and recent cycles, and that it is possible that radio services may be faced with several decades of what, from a radio point of view, could be considered as virtually sunspot minimum conditions. The article concludes by advocating the laying of a cable to some part of the Commonwealth in the equatorial belt where the ionization is higher, and the building there of all main commercial transmitters. So unless you can emigrate, have sufficient room for a 7-Mc. beam, or know where to pick up several thousand miles of cheap surplus cable, you had better make good use of that 28-Mc. beam while the band is still open.

Several decades! Could this be possible? Unfortunately, yes; according to sunspot history it *could* occur. Our June '57 column touched upon the fact that sunspots, phenomena necessary for a healthy ionosphere, were totally absent from Old Sol's feverish brow from the year 1676 to 1684, and the following thirty years produced a measly two dozen measles.

But cheer up, OMs. We can always dig those clever singsong commercials on our faithful Conelrad monitors till a meteor trail shows up.

—···—

And then there's the one about the unclaimed DX QSLs cluttering our ARRL Bureaus, and an idea revived by W4CGO of the W6YDK staff. Syd, a BPL type, figures that amateur traffic nets might well assist ARRL QSL Managers in buttonholing delinquent QSL claimants — although it's definitely *not* the responsibility of a QSL Manager to plead cooperation from those he's trying to serve.

Much of the bulk of a QM's unclaimed backlog consists of cards destined for casual workers of DX, guys who catch a hot opening now and then and who aren't aware that the Bureau is bothered by cards awaiting their self-addressed envelopes. Sooner or later they'll wake up, perhaps, but meanwhile the Manager is burdened by a batch of aging QSO certifications that menaces his sanity.

W4CGO's QTC approach conceivably could help educate some of the unenlightened. One reminder per year per laggard ought to be sufficient, and any implementation of the scheme naturally would be up to individual QSL Managers and their traffic-hound acquaintances.

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What:

After a nosedive in October, normally a month of peppy propagation, conditions bounced right back to boot out the old year in fairly solid shape. Let's grab a handful of "How's" tickertape fresh from the bourse to check recent quotations on our favorite stock, International Transmissions Preferred. . . .

40 c.w., becoming quite a glamour issue, sells at a brisk clip. "Low power and crystals can really compete on 40," declares K2UBW, "DX wings through from 4 P.M. to 4 A.M." . . . "I'm writing this at three in the afternoon while a DM2, a G3 and an LA2 boil through on the low edge of 7 Mc. My 40-meter beam is at the 103-ft. level — I don't remember ever hearing Europe before during daylight hours with the usual skywires." — *K2DGT*. . . . "Just heard all continents on 7 Mc. within five minutes — quite a thrill!" — *W9JJN*. . . . "DL1FF made his usual autumn breakthrough to the west coast to open our European season," notes K6DV. . . . "Weak and hollow signals on 20 may mean good DX on 40," agrees new 7-Mc. convert W8KX. . . . "The JAs dropped down here as they did last fall, but they should be cracking through again in January." — *K6JYF*. . . . WA2COJ, W6NKE, K6CJF, W7DJU, EL4A and s.w.l. A. Rugg add their results, and it all boils down to CO3BU (7013 kc.) 17 hours GMT, EA8CG (9) 7-8, FA8RJ (3) 6, GC2FMV, HK6IC (9) 8, JA1s BTG CD CMG CXW CZF CZF LF NM WM WU, JA2s AGH BP FG HQ, JA3s AEB AKT AMY ANH ANL AUD BLZ FC IL ZP, JA5MU, JA6AGC, JA7s XC XF, JA8s DS FO HO JC JD JO JU LN, JA9s BM MT, KM6BJ (10) 8, KX6CO (7) 6, KZ5SW (10), LAs 6U 7YF (6) 5, PY7AN, TI2CMF (9) 18, UAs in

Last year's ARRL Pacific Division Convention at San Jose in July featured a striking display of QSL cards from more countries than most of us will ever hear. W6s AM BVM GPB KG LDD and TT chipped in 296 confirmations from 296 ARL DXCC countries, all but four of which make up this appropriate backdrop for your first "How's" helping of a dandy new year. (Photo via Northern California DX Club, Inc.)

number, **VK**s 3YD (5) 9, 5BS (5) 8, 7ZZ (6) 11 of QRP renown, **VP**s 6AG (3) 9, 9BO, **VR2**DX (3) 7, XE1KD (2) 18, YUs galore, **ZL**s 1ANR 4LB both (7) 8, **ZS**s 1O (7) 17, 3HX (5) 4-5 and 4UP (12) 5 . . . . KN4FWJ represents the 7-Mc. Novice contingent, reporting success with **CO2**WC and **VK3**XB.

20 c.w. turns in its usual steady performance with W1DGT, K1s LJG (109/70 worked/confirmed), IMP (63/38), JFF, K2BU, W3NHA, W4s IUO JII ORT, W5RX, K5HD (78/59), W6s JQB KG PHF UPJ, W7s LZF DJU, W8KX, W9JJN, K9s GDF (40/27), GDQ, KØJPJ/Ø (50), EL4A, HK5SG, I1ER, VE1PQ and Mr. Rugg accounting for **AP**4M. **CE9**s AH (34) 3, AR, **CN**s 2BK 8AR 8CE, **CO8**HQ, **CP3**s CA CD CN, **CR**s 4AX (20), 7CS, **CX**s 5CO 7BO, **CT2**BO, **DM**s 2AMG 3YFE, **DU7**SV, **EA**s 8BF (70) 23, 8BX 8CG 9GC, **FA**s 9GC 9UO, **FB8**CE 16, **FF8**AD, **FG7**XC (53), **FM7**WP, **FO8**BB, **FY7**YG, **GC2**FMV, **GD3**UB, **HA**s 5BI 5BT 5KBR 7PZ (46) 17, 8CC, **HC**s 1JU 2IU 5CN, **HH2**AR, **HK4**JC, **HR2**FG, **HZ1**AB, **IT1**AGA, **JA**s 1CJ 2RC 3AA 7AD 7KH/mm (90) 12-19, 9AA 7, 9KJ ØBB, K6QPG/**KW6**, **KG**s 1BX 1EM 4AI (26) 6, **KV4**s AA (80) 22-0, BO, **KX6**BT, **LA**s 4CG/p 5AD/p 9RG/p (30) 16, **LU**s 1ZA (35), 3ZL 4ZL (65) of Argentine outposts, **LZ**s 1AF 1KPB 1KPZ 2KKZ, **MP4**s BCU (20) 23, DAA (40) 13, TAF 16, **OA**4D (20), **OQ5**s GU PS (66), **OX3**s RH UD, **PJ2**ME of Sint Maarten, **PZ1**s AC AH, RAEM of Moscow, **SP**s 3KBJ 5ADZ 8MJ, **ST2**AR 16, **SU1**MS, **SVØ**WC, **TF3**MB, **TI2**s CAH DN PZ RC, **UA**s 2KAH 9AA 9AC 9AK 9BI 9CB 9CM 9CK 4, 9KDD (35) 5, 9KDN 9KWA 9KYA 9WF ØAB ØAG ØAX ØAZ ØFG 4 of Sakhalin isle, ØIK ØJB ØKCC 5, ØKID, **UB5**s AQ FJ FR IF JT JF JX KAG KBO KCV SP VW, **UC2**s AR AX KAO KAR, **UD6**AM, **UF6**s AE (27) 17, BD KPA, **UH8**KAA (20) 12, **UI8**KAA (35) 20, **UJ8**AC, **UL7**s HB (44) 5-6, KBB 3, KBK (75) 11, **UN1**s AB AN, **UO5**s AA KAA (10) 23, **UP2**s KCB (30) 12, KDC (85) 14, KNB, **UQ2**s AN AS BA, **UR2**BU, VE2AIG/SU, **VK0**s CC (82) 7, TF, **VP**s 2AR 2GAK 2LO 4WD 4WI (22) 1, 6PJ 7BT 8AI 8EE 8EP (25) 20 of Halley Bay, **VQ**s 2IE (25) 4, 4HT (64) 17, 8BBB (26) 12, **VR**s 2AK (57), 2DA 16, 3V 3W, **VS**s 6AE (47), 9OC 16, 9OM, **VU2**s NR (8), SX (102), **YO**s 2KAM 3AR 3CM 3IA, **YS1**O (33) 3, **YV**s 3CD (20) 2, 5AK 5EZ 6BO 6BT, one ZA1AL, **ZC4**AM, **ZD1**AW 17, **ZE**s 1JN 8JN 8JO 8JR 8JV, **ZP**5s LA LS 1, **ZS**s 3OW 3T 7M (33), 3A2BB, 4X4s BA JQ JR, 7G1A, 8J1AA of Japan's deep freezer, 9G1CX, 9K2AN 16, 9M2s EV and FR.

20 phone is frisky enough to supply **BV1**s USC* 7, USE (310) 10, **CN**s 2BE (180), 8AR (145) 2, 8CS 8IG, **CT**s 1AH 1EY 2AH, **CR9**AH* (310) 9, **DU7**SV* 8, **EA8**CC, **FG7**XE 2, GB5ISM (155) just England, **GD3**UB (199), **HH2**s JK Z, HK3QA (228), **HR1**MM 14, **IT1**TAI, **KC6**PE, **KG**s 1AA (280) 14, 4AA 4AM (280) 12, 6FAA, **LA3**SG/p (325) 22, **OH0**NC (318), **OY7**ML*, **PJ2**MC (145), **TF2**WEK (225) 2, **TI2**PL, UA1DZ* 8, **VK0**s CC 5, HA (300) 14, **VP9**AK, **VR2**DP (108), **VS**s 4JT* (305), 5BY (305), 9AH* 19, YN9BM, **YU1**FC* 14, **ZC4**JB 22, 4X4s GB (135), JB (190), 5A1TR (198) and 9G1CB for the logs of W2DY, W3s MDI/7 QIR (120/118), W4HUO, K9GDQ, EL4A, HK7LX, VE1PQ (119 on A3) and s.w.l. C. Morrow, asterisks for s.s.b.

10 c.w. moves 28-Mc. connoisseur GM3MCH to observe that the current season's early openings have concentrated southward. "The bir-bottle boys on your eastern seaboard were quiet, and the middle west gang faint echoes in the distance. But skip to the Fours and Fives produced fine signals all the way to Mexico and Texas. Seemed odd to QSO those areas with no trouble from New York and New

January 1960

YO3GK holds his own on DX bands, particularly the c.w. slots, and sends this hammy snapshot to W1VG.

Jersey! Ten is truly the wonder band, and all indications at this end point to another good winter and early spring season. But I put in a plea for a little more DX c.w. work on this band." And from EL4A: "People who don't work this band are really missing some good openings. Low power on 28-Mc. c.w. goes a *long* way." In fact, W1s DGT JDS, K1IJG, K2JLD, W3MDI/7, W4ORT, K5s EJQ IID, W6UPJ, K6CJF, W9s LCG OGY, K9s HLW KYR, KØJPJ/Ø, EL4A, VE1PQ and A. Rugg had no difficulty grabbing **CE**4AD (80), **CN2**BK (140), **CR**s 4AX 5AR 6CK 7IZ 16, **CT1**DJ, **DL**8AX, **EA**s 6AM 9AP, **EL**4A, **FA**s 8KD 9KO, **FO8**AC, **FQ8**HA (80) 22, **HA5**BI, **HRØ**AB, **JA**1s AND ANP BHZ BKV BLN BRL BTG BWA CMD CNB, JAs 2RP 2XH 3AG 3IS 4HM (50), 5KF 7AD 8BD 8BP 8EX, **KA2**LN (26), **LZ1**KSZ 16, **OA**4FM, **OD5**LX, **OQ5**IG, **PJ2**AE, **RA6**LAB of the U.S.S.R. (see "Whence"), **SVØs** WC WD, **TI2**CMF, **UB5**FG 16, **UP2**NM (34) 16, **VK9**XK, **VQs** 2CZ 2IE 3HD 4DW, **XZ2**GM, **ZB1**A, **ZC4**FM, **ZEs** 6JY 8JG (98) 18, **ZS7**M (74) 15–20 and **7G1**A of Guinea.

10 **phone** featured a few fantastic openings that had to be heard to be believed — smashing signals from all continents simultaneously. Among delighted participants were W1SRE, WA2GWF, W3s MDI/7 QIR, W4HSR, K5s EJQ (104/86) IID, W6s NKE UPJ, K6CJF, W8GUZ (143), K9s GDQ HLW (98/82), EL4A, GC2RS, HK7LX, VE1PQ and C. Morrow, as well as **CN**s 2AX 8IG 17, **CR**s 5SP (288), 6BX 6LA, **CT**s 1AP 20, 2AC (338), 2AH (348), 3AF (348), **CX**s 1BK 8BM*, **DU1**VQ (470), **EA8**CM, **EL**s 2Z (417), 4A (426) 16, 4M, **FQ8**s AF (290), AT (180), **HC**1IE, **HE9**LAA (247), **HI8**CJY (390) 9, **HK7**s AB LX, **HR**s 2MT 3AC, **HZ1**AB (500), **JA**s 1BDF 1BRL 1BRM 23, 1BWA (190), 1YL (253) 23, 2XW (485), 3EK (416), 7AD (416), 7GW 8IK, K6QPG/**KW6**, **KA**s 2AA (350), 2DJ (401), 2DE (376), 2EB (392), 2RB (428), 8RB 9MF 2, **KG4**s AA AG, **KM6**BU, **KR6**s BB (368), DR (480), GF (497), **LX1**DC (480), **MP4**s BCC (523), QAO (523), **OHØ**NC (193), **OQ5**JW (360), **OR4**RW of Antarctica, **PJ**s 2AE 3AD 19, **PZ1**AP (468), **SP5**PRG (606), **TG5**HC (490), **TI2**OE, **UB5**LV (292), **UQ2**AN (491), **UR2**s AN (490), AO BU (482), **VK3**ND, **VP**s 4MM 5FP 6SS 20, **VQ**s 2SB (420) 17, 2VZ 3GC (474), 3GL (297), 4DT 4RF 5FS (435), **VS9**s AH (281), AZ (242), OM (300), **VU2**s PS NR, **XW8**AC, **YN1**s CJ WW, **YO3**s AR (375), VI (585), **YU1**FC (438), **YS1**LM (397) **YU1**FC (438), YV6BT, **ZB1**A (250) 16, **ZC4**JB (243), **ZD6**FC (391), **ZE**s 2JA 7JV (410) 17, **ZL**s 1ADH 1KW 2BE 2MU 3WB, **ZS3**s S (352) 20, U (400), **4S7YL**, **4X4**s FR (700) 15, GB (269), **9G1**BM and, last but hardly least in the eyebrow-arching department, these new-style Russians: **RA**s 1DZ (391), 6JAV (430), 6LDH, **RB5**s AJU (450), KFM (300), **RC2**s ASL (400), KSB (197), **RD6**ABU (450), **RG6**AR (300), **RH8**AAD (420), **RL7**ABI (390) and **RP2**ABA (490), locations easily identifiable if you substitute Us for the Rs. Oh yes, asterisks in these phone paragraphs indicate single-sideband users (*).

15 **c.w.** purrs along the DX road, closely pursued by W1s DGT LWV, K1s IJG LST, W2ECU, K2s UBW YXC, W3NHA, W4JII, K5IID, W6KG, K6CJF, W7DJU, K7CXZ (45/28), W8KX, K9s GDQ KYR, Køs JPJ/Ø JPL, EL4A, I1ER and A. Rugg mainly on account of **CE9**s AA AF, **CN8**DJ, **CR**s 5AR (65) 15–21, 6BX 7IZ (55) 16, **CT1**NT, **CX**s 1AA 2BT, **DM**s 2AEH (55) 16, 2AHM 2AVN 14, 3BM, **EA8**CB, **EI2**Z, **ET2**US, **FA8**s CR (50) 16, JO 21, TT (72) 15, **FQ8**AG, **FY7**YF, **HA**s 1KSA 1SD 7PZ (20) 13, **HC1**LE (50) 1, **HR2**DK, IT1AGA (40) 16, **JA**s 1BQR 3AF 3BP 3IS 3UI 4HM 5FP 5FQ (70) 19, 7AD 7IF 8GR ØAC, **KA2**KH, **KG1**DT, **KV4**BO, **KX6**BT, **LA2**TD p, **LZ2**KKZ, **MP4**BCV, **OA**s 3D 4BP, **OE3**WB, **OQ5**s AA IG KJ PE RH, **OX3**KW, Dutch **PI1**s LS/mm NTB (40) 15, **PJ2ME**, **PZ1**s AH AU, **SP**s 1JV (80) 11, 1KHA 2HQ/mm (85) 16, **ST2**AR (44) 17, **SVØWX**, **TF3**MB, **UA**s 1KAK 10, 3AH 3HI 4KED ØCF (30), ØKDA ØKID (25) 22, **UB5**s FY JX KAB, **UC2**s AX (87) 9, CB, **UD6**BM, **UF6**KPA, **UI8**AG, **VP**s 4MD 8EE 8EG, **VQ**s 2VZ 3GC 3HD 5EK, **VS**s 1EA 9OM, **WP4**ATO, **XE1**s AX PJ, **XZ2**TH (10) 22, **YO5**LF, YU3YU, **ZB1**A, curious ZC7AD, **ZE8**s JJ 19, JO, **ZP8**JP, **ZS3**s OW S, **4S7**FJ, **4X4**s FU and LB.

15 **phone** is a favorite haunt of W1LWV, K1s IMD JFF LST (120/50), W2DY, W3MDI/7, W4UWC*, K5IID, K6s CJF QPG/KW6, K9GDQ, WØZSZ, KØJPJ/Ø, EL4A, GC2RS, HH2Z, HK5SG and VE1PQ because you can hobnob with such varied vocalists as **CE3**DY, **CN8**s FT IG (227) 11, JF*, **CO2**DB*, **CR5**SP (160) of Sao Thome, **DU6**IV, **EL5**A (220) 20, **ET2**US, **FB8**CD, **FE8**AH (160), GB3s RB RI just England, **HA**s 3WS 8WS, **HB9**JZ*, **HC1**s IE JU*, **HH2**s AE (208) 20, RS, **HI8**GA, **HR1**HP, **HV1**CN*, **HZ1**AB*, **KA2**RB, **KG4**AS, **KR6**HR, KX6CR (262), **MP4**QAO* (185), **OE3**NH, **OHØNC***, **OK1**HH*, **OQ5**s AA (90) 15, LL, **OX3**KW, **PI1**VKL of the Netherlands, **PJ2**AN, **PY2**ARP*, **PZ1**s AA (260), AP (210) 23, AX, **SVØs** WAH (255), WK*, **TI2**s CAH CMF, **UA1**s BE DZ*, **UB5**FJ, UQ2AN, **VK9**BS/9, **VP**s 1EE 4LT 7BB* 9L* 9WB 19, **VQ**s 2PM 4DT, **VS9**OM, **VU2**NR (200), XE1SN, **YN1**s HW 1, TAT*, **YO3**VI, **YS1**RM*, YV4CI, **ZB2**A, **ZC4**RK, **ZE**s 3JG 6JE, **ZL1**s AO 15, GJ, **4X4**s DK GB (190), JU, **5A2**TC (310), **9G1**BQ and **9K2**AN.

15 **Novice** DXers include WV2s HOZ HVR, KN4FWJ, KN8s NHC and QEX (22/9) who await shack decorations from **CE9**AF, **CN8**s GV IT, DJ/DLs in quantity, **EI4**B, **F**3s KR MS, a flock of G-men, **GI3**NKQ, **GM6**TF, **GW**s 2DDX 3GYY, **HZ1**AB, I1CUV, **KC4**USB, **KL7**CEE, **KZ5**LDN, **LA**s 3OG 4ND 5MG 8SE, **LU**s 3FO 9DFV, **OE5**GR, **OH2**TM, **OK**s 1CX 1EB 2OV, **ON4**QJ, **PAØ**LU, **PY**s 2KT 5HV 5VN, 8Ms in number, **SP**s 1ACC 6FZ, **WL7**DCC, **WP4**s ATI ATO, **YO3**UM and **ZL2**PM . . . . . WV2HOZ observes, "Most DX comes back to Generals who, using their v.f.o.s, move onto the DX boys' frequencies so that the latter do not have to tune around for callers. V.f.o. authorization surely is an incentive to get one's General fast!"

160 **c.w.**'s transatlantics season really got under way in mid-October when W3RGQ clicked on schedule with G3PU at 0600 GMT. W1BB feels that 1.8-Mc. conditions are shaping up rather well, and Stew is encouraged by receipt of a Leningrad s.w.l. report for January, 1959, activity . . . . . EL4A writes, "Rough time with QRN on 160 here. I've called a few CQs without results as yet. As a test for conditions, I tune for U. S. BC stations around 1500 kc. The other morning WINZ, Florida, was way over S9." . . . . . Eighty-meter reports are absent from the mailsack in great numbers this month, but W3MDI/7 finds **KL7**BXP (3685) 9 doing a booming 75-meter business with low-band WAS seekers.

Where:

Oceania — VERON'S *DX press* assembles the following hints for those who would trace ex-N.E.I. amateurs: *PK1AD*, H. Diemont, JZØDA, Sentani Airstrip, Hollandia, N.N.G.; *PK1LD*, Van Dooremaal, Eemwijkstraat 47, Voorburg, Holland; *PK1OKL*, W6OKL; *PK1VW*, W. Willems, Apeldoornseweg 34, Arnhem, Holland; *PK2ZZ*, PAØRLF; *PK3EJ*, W2EJV; *PK3GT*, PAØGT; *PK3MA*, PAØPLM; *PK3MB*, P. O. Box 71, Ymuiden, Holland; *PK3PH*, VE3ENH; *PK3PL*, PAØPOC; *PK4DA*, PAØFM; *PK4DG*, PAØYS; *PK4DM*, see PK1AD; *PK4LL*, Holbeinstraat 41, Amsterdam, Holland; *PK4PQ*, P. Quast, Meloenstraat 81, The Hague, Holland; *PK4TO*, PAØEQ; *PK4VD*, PAØVD; *PK4ZZ*, V. v.d. Capellen, Hotel de Luwte, Boerhaveweg 27, Noordwijk/Z, Holland; *PK5AA*, L. de Vos, Gooilaan 79, The Hague, Holland; *PK5HL*, D. Veltkamp-Helbach, W. Pyrmontkade 131, The Hague, Holland; *PK5VO*, PAØVO; *PK6AQ*, CN2AQ; *PK6CS*, C. Stoop, c/o Federal T&T Dept., N.N.G.; *PK6VR*, VK4VR; *PK6XX*, via W1GKK; and *PK6YZ*, W6ZEN . . . . . "As of October 1, 1959, I am QSL manager for FO8AC," states W4KWC, hoping also to acquire Georges' log for last year's ARRL Test. S.a.s.e. or sufficient IRCs will assure direct reply. Ed is game to try to obtain confirmation of FO8AC QSOs prior to the date mentioned but he can make no guarantee at this time . . . . . WGDXC observes that VR3s V (G3MKG) and X (G3JHI) ship cards only via RSGB but that VR3W will reply direct. Printing of QSLs in England slowed down VR3V's initial QSL batches . . . . . The Gulf gang also learn that K5MIZD is arrang-

ing to tackle ZK1AU QSL chores beginning in March . _ . _ . _ VK6UF tells W8KX that VK6 suffixes CE and RM are ungood despite receipt of numerous QSLs for them Down Under . _ . _ . _ W7LZF contributes to our If-It-Isn't-One-Thing-It's-Another Department. A UPI dispatch dated November 13, 1959, reads: "All first-class mail addressed to military personnel and groups in Hawaii, the Philippines and Formosa which reached San Francisco on November 7th and 8th should be regarded as lost." Aircraft emergency jettison.

Asia — "WØBSK reports he received a 4S7YL QSL for a 1957 QSO from manager KH6BPF who advises he has held regular skeds with Soma since 1956," reads a recent *DX Bulletin* of WGDXC. "Confirmations dating back three years can be taken care of easily — s.a.s.e. or IRC, of course." . _ . _ . _ VERON has it that deserved two-way sideband confirmations for contacts with ZC4BE of Cyprus and Asia are available at Jack's mother's address which follows. The QTH appearing in October's "Where" may also be profitable . _ . _ . _ W9DSO and K2UYG forward lines from JT1AB: "Please send me all QSL cards direct to [address following]. I have [no] QSL manager in Prague." Thus apparently October's hint from OK1JX no longer holds . _ . _ . _ WØZSZ, assuming QSL duties for VU2NR of Hyderabad, writes: "I have an extract of his log covering contacts made during September and part of October, 1959, plus approximately fifty QSLs made out by Raju for previous contacts." Dutch desires the usual self-addressed stamped envelopes from W/Ks . _ . _ . _ K5IUO, president of HZ1AB formalities, invites, "Anyone who has worked HZ1AB since December, 1958, and has not received a QSL is urged to reapply with another card. We now have a two-man committee to take care of such things and it has been working out very nicely."

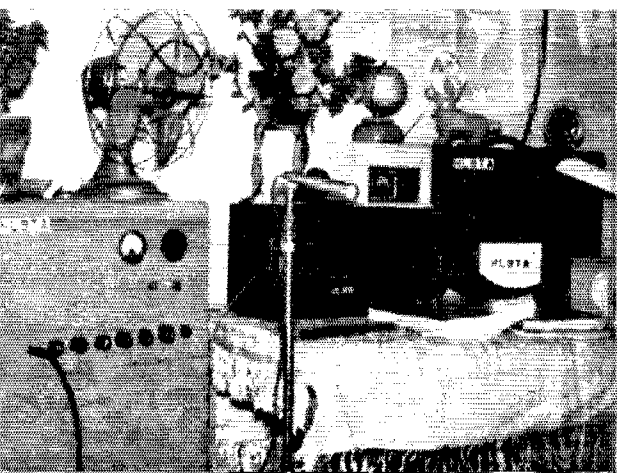
Africa — "A review of the log data supplied by ZD2JM discloses a large number of QSLs unclaimed," communicates K9EAB, John's QSL headquarters. Cliff's ZD2JM log goes back to September, '58, and Statesiders should supply s.a.s.e. and full QSO information with inquiries . _ . _ . _ Lucky lads who latched onto ZS6IF/ZS8 last month should use the address to follow. Lambert requests a QSL with self-addressed envelope plus one International Reply Coupon for surface reply, six IRC's for air. Non-IRC applications will go back via bureaus . _ . _ . _ CN2BK signs up with the vast W2CTN overseas bureau, the usual s.a.s.e. required . _ . _ . _ EL4A (W7VCB) feels that the QSL situation is improving over Liberia way. "We are not allowed to have a QSL bureau but I'll be glad to help pass cards along. QSLs received for bootleggers will be given to orphanages." . _ . _ . _ W2CN reports that CR5AR has changed his QSL approach for the better. One IRC should be enough.

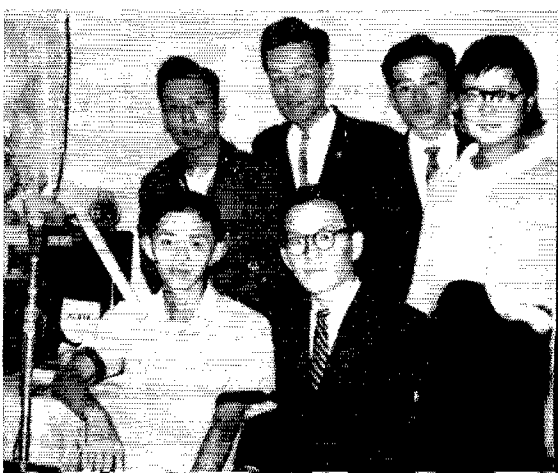
Europe — SVØWT/Crete's new director of operations tells W1UED that QSL performance will improve henceforth. Past APO addresses for this station apparently are no longer valid; see the list to follow . _ . _ . _ "Just returned to Arizona from Leghorn," informs W7AMM (ex-DL4OV-DL4YK-W3UYH-I1DFB), "and I have the logs of I1DFB dating from February 2 through June 20, 1959. I'll QSL U. S. stations direct to *Callbook* addresses, other stations via bureaus." Eber's current QTH: P. O. Box 1412, Sierra Vista, Arizona . _ . _ . _ "I was surprised to find my DJØBL address included in September's column, particularly considering how little I had been on the air. Somebody is really on the ball!" John, W9KAL, suggests a more expeditious address in the following roster . _ . _ . _ "Be so good as to inform the boys that all 2500 QSLs for 3A2AF contacts have been mailed either direct or via the various bureaus. Those still in need of 3A2AF verifications can obtain same by sending QSLs with s.a.s.e. to my home address." This from W6SAI who says it's great to be back after covering some 25,000 miles in Europe and North Africa . _ . _ . _ W4JII got back nothing more than a Radio Tirana s.w.l. flier in response to his card to "ZA3U", and KØGZP worked a bogus TF3PI who uses the name "Pal" instead of the proper Pall . _ . _ . _ K4UKX, now signing DL4HCA at Birkenfeld, receives an occasional card for ex-DL4HC. "A few of the cards are addressed to 'Doc' and all are dated in latter 1956. If you can locate the operator who held that call for this period I will be happy to send him his cards. And some are rather rare." . _ . _ . _ From one S. Matlin, acting general secretary of Russia's Central Radio Club, to KZ5LC as translated by K3CUI: "We acknowledge receipt of your letter in which you request a map or book of amateur radio call signs of the U.S.S.R. Unfortunately we are unable to fulfill your request at this time, since a call book now is in process of publication." Good! By the way, those R-style Russian prefixes caused quite a to-do on 28 Mc. recently, their appearance coming as a result of a switch in the U.S.S.R. four-meter band allocation. No "new ones" involved so far as DXCC is concerned. Calls like RA3KAA normally are used only on v.h.f. over there, so the flurry may well be temporary . _ . _ . _ Typical Continental QSL approaches noted by KØJPJ: PAØVB answers each QSL in the manner received, while SP1JV replies immediately by air if provided sufficient IRCs . _ . _ . _ Via K6BX from OH2YV: "I was SRAL QSL manager for over four years beginning in 1952, a time when a big campaign was undertaken to improve QSLing, evidence of which is seen even today. If you miss more than, say, 20 per cent of Finland QSLs there must be something wrong in delivery." . _ . _ . _ The postman always rings twice — twice a year — at LA8RG/p's Spitzbergen QRH. Most recent delivery occurred in November and the next mail won't come till May.

South America — W8MXS will act as QSL manager for the Galapagos DXpedition of OAs 4AGI 4CX 4GM 5G and Dan himself, expected to hit the airways later this month. W8MXS indicates the usual QSL procedure: s.a.s.e. for Stateside applicants, IRCs for direct reply to others, and the remainder via bureaus . _ . _ . _ HK3LX, who closed his HK7LX career in late November, decries an apparent dearth of QSL spirit in Jamaica. "I have contacted twelve (12) VP5s there and have found it absolutely impossible to get one card despite use of s.a.s.e., IRCs and ready-made blanks. I have some 300 HK7LX QSLs remaining and hope to clear all Bucaramanga confirmations by December 31st." Edmundo also would appreciate help toward confirming contact with 3V8KS two years ago . _ . _ . _ Movieman VP4WD (G3TA) strives to keep abreast of the QSL situation in Tobago where he finds himself in great demand. His cinema assignment should terminate at any time now, according to word via OVARA and W1UED.

Hereabouts — Let's bring the W2CTN superbureau directory up to date. Jack now handles QSL details for CN2BK, CR4s AH AV AX, FK8s AI AT AW, FM7WP, HR2FG, JZØs DA HA, KW6s CP CU, OQ5s BC IG, OX3RH, TG9AL, TI2WD, VKs 2FR 9GK 9NT, VP6PJ, VQs 2EW 3CF 3HH 4AQ, VR2s DA DK, ZB2I, ZD2DCP, ZS7M, 9G1BQ and the non-W/K portion of FM7WU's log. Once again we stress W2CTN's need for s.a.s.e. from W/K applicants, s.a.e.-plus-IRCs from others. Incidentally, s.w.l. A. Rugg of Quebec has about a dozen cards collected toward the "WACTN" certification suggested by W6ISQ in October's column . _ . _ . _ "I've collected a huge pile of cards for supposed FP8AC contacts between October, 1957, and November of '58 on 7 and 14 Mc.," declares W6SAI, "Sorry to disappoint the boys but FP8AC has been QRT since 1950 and the call is inactive." . _ . _ . _ Via WGDXC: In an August QSO KØDQI agreed to act as FG7XG's QSL manager but now, some 300 incoming QSLs later, Scotty has

HL9TA, the Korean equivalent of W1AW, is headquarters station of KARL at Seoul. A fifty-watter ranges from 10 through 40 meters, mostly 20 phone, with operators (standing, left to right) Yim, Cho, Yos, Miss Im; (seated) John and Rhee. KARL Secretary Cho Dong-In expresses hope that soon there will be many more nationals holding ham licenses in the Land of Morning Calm.

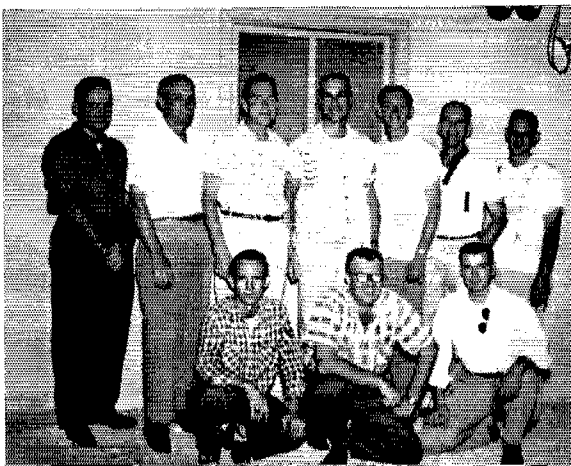




yet to hear from the fellow . _ . _ . _ Interesting episode at KZ5LC. "Worked VP2KJ of Nevis who said 'QSL via my QSL manager, W8MXS.' After signing I went right to work on a card, listening to OA4AGI telling some U. S. ham about the forthcoming OAs DXpedition to the Galapagos. I broke in, offering any KZ5-type assistance needed. Who was the Stateside ham? W8MXS! Perhaps I'm the only DXer who has saved postage by QSOing a QSL manager within twenty minutes after working his client." . _ . _ . _ W8AOL tells K5JVF he knows nothing about any HI bearing his suffix . _ . _ . _ KØSAJ offers his good offices for the handling of a deserving rare-DX station's QSL difficulties . _ . _ . _ K6CJF compliments the W6/K6 ARRL Bureau on an efficient job, and W9/K9 Manager W9DSO scheduled a well-earned Mexico vacation for about this time . _ . _ . _ Specifically speaking, now, and in detail:

CE3LV, J. Farrance (K4HNT), Casilla 13120, Santiago, Chile
CN2BK (via W2CTN)
ex-CN8ES, P. Pagnoux, EAA606, Varennes-sur-Allier (Allier), France
DL4DN, G. Zobel, P.O. Box 895, Ulm/Donau, W. Germany
DL4HCA, J. Hallowell (K4UKX), Maiwiese E-17, Birkenfeld, Germany
DJØBL, J. Rheinstein, W9KAL, 1418 E. 57th St., Chicago 37, Ill. (or via DARC)
EI9U, T. O'Connor, 280 Collins Ave., Whitehall, Dublin, Eire
EL2Z, P.O. Box 270, Monrovia, Liberia
EL4M, Mary Knowles, Letourneau-Liberia, Roberts Field, Liberia
ET2BP, B. Permar, USA MESCA, APO 846, New York, N. Y.
F7GB, U. S. Army Signal Svc. Co., APO 58, New York, N. Y.
F7GL (to W5GZU)
ex-FF8AC, Y. Rangin, ave. du General Leclerc, Bonneuil-sur-Marne (Seine), France
ex-FF8BX, E. Chalou, Chalet Udako, Ilbarritz-Bidart (Basses-Pyrenees), France
ex-FF8BZ, Y. Milesi, Parc Bellevue, rue Felix-Pyat, Bt. 49, Marseille (Bouches-du-Rhone), France
FO8AC (via W4KWC)
FO8AX (to WA6DFH)
FO8BB (via FO8AC)
FP8BE (to K4HYL)
FP8s BH BI (to W1PFA)
FQ8AT, P.O. Box 12, Ati, Chad, Fr. Eq. Africa
FQ8HH, C. Rinaldi, B.P. 137, Brazzaville, Fr. Eq. Africa
FW8AS (via W5GNG)
FY7YF (via W2FXA)
HH2GR (via RCH)
HK3LX, E. Quinones P., Carrera 27 No. 70-89, Bogota, Colombia
HK6IC (via LCRA)
ex-HK7LX (to HK3LX)
HP9FC/mm (to K1AJQ)
HR2FG (via W2CTN)
I1DFB (to W7AMM — see text preceding)
JAØBB, T. Mizukoshi, Sakae Miyata-Machi, Matsumoto, Nagano, Japan
JT1AB, B. Kubac, P.O. Box 369, Ulan Bator, Mongolian People's Republic
JZØHA, P.O. Box 420, Sorong, Netherlands New Guinea (or via W2CTN)
ex-KA2CY-3CY-3GG-ØCY, Capt. E. Worrell, jr., W3MDI/7, Box 419, Officers Mail Rm., Hill AFB, Utah
KA2LM, NavRadFac, Navy 830, Box 12, FPO, San Francisco, Calif.
KG1BX, APO 23, New York, N. Y.
KH6ABH, French Frigate Shoals USCG Loran Stn., P.O. Box 4010, Honolulu, Hawaii
KR6SW, M. Walton, 3rd USASA Fld. Stn., APO 331, Box 70, San Francisco, Calif.
MP4BCV (via MP4BBW)
MP4TAF (via RSGB)
OA5O, Box 91, Lima, Peru
ON4LR, A. Leroy, 541 rue Bocquenade, Fraipont, Leige, Belgium
OQ5AA, P. Menetrier, P.O. Box 55, Bumba, Belgian Congo
OQ5JW, E. S. Bolton, P.O. Box 27, Luputa, Belgian Congo
PJ2ME (via K2SWZ)
SU1AL, A. Labib, 41 Refat St., Shobra, Cairo, Egypt
SVØWS (via WØVFN)
SVØWT/Crete (W/K/VE/VOs via ARRL, others via ISWL)
TF4WDX, MARS, APO 81, New York, N. Y.
TG9CL, P.O. Box 689, Guatemala City, Guatemala
UG6AG, L. A. Tomasian, Radio Club, ul. Teriana 73, Ereyan, Armenian S.S.R.
VE2AIG/SU, J. Simard, 56th Canadian Sig. Sqdn., U.N. Emergency Force, Post Office, Beirut, Lebanon
VE8TO, c/o ISWL, 86 Barrenger Rd., London N. 10, England
VP3IG, P.O. Box 331, Georgetown, British Guiana
VP4MM, J. MacDonald, P.O. Box 890, Port of Spain, Trinidad
VP8DQ, P.O. Box 207, Port Stanley, Falkland Islands
VP9EU, M. Lambert, P.O. Box 204, Hamilton, Bermuda
VQ1s SSB WVR (to VQ3GX)
VQ3ES (to ZE3ES)
VQ8AQ, c/o 154 Park Rd., W. Hartlepool, Co. Durham, England
VR3X (via RSGB)
VS1DO (via MARTS)
VS1EA, Sgt. N. J. James, Sgts. Mess, RAF Changi, Singapore 17
VS4JT (via K6GMA)
VS6AZ (via K6GMA)
VU2ANI (via W8PQQ)
VU2NR (via WØZSZ)
WI1FJL/KP4, C. Gylphe, jr., GMSRON-2, Navy 1506, FPO, New York, N. Y.
WA6DMD/mm, C. E. Powell, *Bella Kaze*, c/o American Consulate, Saigon, Vietnam
YO3VI, P.O. Box 79, Ploesti, Roumania
YS1VW, V. Wichi, P.O. Box 517, San Salvador, El Salvador
YU3BU, F. Florjan, Gregoriceceva 7, Piram, Yugoslavia
YV5AJK, Box 3974, Caracas, Venezuela
ZA1AL, Box 57, Tirana, Albania
ex-ZB1CR (to GI3NKQ)
ex-ZC4BE, c/o Mrs. Swayne, 53 Malcolm Rd., Woodside, London S.E. 25, England
ZC5AF (via W5QL or GW3LQP)
ZD2GUP (via RSGB)
ZD2JM (via K9EAB)
ZE3JA/ZD6, P.O. Box 944, Salisbury, So. Rhodesia
ZS3B (via WØVXO)
ZS3ES, CDM LTS, Oranjemund, Southwest Africa
ZS3J, P.O. Box 59, Windhoek, Southwest Africa

HZ1AB is a venerable D X institution over Saudi Arabia way and we've been favored with several pictures of the station's changing gear and staff over the years. This is the Dhahran Airfield Amateur Radio Club, an outfit whose 32S-1, BC-610, 75A-4 and three-curtain rhombics now pepper the world with plenty of juicy QSOs. In the group are (rear, left to right) K1DWC, J. Davis, W4ERQ, K5MMI, M. Carpenter, K5IUO and K9PBV; (front) KØILI, W6NZL and K6LYM. Messrs. Davis and Carpenter should have their Conditionals by the time this *QST* gets around.

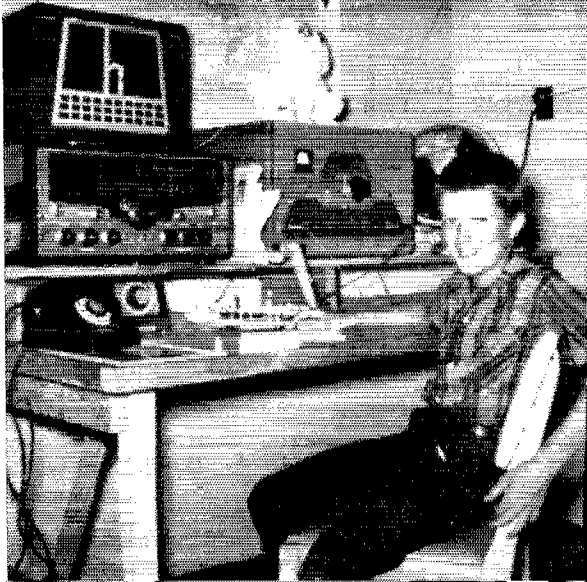


ZS6IF/ZS8, L. Ledoux, 101 Lyndhurst Rd., P.O. Lyndhurst, Johannesburg, S. Afr.
3A2AV, M. Monti, P.O. Box 32, Treviso, Italy
3V8AC, Essid Adb Ali, rue Rekeb Impasse, Jouapa, Msaken, Tunisia
ex-5A5TO, F. Vitringa, P.O. Box 165, Highriver, Alta., Canada
9K2AN, Nasir Khan, P.O. Box 76, Kuwait, Persian Gulf
9M2EV, J. Keng Cho, P.O. Box 326, Ipoh, Malaya

Your benefactors on this month's run: W1s JDS SRE TYQ ZJ, K1JFF, W2s DY JBL, K2s BU QWN UYG, WA2GWF, W3s NHA QIR, W4s HSR IUO KFC ORT, K5JVF, W6s KG PHF, K6CJF, W7LZF, W9s DSO MAK OGY, K9HLW, W0ZSZ, K0JPJ, KZ5LC, EL4A, VE7QF, C. Morrow, A. Rugg, Hamfesters Radio Club (Chicago), International Radio Listeners League, International Short Wave League, Japan DX Radio Club, Newark News Radio Club, Northern California DX Club, Ohio Valley Amateur Radio Association, *Radio REF*, VERON of Holland, West Gulf DX Club, Willamette Valley DX Club and WIA of Australia.

Whence:

Europe — DARC (Germany) invites amateur radiotelegraphers throughout the world to participate in the Fifth WAE DX Contest scheduled for 1100 GMT, January 9th, to 2300 on the 10th, and again on the 23rd–24th, same times. Non-European stations will swap RST001, RST002, etc., serials with Europeans once per band per week end at *one point* per contact *(two points* per 3.5-Mc. QSO). Additional points accrue from sending "QSO reports" (QTC) to European stations at *one point* per QTC. Each QTC consists of (1) time in GMT, (2) station call, and (3) QSO number of any previous WAE Test contact. For example, W9ABC raises DL7YZ and earns a contact point thereby; W9ABC previously worked G4GG at 1207 GMT for G4GG's 69th Test QSO. So, besides the QSO point for his serial trade with DL7YZ, another point goes to W9ABC if he sends "1207/G4GG/069" to DL7YZ. W9ABC can work DL7YZ again later on the same band and same week end, but only for QTC purposes. During the entire Test period each QTC can be transmitted to Europe by W9ABC but once, and DL7YZ can accept no more than ten QTC per band from W9ABC. Unsent QTCs remaining from the first week end may be carried over to the final week end. (It figures that the more Test QSOs accumulated, the more QTC are available to parlay into additional points.) SCORING: Multiply combined QSO and QTC points collected on all bands by the combined numbers of *multipliers* collected on all bands, the latter deriving from DARC's Worked-All-Europe Countries List — CT1 CT2 DJ/DL/DM EA EA6 EI F FC G GC GD GI GM GW HA HB HE HV I IS IT LA LX LZ M1 OE OH OH0 OK ON OY OZ PA PX SM SP SV TF UA1-6 UB UC UN UO UP UQ UR YO YU ZA ZB1 ZB2 3A2, GM Shetland, LA/p Jan Mayen, LA/p Spitzbergen, SV Athos Republic, SV Crete, SV Rhodes, TA Europe and UA Franz Josef Land. (DARC stresses that UD UF and UG are Asia, not Europe.) Special log transcript forms for this affair are available for two IRCs (for airmail, five) at DARC DX Bureau, Fuchsienweg 51, Berlin-Rudow, Germany. Entries go to the same address postmarked no later than March 31, 1960. The highest scorer in each continent and country (or call area) will earn a certificate of merit; second- and third-place awards also will be considered. Gluck! . . . . . The 23rd British Empire Radio Union Contest also comes off this month, but W/Ks are requested to ignore the proceedings because this one, similar to our own Sweepstakes affair, is for BERU men only. Let's be good sports and give them priority on the dance floor over the 16th and 17th, eh? . . . . . W1s BDI ZDP, W2ICO, K6s 3CUI 6BX and J. Howard supply U.S.S.R. commentary: Effective in September the 160-meter band (1715–1800 kc.) was withdrawn from amateur use in Russia, the 80-meter band was expanded to 3500–3650 kc., the 40-meter band reduced to 7000–7100 kc., and the 38–40 Mc. assignment was terminated. Novice v.h.f. lads moved up to 28–29.7 Mc., at least temporarily, accounting for the 10-meter "R" calls you've been hearing and working. R-prefixed U.S.S.R. stations are limited to 50 watts input. . . . "Concerning complaints that we use 7.18 Mc. for our Radio Moscow programs, we wish to inform you that frequencies from 7.1 to 7.3 Mc. are among those set aside for broadcasting by the International Conference at Atlantic City. The ham band in the 40-meter wavelength is from 7.0 to 7.1 megacycles, so we are not interfering with amateur radio operators when we broadcast on 7.18 Mc. A check-up on the regulations currently in force will show you that we are fully within our rights." Rights, shmights — it's questionable logic to beam BC signals to North America on frequencies used by amateurs in North America. . . . Apparently no Franz Josef Land and Wrangel Island ham action can be expected in early 1960. . . . UR2BU, armed with a copy of W3RPG's certification directory, intends to stock up on additional bulkhead decorations . . . . . HB9s NL TU and MO expect to wind up an escapade to Seelisberg, Uri Canton, on the third day of this month after a c.w. and sideband session as HB1s MO/ur NL/ur and TO/ur on 7050, 7075 and 145,060 kc. . . . . "Tektronix Corp. now have a business concern over here at Guernsey," writes GC2RS, "and are starting groundwork on a radio amateur group. I hope they will soon be making themselves heard on the bands." . . . . . PA0ALO popped in on pal W1LWV quite unexpectedly after numerous 15-meter chats. Both are paper-manufacturing folk . . . . . "You portray the Eiffel Tower as a vertical but this isn't true," protests WA6FOS, referring to October's Jeevesie. "The famous tower is the support for a long-distance radio station antenna, according to *Wonders of Wireless Telegraphy*, by J. A. Fleming (first edition 1913)." All right, it's a horizontal . . . . . Among Yanks in Germany: DJ0BL (W9KAL) says. "DJ0 is the prefix reserved for foreigners residing in Germany. It is very easy for W/K to operate here and the post office department is most helpful in assisting with licensing. At present there are about thirty DJ0 suffixes issued, about half of which are active. Unfortunately there are quite a few pirates also using DJ0 calls, a serious problem over here. I have lately improved my antenna system in Munich and now use a ground-plane, getting into the U.S. quite well. I run 40 watts to a Geloso rig and usually am on 15 or 20 between 1700 and 2100 GMT, code only. I also enjoy working the 21-Mc. Novice gang." . . . . . DL4HCA (K4UKX) holds forth from Birkenfeld, "Just located a source of bamboo today, so perhaps within the next few weeks I can solve my antenna problem with a three-band quad." . . . . . VE6XJ corrects CT2AH's picture label in October's column, pointing out that Fernando's name is Gamboa Pacheco, his QTH Santa Maria airport. While visiting CT2AH, VE6XJ witnessed the passing of one of the transmitter's two 807s, items extremely hard to replace in the Azores . . . . . A fire truck extension ladder makes a handy 70-ft. mast to support GM3BQA's cube squad . . . . . LZ1UR tells W8KX of his visit to UB5s FG FJ and KCA, also mentioning operation as LZ1UR/UB5. Walt hears that UA9DM, avid 19-year-old DX hound, recently visited Sofia where LZ1UR is about to apply for DXCC membership after a swift three-year long-haul career . . . . . OH2YV writes K6BX of 1306 QSOs during his five-day Alands stint with OH2XK in October. "Bands were very poor and we would have doubled that total under normal conditions." A Valiant and Geloso inhaler did the trick . . . . . W8TWZ finds that IIFT has earned DXCC and gathered almost 1800 W/K QSOs with 25 watts since becoming licensed three years ago . . . . . SM5BST hints of possible future s.s.b. DXpeditionary moves in lines to W1SVR . . . . . W2ECU finds HA1KSA in search of Wyoming for WAS while SP1JV tells W6KG he'd love to nail the same state plus Nevada, on 21 Mc. HA1KSA often works 15 or 20 meters on Thursdays and Fridays from 1600 to 2100 GMT . . . . . W6KG discloses that VO1AC formerly operated HA5KBK. Adam would welcome info on any other ex-HA amateurs . . . . . WIA, NCDXC and VERON collaborate with Continental notes: REP of Portugal offers a wallpiece called the Port Wine Award. . . . LA3SG/p would like to work more Pacific persons around 14,093 kc., 0800–0900 GMT, before he closes down for schooling in the U.S.A. . . . Permits were required for HADW/HV's October sortie from (1) the Vatican with an accompanying letter, (2) the Italian gov-

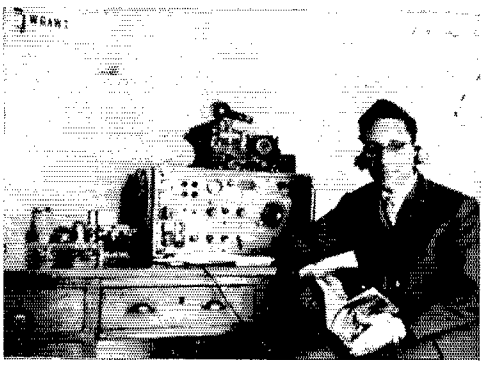


Alexander conquered the world while still in his twenties, but K8JXK turned the trick before he was 12. If there has ever been a younger ARRL DX Century Clubber we have yet to hear of him. (Photo via W1WPO)

ernment ministry of posts and telegraphs, and (3) the local police force for transportation of radio paraphernalia. Bill managed about 160 QSOs, most with W/Ks and thirty or so with Sixers. . . This SP1JN/mm 'ZA turns out to be shipboard stuff.

South America — "OA4GM has organized a trip to the Galapagos Islands this month not only to operate a ham station but to qualify his 56-ft. schooner *Tigress* for long-distance racing. Operators will be OAs 4AGI 4CX 4GM 5G and myself, W8MIXS. We will operate a homemade rig on c.w., a KWM-1 on 10, 15 and 20 sideband, and another s.s.b. transmitter on 40 and 80. Antennas will include a two-element triband beam, an all-band vertical and dipoles. We plan to leave Lima on January 7th and, with favorable sailing conditions, should be in the islands eight to ten days later." . . . . . HK7LX piled up some 4000 QSOs with about 200 countries in his 30-month Bucaramanga stay and now returns to HK3JLX, Bogota, and more conveniences of life . . . . . From roving G3TA: "So far as I can discover, my initial contact with W2KQT from VP4WD was the first amateur contact ever made from Tobago. This island has an approximate population of 40,000 but no resident amateurs." The VP4WD 30-watter certainly shook up 40's low edge . . . . . PZ1AH and others convince W8KX that temperature and humidity are taking their usual toll of ham equipment in the tropic zones. Imagine your own plate transformers turning into green mush — and no replacements available . . . . . VP3HAG, returning from holiday in Europe, recently surprised W3QIR by landline from New York City . . . . . W4KFC spots CE3LV as KH6NT. Jack has a two-year FAA assignment in Chile and expects to make his DX mark on 15 and 20 c.w. . . . . Last year's Serrana Bank gang — Ws 3PZW 4KVX and 9EVI — hope to join Colombian amateurs in activating remote Malpelo Island, a rugged uninhabitation in the Pacific some 300 miles west of Buenaventura, Colombia, around the middle of this month. The adventurers anticipate a five-day spree with three stations simultaneously operative on voice and code. This undertaking could set a new multilingual fashion for DXpeditions: English, Spanish, Russian, French, German and Italian transmissions will be available.

Asia — Arabian nights are profitable DX periods and K5IUO comments on the HZ1AB situation: "We operate 20 c.w. and s.s.b. from 14,300 to 14,330 kc., mostly around 14,325, every day at 2300 GMT. Also you might pass along to the 40-meter c.w. boys that we will be on the low edge of 7 Mc. with a kilowatt and rhombic. We hear east coast stations working Europe on 40 but we'll have to work through a flock of Russians to hit the States. We also operate 20 sideband on the long path almost daily around 1300 GMT, getting into the west coast very well at that time, and I personally operate 20 c.w. two or three days per week." Bud's tour of duty in Saudi Arabia is drawing to a close so we hope he leaves some of his ham spirit to help keep HZ1AB rolling . . . . . JA3RF recently visited K6DV's



SU1MS regularly shakes up North Americans with 80 watts and a 100-foot-high dipole near 14,080 kc. Mahmud likes c.w. sessions around 0200–0400 GMT. (Photo via K2UYG)

vicinity, checking up on the U.S. auto industry. Mac reports that JA4LL/mm, a 7-Mc. fixture of long standing, is fairly inactive now because of heavy watch skeds. *Africa Maru* broke course recently to answer an SOS in a Midway area storm, arriving at the scene to find only glass fish net floats afloat . . . . . YA1IW (K6IWG) writes somewhat sorrowfully concerning the intended Andamans action of VU2s AK NR and RM as VU2ANI, Port Blair. "Got on the air one day as VU2NR was finishing a QSO with W3RIS and heard him tell Walt that I was not going on the forthcoming DXpedition to the Laccadives and Andamans. A few minutes later I contacted Raju and he confirmed the disappointing news. I had previously applied to the Indian government for a license to operate in VU4 and VU5. Not long afterward I received an official reply in the negative. In the meantime preparations were made by VU2s AK NR, Ws 3RIS 6UOU 7PHO 8PQQ ØMLY, KH6OR and many other hams throughout the world. Since the Indian government will not permit me to go even as a second operator, that eliminates VU4 because I was to overcome lack of Laccadives powerful facilities with an Onan generator. AC3 and AC5 earlier had proved impractical goals because of civil matters there. Anyway, the way things now stand the three VUs are going ahead with the part of the trip that includes the Andamans. They hope to operate 10, 15 and 20 meters, phone, c.w. and sideband, from mid-December to mid-January with a KWM-1 and Mosley beam courtesy Ws 6UOU and 7PHO. All our thanks go to the VU boys who are going ahead in order not to disappoint all the fellows who have been looking forward to this DXpedition." Cal knocks off from YA1IW now, leaving YA1AO active in Kabul on 10 and 15 meters. YA1IW managed 122 countries from Afghanistan with a G-66, G-77 and, for the most part, a simple dipole. Now he's out to visit some of the many friends he made on the air, touring Asia and Europe by Landrover . . . . . K1JDN, formerly HL2AM and KARL's first honorary member, is delighted to see amateur radio making further progress in Korea . . . . . VERON hears that DL9PF has his DX eye on a midsummer Turkey trot if the scarlet ribbons give way . . . . . WIA's VK2ZR writes of BYs 1AC and 4AC, presumably Red China, heard in QSOs with Curtain folk on 20 c.w. around 1200 GMT.

Africa — Looks as though the Aldabras will hold out a while longer, judging from VQ4AQ's epistle to W2CTN (and did you dig the recent *National Geographic* treatment on VQ7?). "The chap who has the boat we were to use on our

(*Continued on page 150*)

The wanderlust, an extremely virulent strain of DX fever, lurks in almost everyone, but few of us can heed its siren call. WA6DMD could, however, and did. On retiring from the USAF in Japan after 23 years service, Carl acquired the *Bella Kaze* and put to sea with his wife Masumi (in photo), Japanese crewman Fujie Nobuo and Butch, a German shepherd, for a leisurely voyage around the world. Since November, 1958, this trim craft and its doughty crew have island-hopped the China Sea and now head for Vietnam after a pleasant stopover with the VS6 gang. WA6DMD/mm frequently is heard on 21-Mc. schedules around 0900 GMT using Heathkit Cheyenne and Comanche mobile gear.

Correspondence From Members-

The publishers of *QST* assume no responsibility for statements made herein by correspondents.

KLAXON REBUTTAL

Route 10
Livingston, N. J.

Editor, *QST:*

Several months ago your columns carried several letters claiming the first use of klaxon horns at conventions. In the process of rummaging through my old records recently, I ran across a clipping from the now defunct "*New York Globe*" dated March 13, 1922.

In addition to establishing a "first" date in the subject area, I think many of your readers will be interested in the newspaper reporter's account of the good old days when short wave transatlantic communication was still an unaccomplished dream.

By way of explanation, a half-inch spark coil was used to drive the Magnavox speaker. We expected the Magnavox to develop shorted turns at any minute with this high voltage input, but it held up nobly.

The "we" is not editorial; while I spark-plugged this venture, I was assisted by John Dodman 2AGB and John Tiffany 2BQK. The newspaper account of the affair follows:

RADIO BANQUET SCENE OF WILD ENTHUSIASM

One of the greatest gatherings in the history of amateur radio took place last Saturday night when the annual banquet of the Second District Council was held at the Hotel Pennsylvania.

Among the speakers were Professor Alfred U. Godsmith, David N. Sarnoff of the Radio Corporation, and Lieutenant Commander Patterson. J. O. Smith was the toastmaster. The climax of the evening came in the form of a testimonial to Paul Godley for his successful conduct of the trans-Atlantic tests last December.

During the early stages of the dinner the immense banquet hall was a bedlam of sound, owing to the fact that most of those present had brought some sort of whistle or other device for making a noise of some sort. The first few amateurs in the hall started the ball rolling by using these whistles to send code messages back and forth across the hall. As more amateurs came into the room the noise was added to and the dots and dashes flew thick and fast until such a state of interference was caused that no one could read a single message. One of the amateurs who sat in the balcony came all prepared with a Magnavox, storage battery and key. When the key was pressed the Magnavox "spoke" in a way that could not be misunderstood. This young man just about controlled the whole meeting with a few terse remarks at the right moment. His F B and H I and other abbreviations were certainly appreciated by the other amateurs present.

Dana A. Griffin, W2AOE

HAWAII DX

606-7 Lilienthal Rd., APO 915
San Francisco, Cal.

Editor, *QST:*

I have been a ham for only about three years. During these three years I have enjoyed RCC, WAS, WAC and a pretty good plug at DXCC. While enjoying my hobby, I also felt it was my duty to participate in the 75 meter traffic nets on both c.w. and fone. I have never refused a message or help in my few years.

Now I have been shipped to Hawaii and feel that this is probably my first and only good chance to acquire a DXCC award. At the same time I realize that now that there are 50 states, my QSL is in great demand as the 50th state in most cases. I feel that it is my duty to help these people out and I think nothing of filling out five or six log pages a week just for the QSL hunters. When the weekend comes around I see at last the chance to go after my DXCC award. I sometimes call "CQ DX" which by common usage means "CQ foreign country." At the end of my first CQ DX I have no less than 30 stations on the West Coast calling me. Before long I am deluged by half of the people on the band, so I cannot copy the weak DX calling. I then call QRZ DX, NO USA. This plea has no effect whatever in most cases.

If the band does not yield any DX, I am always glad to work my buddies back on the mainland the rest of the day. I always appreciate the fellow who hears my CQ DX and moves up about 5 kc. to give me a call. This enables me to search for any legitimate callers. If I don't hear any I will gladly answer the good operators off the freq.

Warren A. Wolff, KH6DGL/W5KKW

ADD SERVICEMEN

317 N. 9th St.
Montevideo, Minn.

Editor, *QST:*

Thanks for the article "Power Line Noise" by Richard Smith, W1FTX, in your November issue. He states that cooperation by amateurs is necessary — I would like to include radio and TV servicemen also.

I have been employed by a power company for the past 32 years. Part of my work is radio and TVI detection. We use the methods he mentions and have done so for years.

I take issue with the following statement he makes: "Conversation with other power company engineers indicates that not many of them are familiar with this type of noise either, which is surprising but true." I cannot agree with this. The power companies have construction standards written up from years of experience, which specify just what must be done to eliminate line troubles. We find that just a small percentage of complaints are due to lines. Many complaints are received and when investigated are found to be due to other causes. Some amateurs are prone to call all their interference "line trouble."

It is surprising some of the calls we get. For example, a person complains that the trouble is caused by his neighbor and would we do something about it. They request that we do not mention where the information came from. What would you do in a case like that?

I was at an interesting TVI demonstration some years ago. The chairman was an amateur. He called for questions from the floor after the meeting. A party got up and asked what the power companies did along this line. He answered in not too friendly a tone, that they did nothing. I got up and expressed my opinions and that I didn't like the statement made. He could have learned something about cooperation from an article such as Mr. Smith's. Believe me, the electric utilities get blamed for a lot of interference that they are not responsible for. Cooperation from those making the complaints would be appreciated.

I would like to see articles by amateurs in *QST* and other radio magazines on radio and TVI experiences they have had. There are, no doubt, quite a few "Hams" working for power companies with experiences that would be helpful to the rest of the amateurs.

In the words expressed by Mr. Smith, "Don't get tough" — let's cooperate.

C. A. Sampson, W9GBF

STRUGGLE WITHOUT NOVICES

P. O. Box 64
Croton Falls, N. Y.

Editor, *QST:*

We have all heard the screams about how crowded our

(*Continued on page 152*)

Operating News

F. E. HANDY, W1BDI, Communications Mgr.
GEORGE HART, W1NJM, Natl. Emerg. Coordinator
JOHN F. LINDHOLM, W1DGL, Ass't. Comm. Mgr., C. W.
ROBERT L. WHITE, W1WPO, DXCC Awards
LILLIAN M. SALTER, W1ZJE, Administrative Aide
ELLEN WHITE, W1YYM, Asst. Comm. Mgr., Phone

1960. Let's face it; a New Year is ahead. This is written before all 1959 work has been reported, but we dare say that the old year is going to show more awards and certifications granted, and a larger volume of traffic reports and emergency tests reported than in earlier recorded ARRL history. We hope you enjoyed some part in this; also, that as an amateur and League member you hold an SCM Official Station post or leadership role or will hold them and share some of our results and rewards in the ever-rewarding hobby of Amateur Radio in 1960.

An ARRL aim is to provide objectives such as appointments, award recognitions and mechanisms to make our communications skills honestly useful to ourselves and others. Special activities help make a greater sum total of radio results for those who take part, and can be a stepping stone to individual increases in proficiency. Overall, our radio operational results are the sum of each station's activity, and the organization efforts of each member and field organization leader. The substantial progress of our National Traffic system and ARRL Emergency Corps is the result of these organized efforts.

Things to Go After. As you sum up your individual radio records of the past year, large or small, let these just be a stepping off point for getting the most out of amateur operating in the *coming* months. Watch the Activities Calendar which appears in this section of *QST*. Each month it will show the operating activities. Besides the four major contests, VHF SS, DX Contest, SS, and Field Day, there are code runs for certificates, FMTs for higher precision frequency measuring, CD parties for fraternalism and station testing etc. But you the member have to select some items and apply yourself, or it's no show. You profit in this game only in proportion to your participation. We suggest making use of these ARRL sponsored activities in 1960 to become a more versatile amateur. Recognition, appointments, and operating results come only as one bestirs himself. How you do it is evaluated by you. Keep in mind, however, a certificate or QSL card can turn sour instead of standing for a proud result, if not earned or achieved with courtesy, and decency in operating, conforming to the individual and group rules and standards of the fraternity.

Some simple questions get us quickly from the general to the specific. Do *you* have WAS or DXCC? CP-35? RCC? QSLs, memories, and operating know-how from your time in the DX Test, VHF-SS, SS, or FD? OMU, AREC cards, RACES identification? Use phone, c.w., RTTY? Net membership? H.f. . . . v.h.f.? BPL? OES, OPS or ORS? This, we think, is the year to decide to go after some of the new things, that you haven't achieved in the past, as well as to extend past records. Nineteen-sixty is a good year to go for some new angles in Amateur Radio.

V.H.F. SS. Did you have a good time in the November Sweepstakes? Here's another one, but this one exclusively for v.h.f. The dates are Jan. 9–10 and besides giving your v.h.f. gear a thorough workout, it's a chance to get new States and ARRL sections on bands 50 Mc. up. Novices and Technicians now use *both* six and two, and according to advance reports this will be the biggest V.H.F. Sweepstakes ever. You can depend on there being v.h.f. activity going on simultaneously in every part of the nation. ARRL extends the cordial invitation for you to take part. Your reports on what you work in the period of the V.H.F. SS, large or small, are welcomed. See the detailed announcement in December *QST*.

ARRL's International DX Test. February and March will mark the dates for the annual DX fray. We always run the announcement well in advance, so it has time to reach all overseas points beforehand. As usual, we have airmailed data to key spots, and invited other nation's societies to invite their members to take part. It should be a good test. Four separate week ends are provided to level out the QRM and to get insurance against propagation conditions being bad for a given week end. We'll *hope* for the best conditions for our phone and c.w. week ends. If time permits and you have a "full gallon," you will of course be out to win; but the chief patrons of DX contests are always those looking for more DX and some new countries that may only show at this time of year. Good hunting!

Alaska and Hawaii Make New States for DX to Look For. Last year's DX contest rules were printed before we knew whether or not Alaska would make statehood by the DX test dates, so no change was then made. This year for the first time the DX competition rules place both Alaska and Hawaii on the same side as the other 48 states — looking for DX countries. During the year we made a survey of all DX participants in the two new states, and while some

were strong for keeping KL7 and KH6 in a countries status for the contest as well as for DXCC, the *majority* favored the contest change we now make official. (There's *no* change in status for these areas to count as DXCC countries in view of their geographical separation, of course.) *In the contest* all amateurs outside the United States and Canada will now have a better chance to accumulate credits for WAS. And we hope DXers in both new states will have a holiday working on a "new side" in the contest.

December-January Prospects for 1.8 Mc. Work Good. "For some years back, special tests have taken place on the 160 meter band, especially with the G's. W1BB has worked some 55 countries on this band. I, myself, worked W, VE, FA, and other DX when I was G6WY. Many G's do not use more than 10-watts, but some G's have worked ZL's on this band, ultimate DX for 160. Working to get across at this season is a fascinating past time. I recall contacting a 6-watt W1 some years back.

"Now that the sun spot cycle is swinging back to the l.f. bands, I hope some organized activity can be arranged. This is a plea to bring fellows from the higher frequency bands down to 1.8 Mc. to try and see what can be done in North America. These winter evenings will bring real good c.w. DX, if only the fellows will come on and give the band a real work out. Let's have a real burst of activity on 160 meters this winter."

— *H. A. M. Whyte, VE3BWY ex-G6WY.*

— *F. E. H.*

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When hurricane "Gracie" moved in on the coast of South Carolina on Sept. 28, she found the amateurs there already organized and waiting for her. The network had started during the afternoon, and by 2000 all agreed-upon points had the communications they required, with net control at K4CNZ and a two-meter link to Red Cross headquarters. Other links were formed to OCDM regional c.d. headquarters (W4POI), state c.d. in Columbia and local c.d. people in the storm area. Traffic flowed smoothly into Red Cross headquarters and c.d. emergency headquarters in Charleston. By the evening of Sept. 28, emergency generators were put into operation, and by Tuesday morning the entire network was operating on emergency power.

Late in the evening of Sept. 28 the need for a high-powered mobile communications unit became apparent; whereupon W4ZRH, state r.o., contacted Shaw Air Force Base and obtained the services of the MARS van which, after some difficulties because of rain, wind and storm damage, was met at Charleston city limits by a police escort and directed to operational headquarters. Here, complete with its crew of two operators (W4HMS and K4RLX) and four power and maintenance technicians, it operated as net control until the morning of Sept. 30, handling over three hundred messages on a 24-hour basis. Call used was K4FAI/mobile.

W4ZRH estimates that approximately 2800 messages were handled by the network from 1800 Sept. 28 to noon on Sept. 30. Traffic consisted of weather advisories, Red Cross business, civil defense functions and many similar official communications. After the storm, RACES v.h.f. equipment was utilized in assisting police to minimize looting by checking on people going into disaster areas. The following additional amateurs are mentioned as having taken part: *K4s* FEB (operators: *K4s* SPQ/4, YYN YYO BRP, *W4s* EKD CSP ITU) PQU/mobile GRW/mobile UXF YCU PLK CNG LXF/mobile IFH YBG YCT YYR KSY, *W4s* SOD IYA THZ VPN ERG ZRH BCZ. A nice job of emergency communications by the Charleston, S. C., group.

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Amateurs in Camden, S. C., were ready for "Gracie" long before her actual arrival. As early as 1100, Sept. 28, they were set up at City Hall with three stations reporting in from the north, east and west outlying areas. Operators at this station remained on duty long after the emergency was over, assisting with messages to and from other stricken areas. Those mentioned: *K4s* YQE YOE GGP ULP ZUK STM KBC, W4JDH, *KN4s* JPV JPX JPT KAL. — *W4DX.*

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On October 1 at approximately 0500 a tremendous gasoline explosion at a refinery just north of Charleston, S. C., created an emergency situation that required amateur communications facilities to go into action. W4ZRH requested broadcast stations to send out an appeal to all amateurs with mobile equipment to assemble at a point near the fire. By 1030, communications were established between the Emergency Red Cross location and Charleston Air Force Base MARS station, rendezvous point for mobiles, and police control points near the scene of the disaster. Subsequently c.d. and local amateur v.h.f. equipment was placed into operation between the police control point, Charleston Air Force Base MARS station and the Red Cross control center. This v.h.f. circuit was very effective for local traffic. The following amateurs took part in this emergency: *W4s* EKD CSP ADZ IUT IVE OOH TPE ZRH ZJU VPN DAW, *K4s* SPQ RJZ CNZ CNG USA. The group was congratulated publicly by many important officials for their fine work. — *W4ZRH, State Radio Officer, S. C.*

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Amateurs in Western Florida assisted the Okaloosa County sheriff's office in patrolling streets and highways and reporting damage during tropical storm "Irene" on October 7 and 8. A portable ten-meter station was set up in the sheriff's office in Fort Walton Beach. Other stations, previously installed for just such an occasion, were activated at Fort Walton police department and at the Eglin Air Force Base Hurricane Command Post. Mobile units, accompanied by uniformed members of the sheriff's posse, patrolled all highways in south Okaloosa County, reporting

VE1US, EC for Nova Scotia's south shore, operates his mobile rig during Liverpool's Bi-Centennial of Civil Defence, a c.d. exercise held in September.
(Photo by Bob Brooks, Yarmouth, N. S.)

stalled cars, power lines down, road and weather conditions. The net was in operation from 1800 Oct. 7 to 0500 Oct. 8. Several local stations also maintained contact with long haul nets on 75 and 40 meters. The following amateurs participated: *W4s* EWJ RKH IQK BPJ MFY SMM UXW AOK BLQ BVE NFJ SYP, *K4s* MDJ PHG UPI AAK JSJ MTQ UBR LOL OSY, *W5s* WOQ/4 RHE/4, *K5s* AOQ/4 GBS/4, W6RRZ/4, W7NFG/4. — *W4RKH, SCM Western Fla.*

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On Oct. 10, electrical storms and heavy rains left the city of Columbus, Miss., without any communications except radio. Members of the Tombigbee Amateur Radio Club, along with supporting stations in Mississippi and Alabama, assisted in maintaining communication until regular service was restored. Stations participating: *K4s* PHH/mobile, TDJ, DQL HCA, *K5s* LIC MHR EFA, *W5s* BEV JJA BX RIM. — *W4AOZ.*

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W5ODK/mobile witnessed a serious auto accident near Tulsa, Okla., on October 10. Immediate contact was made with W5OPQ in Tulsa, who summoned police and ambulance aid. K5LMIS/mobile, near the scene, also assisted by directing the ambulance to the accident location. — *W5ODK.*

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The Virginia Phone Net (VFN) mobilized its forces into action on October 30 when communications were needed in connection with rescue operations for a crashed air liner. K4CHA situated himself in the middle of the search area and acted as main liaison link with the rescue teams. Mobile stations with the teams passed information to K4CHA on six meters, who then relayed it via the net to appropriate agencies throughout the state. W4BTL represented Roanoke and W4DVQ was on hand for Montebello. These three stations maintained contact for 14 hours on Oct. 31 and approximately six hours on Nov. 1. W4ONV acted as net control during the first part of the emergency sessions and W4BGP during the latter. Stations throughout the entire eastern U.S. assisted in keeping the frequency clear. FCC invoked voluntary clearance of the channel 3830-3840 kc. during this emergency. — *W4BGP.*

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At the rate we are going, we will soon have a pretty accurate overall check on the status of our AREC each month. *Thirty-three* SECs reported September activities in as many ARRL sections, edging a good step closer to the halfway mark in monthly SEC reporting. AREC members in these sections, according to these reports, totals to 11,375. Two sections, Michigan and Eastern Florida, report AREC membership at over a thousand. One new section, Oklahoma, submits its first report for 1959. The number of different sections heard from so far in 1959 now stands at 40. You SECs that don't send in monthly reports are going to get lonely pretty soon. How about joining the crowd? Sections reporting: S. Texas, Ont., Mich., Ala., Nev., N. Dak., Wash., San Joaquin Valley, E. Fla., N. Mex., Tenn., S. Dak., Kans., W. N. Y., Colo., E. Pa., E. Bay, N. Texas, Okla., Ore., Utah, Md.-Del.-D. C., Wyo., Mo., Santa Clara Valley, Maritime, Vt., W. Mass., Minn., Ind., NYC-LI, W. Va., Wis. If we get past the halfway mark, we'll start listing the sections *not* heard from.

RACES News

Your NEC occasionally gets invited to attend OCDM communications conferences, and always accepts if at all possible. The most recent one was the OCDM Region IV Communications Conference, held at OCDM Operational Headquarters in Battle Creek, Mich., which is also Region IV headquarters. This took place in early November. Usually nearly half of the people attending these conferences are amateurs, but we think the percentage was rather lower than that for this one. The rest were communications and/or warning officers, non-amateur radio officers, a few c.d. directors, heads of other services, institutional, agency or manufacturers' representatives, etc. A good many of them knew nothing whatever about communications, and some of them very little about civil defense. Yet, this was a civil defense communications conference. (One OCDM official explained that this was a means of getting good attendance, that the heads of services might attend functions such as these if the program looked reasonably attractive, whereas they might hesitate to send communications specialists — which struck us as a rather cynical outlook, but he's probably right.)

This is the station set up at the Camden, S. C., City Hall, which was in operation during Hurricane "Gracie." Standing, l. to r.: KN4JPV, W4DX, KN4KAL. Seated, l. to r.: K4ZUK, K4YOE, K4KBC.

And indeed, much of the program had little if anything to do with c.d. communications. Mr. James McGlynn, Region IV communications officer, opened the conference by mentioning the "islands of communication" that exist within states and communities, many of them unaware of the others' needs or facilities, and some not knowing even their own communication needs. We communicators, Mr. McGlynn said, must interpret and anticipate; this is part of our job.

We wish there was room here to give you a full report of the conference. For the nonce, it will have to suffice to say that it was interesting, instructive and well-run; and although from our own standpoint we could have wished for a more strict adherence to the communications theme, the trip and the time spent were well worth while in terms of broadening experience and acquaintanceship. We met and chatted with (some again, some for the first time) amateurs from all five states of the region, with amateurs from OCDM operational headquarters and the various OCDM regions attending, with representatives from FCC and various manufacturers of communications equipment; and if we didn't learn much new about c.d. communications, we certainly absorbed a great deal of basic understanding of the overall civil defense picture.

TRAFFIC TOPICS

'Tis said that "nothing succeeds like success," and this must be true, because now that NTS is a going organization and still expanding in scope and facilities, it seems that everybody and every net wants to join it. We get quite a few letters asking us how.

For the individual traffic-inclined amateur, the answer to this is easy: take part in your section NTS net. Most sections have them, either on c.w. or phone or both. If yours is one of the sections that *doesn't* have an NTS net, there is nothing to prevent your forming one. Just get a copy of CD-24 to see what an NTS section net is supposed to do, then start organizing.

As a matter of fact, that's about the only way that a net *can* join NTS — by being organized specifically for the purpose. If the net is not formed with this in mind, some modifications will inevitably have to be made later in order for it to be considered a part of the system; for each net has specific meeting times, must perform specific functions, and must conduct specific liaison assignments if it is to do its job as a single link in the chain. For years we have fought to hold the line on this, to prevent NTS from deteriorating into a conglomeration of nets each going its own way about

its own business. On occasions, nets have vowed to do whatever is necessary in order that they can be considered a part of the system — but when the only thing that can be done is to dissolve the net and have its members participate in appropriate NTS nets that already exist, what can we say? CD-24 tells the story of what each NTS net does; if your net can do one of those things, and if it is not already being done by an existing net, it might be possible for your net to become a part of NTS. Otherwise, it certainly is not possible.

We think the main trouble is that many traffic men still do not understand the basic principles on which NTS was formed. It is not a membership organization for nets. It is a service organization of nets for two specific purposes. One is to get the traffic from its point of origin to its point of destination *systematically* in the shortest possible time; the other is to provide a maximum of training in handling record communication on a *systematic* basis. Sometimes these two objectives conflict with each other. NTS is designed to effect the best possible balance between the two.

Some time ago a prominent traffic man (think it was W4IA) proposed adoption of "NTS affiliate" nets, those nets which are not definitely a part of the system but which nevertheless conduct liaison with NTS nets. We hope that *all* traffic nets are NTS affiliates to the extent that they will use the system's facilities at whatever level needed, just as NTS will utilize non-NTS facilities if this is necessary to get the traffic through. We hope that all traffic nets will be affiliated with each other so that each can use the facilities of each other when necessary. NTS is a tight organization whose nets operate according to a certain pattern, but this does not mean that the system's nets are "closed" to traffic men who are not "members." The only thing is, just as you have to observe the traffic laws of another state when you are driving in that state, you have to observe NTS rules of procedure when you are operating in NTS nets.

Because your traffic net cannot be officially a part of the ARRL-sponsored system does not mean that the League hates you and therefore you should hate the League. Far from it. We love all traffic men and all traffic nets. If some NTS officials occasionally appear to indicate otherwise, be informed right here and now that this is not the official policy. Unfortunately, we cannot give any single net "publicity" merely as such. There is not enough room on these pages. But if your net is one of widespread coverage, send us your monthly data if you wish and it will be summarized herewith. If it is of section coverage, your SCM should summarize it in his monthly column.

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Net reports. Early Bird Transcontinental Net reports 31 October sessions, 863 messages handled. Eastern States Net had 302 check-ins, handled 322 messages in 30 sessions. The 7290 Traffic Net had 42 sessions, 1277 check-ins and handled 706 messages. The 20 Meter SSB Net handled 772 messages in 17 sessions with 307 check-ins. Mike Farad Emergency and Traffic Net operated 22 sessions, 415 check-ins handling 313 messages.

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National Traffic System. For the first time in NTS history, a section has transferred from one region to another, and this change moved it into a different area. Effective Nov. 1, 1959, Tennessee changed from the NTS Fifth Region to the Fourth Region, and on that date commenced regular representation in 4RN instead of RN5. All NTS net managers concerned have been notified of the change. This is a general notice to all NTS traffic men to the effect that traffic for Tennessee should now be routed via the Eastern Area Net and Fourth Region Net instead of the Central Area Net and Fifth Region Net as previously. This change was made strictly in accordance with NTS procedures, in which a section on a borderline between two NTS regions may be officially a part of either region, but not both.

October reports.

Net	Sessions	Traffic	Rate	Average	Representation (%)
1RN	31	811	.629	26.1	87.1[1]
2RN	62	436	.346	7.0	93.2
3RN	62	437	.307	7.0	88.7
4RN	62	767	.368	12.4	78.8
RN5	62	1362	.685	22.0	93.2
RN6	62	1618	.510	26.1	91.3
RN7	62	633	.280	10.2	41.7
9RN	52	1667	.859	32.1	80.8
TEN	62	1010	.575	16.3	67.9
ECN	19	33	.105	1.7	70.2[1]
TWN	31	465	.442	15.0	70.9[1]
EAN	27	1235	.856	45.7	96.3
CAN	31	1437	.904	46.3	100.0
PAN	31	1673	.767	54.0	100.0
Sections[2]	1029	8466		8.2	
TCC Central	62[3]	1503			
TCC Pacific	111[3]	1598			
Summary	1685	24151	CAN	12.5	CAN/PAN
Record	1551	21316	.928	12.3	100.0

[1] Region net representation based on one session per night. Others are based on two or more per night.

BRASS POUNDERS LEAGUE

Winners of BPL Certificates for October traffic:

Call	Orig.	Recd.	Rel.	Del.	Total
W3CUL	316	2201	1404	793	4714
W2KEB	277	2028	1684	377	4366
WØBDR	32	1287	1194	12	2525
K2UTV	307	1104	1073	31	2515
WØLGG	221	798	860	30	1909
W8UPH	23	880	792	84	1779
W9SCA	22	878	871	3	1774
W7BA	22	876	856	19	1773
WØLCX	33	692	663	37	1425
K5WSP	15	630	630	29	1334
W9DO	17	589	560	46	1212
K6HLR	24	582	490	22	1118
K6BPI	59	527	476	51	1113
W9DYG	27	544	503	35	1109
W6GYH	163	428	416	14	1021
W1SMU	56	486	448	22	1012
K1BCS	118	448	380	47	993
W6WPF	4	486	465	21	976
K1FDP	28	460	153	34	975
K4SJH	116	434	374	33	957
W6RSY	47	465	297	87	896
K4QES	9	432	430	2	873
W6EOT	4	430	405	20	859
K9DAC	22	398	379	19	818
W9NZZ	240	289	1	284	814
W7QLH	11	381	342	22	756
W1YBH	12	366	63	281	722
K4UBR	33	349	312	27	721
K1CIF/K1MMQ	67	281	233	23	704
KØKBD	20	361	301	17	699
W3IVS	29	328	302	26	685
K4QIX	14	311	314	31	670
K1GRP	22	324	309	14	669
W4AKC	13	380	257	6	656
W5CEZ	15	331	280	27	653
W7BDU	1	320	315	2	638
W1PEX	14	313	299	11	637
K2YZI	114	250	224	8	596
W9FJR	43	269	252	17	581
W1NJM	2	290	104	180	576
WØOHJ	6	285	276	9	576
W7DZX	6	283	255	22	566
W7ZB	25	268	246	14	553
W9TT	38	269	63	183	553
W9IDA	118	216	208	2	544
WØANA	36	309	141	45	531
WØKQD	102	221	198	5	526
W3VR	71	231	212	9	523
W9CXY	7	257	252	5	521
W2TPV	42	240	232	2	516
WA6BAM	9	201	210	91	511
W1KYQ	16	262	227	1	506
KØDTK	79	214	206	4	503

Late Reports:

W1SMU (Sept.)	46	381	335	8	770
K1LSM (Sept.)	11	278	252	17	558

More-Than-One-Operator Stations

Call	Orig.	Recd.	Rel.	Del.	Total
W6YDK	1065	1288	1183	55	3591
W1AW	22	1027	101	918	2068
K6MCA	25	473	486	30	1014
W6IAB	85	416	371	36	908
WØTUS	100	262	171	24	557

BPL for 100 or more *originations-plus-deliveries:*

K4QLG	327	KØSGJ	140	W9PCQ	111
K4HJK	224	K4AVU	139	K4LVE	110
W9DGA	211	K4PIA	138	W9TZN	110
K4CNY	205	W9ETM	130	WA6EEO	108
W5ZHN	195	W7AVN/5	129	W3TN	106
W1BDI	176	K9PLF	128	K9PDJ	102
K7BKH	158	KØGIW	125	W4ZKU	100
VE2WT	151	WØKJZ	125		

More-Than-One Operator Stations

KG1DT	297	K4WCZ	131	KØASR	105
WØDVL	228	W1YU	114		

BPL medallions (see Aug. 1954 *QST*, p. 64) have been awarded to the following amateurs since last month's listing: W3IVS, W3VR, K4AHA, W5ZHN, W7AVN/5, K7BKH.

The BPL is open to all amateurs in the United States, Canada, Cuba and U. S. possessions who report to their SCM a message total of 500 or more or 100 or more originations plus deliveries for any calendar month. All messages must be handled on amateur frequencies within 48 hours of receipt, in standard ARRL form.

A.R.R.L. ACTIVITIES CALENDAR

Jan. 7: CP Qualifying Run — W6OWP
Jan. 9–10: V.H.F. Sweepstakes
Jan. 15: CP Qualifying Run — W1AW
Jan. 16–17: CD Party (c.w.)
Jan. 23–24: CD Party (phone)
Jan. 31–Feb. 15: Novice Roundup
Feb. 3: CP Qualifying Run — W6OWP
Feb. 5–7: DX Competition (phone)
Feb. 9: Frequency Measuring Test
Feb. 15: CP Qualifying Run — W1AW
Feb. 19–21: DX Competition (c.w.)
Mar. 3: CP Qualifying Run — W6OWP
Mar. 4–6: DX Competition (phone)
Mar. 15: CP Qualifying Run — W1AW
Mar. 18–20: DX Competition (c.w.)
June 25–26: Field Day

OTHER ACTIVITIES

The following lists date, name, sponsor, and page of this *QST* in which more details appear.

Jan. 9–10: WAE DX Contest (c.w.), DARC (p. 77, this issue).

Jan. 23–24: First New Mexico QSO Party, Sandia Base Radio Club (p. 136, this issue).

Jan. 30–31: VE1 Contest, New Brunswick Amateur Radio Assn. (p. 146, this issue).

[2] Section nets reporting: MDDS, MDD (Md.-Del.-D.C.); NEB (Nebr.); SCN (Calif.); Iowa 75 Phone; WSN, WIN (Wis.); NJN (N. J.); VN, VFN (Va.); MKPN, KYN, KPN (Ky.); AENO, AENP, AENB (Ala.); FMTN, Gator, TPTN (Fla.); Tenn. CW, Tenn. Slow; TLCN (Iowa); MJN, MPN Evening, MPN Noon, MSN (Minn.); S. Dak. 40 Phone, S. Dak. 75 Phone, S. Dak. CW; CPN (Conn.); ILN (Ill.); WVN (W. Va.); WSN (Wash.); BCEN (B. C.); SCN (S. C.); QKS (Kans.); GSN (Ga.).

[3] TCC functions performed, not counted as net sessions.

Even with one region net and one TCC report missing, we smash previous records, including the average traffic per session. This latter is something we don't do every month. A nice October performance, fellows!

Region net certificates have been awarded to *K1s* HAN HWF LSM and W1ISO by 1RN manager W1BVR. W2PHX is back in the saddle in 2RN and notes that the teen age set takes over during the summer months just as the vacation set is leaving, a very workable arrangement for all; 2RN certificates have been awarded to *K2s* AOQ JBX MBU MIG UZJ YTD and W2TPV. W3UE says traffic is moving on 3RN, but some of it is luck and he wishes more would accept regular assignments. Correction: K5QNF is *not* the new RN5 manager (too busy with school), but is acting until one can be appointed; the search goes on. K6HLR has modified his RN6 log sheet so it is usable for all NTS nets; if enough interest is shown, he will get prices on having them printed up. KØKBD takes over TEN reporting starting with November; thanks to WØTOL for a fine job. KØEDH is the new manager of TWN, replacing W5DWB, whose business necessitated his resignation. EAN manager W8SCW notes that in October 2RN missed being represented on EAN on one session, its first miss in over four years; quite a record. W9DO is pleased with the operation of CAN, although TCC liaison to EAN gives them some trouble. W6PLG writes a nice chatty letter on the back of his PAN report form, the upshot of which is that PAN is having its troubles but is coming along all right, and Clem is feeling much better, thanks.

Transcontinental Corps. A TCC station may report into your NTS net, at any level, to distribute traffic. If this happens, he usually has some other traffic to get rid of on other nets, so don't hold him up if it can possibly be avoided. Get his traffic cleared and get him on his way. TCC stations are the only ones in NTS who are encouraged to "net hop" — but this for distributing received traffic, not for receiving it. The traffic should be received at area level only. October Reports:

Area	*Functions*	*% Successful*	*Traffic*	*Out-of-Net Traffic*
Central	62	96.8	3006	1503
Pacific	111	90.1	3186	1598
Summary	173	92.5	6192	3101

The TCC roster: Central Area (WØBDR, Director) — *WØs* LCX SCA BDR LGG, W9CXY; Pacific Area (W6EOT, Director) — *K6s* OJV ZYZ HLR LVR GID, *W6s* EOT WPF IZG HC CMA, K7CWV, *W7s* GMC ZB BDU, *KØs* EDH EDK, *WØs* ANA KQD.

CONTEST NOTES

The following little gems of error crept into the ARRL International DX Competition Results, as reported in October *QST*. W6WWD should have been listed as the c.w. winner for the Northern California DX Club. His score added, causes the Northern California DX Club with 4,803,610 points to overhaul the Southern California DX Club with their corrected score of 4,353,606 points. Therefore, the standings are reversed with the Northern club third, and the Southern club fourth. Add W6BXL to the disqualified list.

Multi-op station VE2JC was incorrectly listed as VE2ABE, one of the operators. W6OJW's c.w. entry was listed with the phone scores of East Bay. OA5AGI should have been listed as OA4AGI. UA6KVB was incorrectly listed as UA9KVB.

Apologies to all concerned for the above incorrect listings.

WIAW OPERATING SCHEDULE

(All times given are Eastern Standard Time)

W1AW returned to its Fall-Winter operating schedule with the return to Standard Time. General operation covers all amateur bands on which W1AW has equipment. Novice periods include operation on 3.5, 7 and 21 Mc. (see footnote 2 in box on p. 76, November *QST*). Master schedules showing complete W1AW operation in EST, CST or PST will be sent to anyone on request.

Operating-Visiting Hours:

Monday through Friday: 1500–0300 (following day).

Saturday: 1900–0230 (Sunday).

Sunday: 1500–2230.

Exceptions: W1AW will be closed from 0300 Jan. 1 to 1900 Jan. 2 in observance of New Year's Day, and from 2230, Feb. 21 to 1500 Feb. 23 in observance of Washington's Birthday.

General Operation: Use the chart (p. 76, November *QST*) for determining times during which W1AW engages in general operation on various frequencies, phone and c.w. Note that since the schedule is organized in EST, certain morning operating periods may fall on the evening of the previous days in western time zones. W1AW will participate in all official ARRL operating activities, using scheduled general operating periods for this purpose if necessary.

Official ARRL Bulletin Schedule: Bulletins containing latest information on matters of general amateur interest are transmitted on regular schedules:

Frequencies (kc.):

C.w.: 1820, 3555, 7080, 14,100, 21,075, 28,080, 50,900, 145,800.

Phone: 1820, 3945, 7255, 14,280, 21,330, 29,000, 50,900, 145,800.

Frequencies may vary slightly from round figures given: they are to assist in finding the W1AW signal, not for exact calibration purposes.

Times:

Sunday through Friday: 2000 by c.w., 2100 by phone.

Monday through Saturday: 2330 by phone, 2400 by c.w.

Code Proficiency Program: Practice transmissions are made on the above listed c.w. frequencies (except 1820 kc.) starting at 2130 daily. Speeds are 15, 20, 25, 30 and 35 w.p.m. on Monday, Wednesday and Friday, and 5, 7½, 10 and 13 w.p.m. on Sunday, Tuesday, Thursday and Saturday. Approximately ten minutes of practice is given at each speed. *Exceptions:* On Feb. 9 W1AW will transmit a special Frequency Measuring Test and on Jan. 15 and Feb. 15 W1AW will transmit ARRL Code Proficiency Qualifying Runs instead of the regular code practice.

Here's the lad that paced the field in the last two c.w. CD Parties. OO, K5DGI, shows how he racked up 287,000 points. Wes, an LSU student, has that top shelf reserved for a kw. So watch out come next summer!

RESULTS, OCTOBER CD PARTIES

Two Louisiana boys battled it out for top honors in the October c.w. CD Party. For the second Party in a row, K5DGI came out on top, this time with 287,000 points with 815 contacts in 70 sections. Top QSO figure and second high score went to K5ESW who racked up 819 contacts in 69 sections, good for 283,935 points. Rounding out the top five were W4KFC, W1RAN, and K6SXA, who once again proved you can score big from the west coast.

The phone bit was taken by W1ECH, who again battled his way to the top of the heap. Gary scored 147 QSOs in 28 sections to lead by quite a comfortable margin over K2PHF, with 108 contacts in 28 sections. K2LXL, K1MID (ex-K2QZS) and W3NF, rounded out the top five.

The following are the high claimed scores. Figures show score claimed, number of QSOs, and number of different sections worked. Final and complete standings will appear in the January *CD Bulletin*.

C.W.

K5DGI	287,000-815-70
K5ESW	283,935-819-69
W4KFC	264,875-808-65
W1RAN	222,020-647-68
K6SXA	220,500-625-70
W3MSR	209,250-668-62
W3KLA	186,310-601-62
W8IBX	178,880-554-64
W9JJN	172,900-525-65
W9RQM	170,495-552-61
VE3BZB	167,445-545-61
K5BSZ	161,280-507-63
W3NF	159,000-523-60
K4RJM	157,185-495-63
WØNYU	155,610-487-63
W9FVT	153,110-502-61
W9MAK	152,775-478-63
W9LNQ	148,535-482-61
K4CAX	147,915-512-57
W8SCW[1]	145,500-479-60
W1TS	143,010-447-63
W4DQS	137,860-445-61
K4PUZ	129,300-431-60
W1WAJ	127,965-443-57
K4OYR	126,300-414-60
KØOBF	123,520-383-64
W4PK	122,760-389-62
W9IOP	121,000-433-55
K4PIA	120,960-427-56
K5LMJ	120,950-410-59
K4BAI	119,880-438-54
W2REH	119,780-450-53
W1AQE	119,400-398-60
K8JLF	117,740-400-58
K8HGT	114,755-385-59
W4DVT	113,390-384-58
W2SZ[2]	112,500-368-60
W8PBO	111,360-380-58
KØAZJ	109,910-375-58
W7RGL	106,750-343-61
W3ADE	106,590-367-57
K5TYW	106,445-342-61
K8KCO	103,380-367-56
K2SSX	103,275-400-51
K9ELT	103,240-352-58
W3IWJ	103,125-371-55
W6BES	102,600-353-57
W2DRV	100,170-371-53

PHONE

W1ECH	21,560-147-28
K2PHF	16,100-108-28
K2LXL	14,000-108-25
K1MID	13,800-111-24
W3NF	13,340-109-23
KØKYK	10,400- 77-26
K3ANS	10,200- 98-20
W1DXS/1	8010- 89-18
W2COB	7790- 82-19
W3MSR	7665- 66-21
W8NOH	7200- 55-24
K2QDT	6365- 67-19
K1DPM	6120- 69-17
W1VW	5850- 61-18
VE2CP	5580- 55-18
W4JUJ	5400- 47-20
K2JTU	5250- 48-21

[1] K2SIL, opr.; [2] W2CEV, opr.

Leading the phone gang is no new game for W1ECH. Gary's DX-100 came through with 147 contacts in 28 sections for 21,560 points. An audio change, described by Gary in "Hints and Kinks," November *QST*, is a boon, no doubt, to scoring big.

RESULTS, SEPTEMBER FREQUENCY MEASURING TEST

The September 16, 1959 FMT, open to all amateurs, brought entries from 254 participants who made a total of 1092 measurements. Of these, 145 ARRL Official Observers submitted 657, and 109 non-OOs made 435 readings. All taking part have received individual reports of their readings. The standings accredited to the more precise in each group appear below; all listed show ability of the highest order in Frequency Measurement. February *QST* will announce details on the next ARRL FMT.

Observers	*Parts/ Million*	*Non-Observers*	*Parts/ Million*
W5NKH	0.0	K6IYF	0.0
W8CUJ	0.0	W6YAW	0.0
W1LER	0.2	W1PLJ	0.1
W2FE	0.2	WØWKO	0.1
W4JUI	0.2	K6RTD	0.2
K6OQD	0.2	W8GQ	0.2
W9VZF	0.2	W4VGO	0.3
W1MUN	0.3	W4SHL	0.4
W8YCP	0.3	WØSIN	0.6
W8GBF	0.4	W4HER	1.0
W9PPD	1.4	W6FVO	1.6
W9TZN	1.6	WØLFI	1.7
W6GQA	2.0	K6HI	2.9
W2AIQ	2.1	W6MMC/7	3.5
K6OHJ	2.4	K2LMG	3.8
W9ZFA	3.2	W5TBG	5.5

The following rating is based on a single measurement: OO — W5VEZ 0.9.

RTTY NOTES

Results of the RTTY Sweepstakes of October 30 and 31 have been received from W6AEE of the RTTY Society of Southern California. Leading the pack was W3CZE with 8640 points with 108 contacts in 40 different sections. Close behind in contact total was W2RUI with 99 to score second high with 6732 points. Of the 152 stations reported active in the contest, 48 submitted log entries.

The figures after each call in the listing show score, number of QSOs, and number of different ARRL sections worked.

W3CZE	8640-108-40	VE7KX	2132- 41-26
W2RUI	6732- 99-34	K6DSQ	2128- 38-28
W5YM	6650-	W4GJY	1932- 42-23
WØAJL	5740- 82-35	K6JPR	1892- 43-22
WØMPF	4836- 78-31	W6CG	1680- 35-24
W5BGP	4686- 71-33	W6NRM	1584- 36-22
W1OUG	4020- 67-30	W9VMG	1404- 39-18
W2TKO	3815- 55-35	K9BRL	1197- 29-21
W8CAT	3528- 63-28	WØFQW	1176- 29-21
W1BDI	2632- 47-28	W2JCM	1140- 30-19
W2JAV	2610- 45-29	K6OWQ	1134- 27-21
WØGK	2175- 44-25	W4JXG	1008- 28-18

Walt Ermer, W8AEU, receives the "Amateur of the Year" award from Jack Siringer, W8AJW, convention chairman, at the Cleveland Amateur Radio Convention banquet, Oct. 17. And well-deserved it is. Walt, EC for Cuyahoga Co., Ohio, has over 300 AREC members enrolled throughout the county in one of the most active, if not the most active, AREC groups in the country.

DXCC NOTES

Announcement is hereby made of the addition to the ARRL Countries List of Cargados Carajos, VQ8. Cargados Carojos Shoals is located in the Indian Ocean approximately 260 miles NNE of Mauritius.

Announcement is also made of the addition to the ARRL Countries List of Willis Islands, VK4. The Willis Islands are located in the Coral Sea outside the Great Barrier Reef, Queensland, Australia and approximately 240 miles east of Port Douglas. Both of these additions are made by virtue of point 2 as explained in the July 1959 *QST*, page 84.

DXCC credit will be given starting March 1, 1960 for creditable confirmations dated on or after November 15, 1945. This is to permit foreign amateurs to start receiving credits at the same time as those in the U. S. A. Confirmations received prior to March 1, 1960 for these countries will be returned without credit.

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We wish again to call attention of workers for DXCC to Rule 11 of conditions for that award. This rule was written to assure high ethical standards for all DXCC-certified amateurs. Unfortunately there have been some, each year, who submit manufactured or altered confirmations to attain the award. Any confirmations submitted for DXCC credit should be reviewed with Rule 11 in mind. ARRL has to base disqualifications directly on any confirmation as submitted. Necessarily the rule cannot be concerned with *who* may have made a patent alteration, so *before* you submit cards or other evidences, scan them most carefully. If any have reached you with mark-overs or are wrong in other respects, avoid disqualification by going after a new card at the source. Complete rules are in every *Handbook*, in every copy of *Operating an Amateur Radio Station* and appear on the Operating Aid No. 7, the Countries List. A line to Headquarters will bring a copy of the DXCC Rules.

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The Countries List which appears with the announcement of the ARRL International Competition is for use in the 1960 Competition *only*. It is not a complete DXCC Countries List. The complete Countries List is available on request.

CODE PROFICIENCY PROGRAM

Twice each month special transmissions are made to enable you to qualify for the ARRL Code Proficiency Certificate. The next qualifying run from W1AW will be made Jan. 15 at 2130 Eastern Standard Time. Identical texts will be sent simultaneously by automatic transmitters on 3555, 7080, 14,100, 21,075, 28,080, 50,900 and 145,800 kc. The next qualifying run from W6OWP only will be transmitted Jan. 7 at 2100 PST on 3590 and 7129 kc.

Any person can apply. Neither ARRL membership nor an amateur license is required. Send copies of all qualifying runs to ARRL for grading, stating the call of the station you copied. If you qualify at one of the six speeds transmitted, 10 through 35 w.p.m., you will receive a certificate. If your initial qualification is for a speed below 35 w.p.m. you may try later for endorsement stickers.

Code-practice transmissions are made from W1AW each evening at 2130 EST. Approximately 10 minutes' practice is given at each speed. Reference to texts used on several of the transmissions are given below. These make it possible to check your copy. For practice purposes, the order of words in each line of *QST* text sometimes is reversed. To improve your fist, hook up your own key and audio oscillator and attempt to send in step with W1AW.

Date	Subject of Practice Text from November *QST*
Jan. 5:	*35 Watts Audio — 90 Cubic Inches*, p. 24
Jan. 8:	*Power-Line Noise*, p. 26
Jan. 12:	*Your "On-the-Air" Personality*, p. 29
Jan. 18:	*A Glimpse of Russian Amateurs*, p. 50
Jan. 21:	*Circle Completed*, p. 52
Jan. 28:	*Recruiting More Hams*, p. 53

SUPPLEMENT TO NET DIRECTORY

The following listing will supplement and correct the listing on page 79, November *QST*. Please inform us promptly of any errors or omissions so that they can be included in the March *QST* installment. An asterisk (*) indicates correction from previous listing in November *QST*. A double asterisk (**) indicates net is part of the ARRL National Traffic System. This listing brings the record up to date as far as Nov. 18, 1959. Registrations received after that date will appear in the March *QST* supplement.

Net registrations that do not show a traffic or emergency purpose are not included. Only nets which have been registered or reregistered since Aug. 1, 1959, are included. This list does *not* include nets listed in November *QST* unless a change is shown.

Important note: QST net listings are for *information only*. Insofar as possible, net information is listed exactly as received. Certain common abbreviations are used to conserve space in net names, and under column headed "Days" the following abbreviations are used: Sn, Sunday; M, Monday; T, Tuesday; W, Wednesday; Th, Thursday; F, Friday; S, Saturday; Dy, Daily, including Sunday; 1/M, first Monday of month (& similar); 1/3M, first and third Mondays of month (& similar). Listing in *QST* or the annual ARRL cross-indexed net directory does not signify necessarily that nets listed have any official status, does not entitle them to exclusive or prior right to the frequency or frequencies on which they are registered, and is in no sense a form of copyright.

Name of Net	*Freq.*	*Time*		*Days*
AENI Valley Net (Ala.)	3885	1330	EST	Sn
The After-the-Net Net (ATNN)	3910	1900	CST	W
Akron (O.) CD Disaster Net	50,700	1900	EST	M
Ala. Emerg. Net J (AENJ)**	3900	1330	CST	Sn
Ala. Emerg. Net (O)**	50,550	1915	CST	MWF
Ala. Emerg. Net "P" (AENP)**	3955	1800	CST	Dy
		0630	CST	M-S
		0800	CST	Sn
Ala. Emerg. Net "S"	3825	1330	CST	Sn
Albuquerque VHF Net (N. M.)	146,802	1900	MST	T
Amateur Radio Caravan Club of New Mexico Net	29.600	1930	MST	W
American Legion Amateur Radio Net, Inc.*	3975	1900	PST	Dy
Antilles Amateur Weather Net	7245	0700	AST	Dy
		1700	AST	Dy
Anniston Emergency Net "Y" (AENY) (Ala.)	3830	2030	CST	M

Atlanta 10 Meter Phone Net	29,600	2200	EST	Sn
Badger VHF Club Net (BVHFCN) (Wis.)	51,100	2000	CST	Sn
Baltimore County Emerg. Net ...	29,250	2130	EST	3/M
Barry Amateur Radio Net (Mich.)	50,550	2100	EST	M
Beaver Valley Emerg. Net	145,350	2100	EST	W
Bedford (Mass.) CD & AREC Net	29,120	2000	EST	M
Belleville CD Net (N. J.)	146,250	0930	EST	Sn
Berrien County Emerg. Net (BCEN) (Mich.)	29,610	1430	EST	Last/Sn
Birmingham Mobile Emerg. Net Ala.	29,560	1300	CST	Sn
		1900	CST	Th
Boston Red Cross Net (BRCN)	29,650	2000	EST	M
Breakfast Club Net	3873	0400	CST	Dy
British Columbia Emerg. Net (BCEN1)**	3650	1900	PST	M-S
British Columbia Emerg. Net (BCEN2)**	3650	2200	PST	M-S
Broome County Regional AREC Net (N. Y.)	50,400	2100	EST	F
Brown County Emerg. Net (B.C.E.N.) Wis.)	3950	1330	CST	Sn
Burlington County RACES Net (N. J.)	29,580	1945	EST	F
	51,000			
	146,320			
Buzzards Bay, Cape Cod & Islands Emerg. Net (Mass.)	145,260	1900	EST	M
Calif. Civil Defense Net (CCDN)	3501	1900	PST	M
		2000	PST	T-F
Cambria County CD Emerg. Net (Pa.)	29,470	2000	EST	T
Capitol Area Radio Emerg. Net (N. Y.)	145,350	1500	EST	Sn
Carbon County AREC Net (Pa.)	3840	0900	EST	S
Carroll County Net (Md.)	29,300	2130	EST	M
Catawba County Races Command and Information Net (N. C.)	146,820	1900	EST	T
Cedar Valley 6 Meter Civil Defense Net (CVCDN) (Iowa)	50,400	2000	CST	W
Central Area Net (CAN)**	3670	2030	CST	Dy
Central Fla. Operational Area C.D. Net (CFOA)**	145,210	0700	EST	M-Th
Central Ill. Net (CIN)	1815	0830	CST	Sn
Central Kans. Phone Net	3930	0730	CST	S
Central Texas Emerg. Net (CENTEXEN)	3870	0830	CST	Sn
Channel Cities Net (CCN) (Cal.)	145,800	1830	PST	M-F
Cherokee Emerg. Phone Net (Ga.)	3965	1330	EST	Sn
Chicago FMN-1 AREC Net	147,500	2000	CST	Th
Chicago RACES Net	145,200	2000	CST	Th
Chicago Six Meter RACES Net	50,540	2200	CST	Th
Chittenden County AREC 2-Meter Net (CCAREC) (Vt.)	145,800	1110	EST	Sn
Colorado CW Net (CCW)**	3655	2000	MST	M-F
Colo. Weather Net (CWXN)	3945	0645	MST	M-S
Concord AREC Net (Mass.)	146,520	2100	EST	M
Conn. 6 Meter Phone Net (C6PN)	50,580	1945	EST	MTh
Conn. VHF TFC & Emerg. Net**	145,980	2030	EST	MWF
Copper State Net (CSN)**	3880	1930	MST	M-F
CQ Radio Club Net (Conn.)	146,700	1900	EST	T
Cumberland Valley Amateur Radio Club Emerg. Net (Pa.)	29,400	2200	EST	Sn
Deep Sea Dragnet (DSD)	3970	1145	EST	M-S
Del Co AREC 10 Mtr Net (Pa.)	29,050	2130	EDT	Sn
Delaware Emerg. Net	3905	1830	EST	S
Dog House Net (Ohio)	3860	1800	EST	M
Early Bird Transcon Net (EB)*	3845	0500	CST	Dy
East Central Ind. 6M Phone Net	50,400	2100	EST	M-S
Eastern Area Net (EAN)**	3670	2030	EST	Dy
Eastern Area Slow Net (EASN)	3748	1800	EST	Dy
Eastern Mass. Net (EMN)**	3660	1900	EST	M-F
Eastern Seaboard Teen Age Net (EASN)	7250	1530	EST	M-F
Eighth Regional Net (8RN)**	3530	1945	EST	Dy
		2130	EST	Dy
El Paso Ten Meter Emerg. Net	29,640	1930	MST	M
Everett Emerg. CD Net (Mass.)	29,560	1930	EST	M
	146,900			
Evergreen Emerg. Net (Wash.)	51,000	1930	PST	TTh
Evergreen State Net	3920	1700	PST	M-S
Finger Lakes Net (N. Y.)	145,350	2100	EST	F
Five Town's Net (N. Y.)	146,100	2000	EST	M
Florida (East & West) Net (QFN)**	3650	1830	EST	Dy
Frisco Net	3810	0900	CST	S
Fulton County Amateur Net (Ill.)	3810	1330	CST	Sn
Fulton County (O.) Net	1821	2000	EST	W
Genesee County Emerg. Net (Mich.)	29,480	2000	EST	W
	145,260			
Ga. Cracker Mobile Net	3995	1330	EST	Sn
Ga. Cracker Net	3995	0800	EST	Sn
		1800	EST	T-Th
Ga. Teenage CW Net (GTN)	7125	1300	EST	S
Ga. Teen-Age Net (GTN)	7290	1000	EST	S
Granite State Phone Net (GSPN)**	3842	1900	EST	Dy
The Graveyard Network	3885	0400	EST	Dy
Greater Atlanta VHF 6 Meter Net	50,200	2030	EST	F
Green Mountain Net (GMN)**	3855	1730	EST	M-S
Gulf Coast SSB Net	3925	1730	CST	Dy
Hair Pin Net	29,130	1300	EST	T
Ham Butchers Net	7280	1205	CST	M-F
Hamilton County Emerg. Net (Iowa)	1815	1830	CST	Dy
Handy Cappers Phone Net	7280	0830	CST	MWFS
Hi-Plains 160 Meter Emerg. Net	1815	1830	CST	MTh
Idaho Weather Net	3970	0700	MST	M-S
Illinois CW Net (ILN)**	3515	1900	CST	M-S
Illinois Emerg. Net (IEN)	3915	0800	CST	Sn
		1730	CST	TTh
Illinois Emerg. Net (IEN)	3940	0800	CST	Sn
		1900	CST	TTh
Ind. Mich., Ohio Net (IMO)	50,850	1815	EST	M-F
Indiana Phone Net (IPN)**	3910	0800	CST	Dy
		1730	CST	M-F
Ind. State Traffic Net (QIN)**	3656	1900	CST	Dy
Ind. State Training Net (QIN)	3745	1800	CST	MWF
Interstate Phone Net (IPN)*	3980	1530	EST	M-S
Iowa City Six Meter AREC Net	50,400	2030	CST	W
Jasper County Emerg. Net (Iowa)	1810	1830	CST	Th
Jefferson Six Meter Net (La.)	50,100	2000	CST	T
Johnson Wyandotte County 10 Meter Emerg. Phone Net (JOWY) (Kans.)	29,600	1930	CST	W
Kankakee Area Net (Ill.)	3920	1200	CST	Dy
Keep Minn. Green Net (KMG)**	3810	1900	CST	Dy
Kennehoochee Emerg. and Traffic Net (Ga.)	29,460	2130	EST	Sn
Kent Emergency Net (Mich.)	50,550	2000	EST	M
		2100	EST	W
Ky. Sideband Net (KSN)*	3975	1900	CST	M-F
Ky. tfc net (KYN) Early Session**	3600	1700	CST	M-S
Kings County AREC CD 2 Meter Net (N. Y.)	145,260	2030	EST	M
Kings County RACES-AREC 6 Meter Net (N. Y.)	50,400	2030	EST	M
Kings County RACES-AREC 10 Meter Net (N. Y.)	29,640	2100	EST	1/M
K6MYK Repeater Net (Calif.)	145,180	0630	PST	Dy
	146,980	1630	PST	
Knox County Six-Meter Emerg. Net (KEN) (Tenn.)	50,400	1900	EST	M-F
Lakeland Slow Speed Net (LSS)	3580	1700	EST	MWF
Louisville (Ky.) Area Radio Emerg. Nets	29,500	1930	CST	M
	53,600			
	147,300			
Madison VHF Net (Wis.)	50,100	2000	CST	Th
Maine State Slow Speed CW Net (MSSN)	3726	1730	EDT	TThS
Malden Emerg. Net (Mass.)	29,540	1930	EST	M
Manchester Emerg. Net (N. H.)	29,000	1900	EST	F
MANCORAD Net (Wis.)	3730	1030	CST	Sn
	3965			
Manitoba Phone Net	3760	1245	CST	Dy
		1900	CST	
Maritime Fone Net	3750	1900	AST	Dy
Marshall County 160 Mtr. Emerg. Net (MCEN) (Iowa)	1805	1930	CST	W
Md. Emerg. Phone Net (MEPN)	3820	1300	EST	SSn
		1800	EST	MWF
Md. Six Meter Emerg. Net	50,250	2100	EST	W
Maryland Slo Net	3670	1845	EST	M-F
Mason County Red Cross Disaster Net (Mich.)	3920	2100	EST	M
Mass. Phone Net (MPN)**	3870	1800	EST	Dy
MDD MD DEL & DC Net**	3650	1915	EST	M-S
Medford CD Net (Mass.)	29,520	1900	EST	M
Miami Valley Emerg. Net	1820	0900	EST	Sn
Miami Valley VHF Net (Ohio)	50,540	2100	EST	S

Mich. Buzzards Roost/Mich. Emerg. Net (BR & MEN) (Mich.)	3930	0900 1730	EST EST	Sn M-F
Mich. (QMN) TFC Nets** (Slow) (Fast)	3663	1800 1830	EST EST	Dy Dy
Mich. 6 Meter Net	50,250	2200	EST	Sn
Mile High Highbanders (MHH) (Colo.)	50,300	2000	MST	M
Military Civilian Net (MCN)	7125	0930	PST	M-F
Minn. Junior Net (MJN)**	3695	1900	CST	Dy
Minn. 160 Meter Net	1810	1930	CST	TTh
Minn. State Phone Net (noon section) (MPN)**	3820	1205	CST	Dy
Missoula Area Emerg. Net (Mont.)	3890	0900	MST	Sn
Mo. 160 Mtr Emerg. & Traffic Net	1820	2000	CST	MTh
Mobileers Conn. Emerg. and Mobile Group	145,350	2000	EST	Dy
Mohawk Hudson Training Net (MHT) (N. Y.)	3716	1300	EST	S
Morning Ky. Phone Net (MKPN)	3960	0730 0800	CST CST	Dy Sn
Moultrie County Emerg. Net (Ill.)	28,700	2100	CST	1/3Th
Mountaineer Phone Net (MPN)	50,250	2000	EST	Sn-F
Muskingum Amateur Radio Assn. Emerg. Net (Ohio)	29,616	2200	EST	F
Muskogee County Net (C.W.) (MCN) (Okla.)	3742	0800	CST	S
Nassau County 10 Meter Net (N. Y.)	28,720 28,680	2000	EST	M
Nebr. Civil Defense Net, Area No. 3 (NCD3)	1997	2030	CST	W
Neb. 160 Meter Emerg. Fone Net	1995	2000	CST	MTThF
Nebr. 75 Meter Emerg. Phone Net (NEPN)**	3983	1230	CST	Dy
Nevada State Net (NVN)**	3660	1915	PST	M-F
N. H. CW Traffic Net (NHN)**	3685	1830	EST	M-F
N. J. Civil Defense Net (CW) (CDNJ)	3505.5	1015	EST	Sn
N. J. Civil Defense Net (Phone) (NJ-2)	3993	0930	EST	Sn
N. J. Emerg. Phone & Traffic Net (NJFN)**	3900	0900 1800	EST EST	Sn M-S
New York City — Long Island Phone Net (NYCLIPN)**	3908	1730	EST	M-S
New York City — Long Island VHF Traffic Net	145,800	2000	EST	TWTh
N. Y. State C.D. Command Net	3993	0900	EST	Sn
New York State Net (NYS)**	3615	1900	EST	Dy
N. Y./Vt. RTTY Net (NY/VER)	147,150	2100	EST	Dy
Newport County Emerg. Net (R.I.)	29,530	1000	EST	Sn
Ninth Region Net (9RN)**	3640	1730 2000	CST CST	Dy Dy
Nite-Owl Net (Ill.)	29,640	1930	CST	Th
No Name Phone Net	7250	0800	EST	Dy
N.C. CW Net (NCN)	3509.5	1900	EST	Dy
N.C. Single Sideband Net (NCSBN)	3895	1900	EST	Dy
N.C. Six Meter Net	50,285	0830 2030	EST EST	Sn Th
N. Dak. 75 Meter Phone Net	3845	1700	CST	M-F
North-Texas-Oklahoma Traffic Net (NTO)	3960	1730	CST	Dy
North West Slow Speed Net (NSN)	3700	2100	PST	M-S
Northern Va. Emerg. Net (NVEM)	29,200	1230	EST	Sn
Northwest Fla. CW Net (NWFN)**	3650	1730	CST	Dy
Novice Hurricane Net (NHN)	3725 7152	0730 0630	EST EST	Sn M-S
Nut Net	50,950 146,950	0900 0900	CST CST	W Sn
Ohio Emerg. CW Net (OEN)	3580	1830	EST	S
Ohio Emerg. Net (OEN)	3860	1800	EST	Th
Ohio Slow Speed Net (OSN)	3580	1830	EST	M-S
Okla. Phone Emerg. Net (OPEN)	3860	0800	CST	Sn
Ontario Phone Net (OFN)**	3770	1900	EST	M-S
Ontario Quebec Net**	3535	1900	EST	M-S
Oregon AREC Net	3875	1900	PST	M-F
Ottawa County RACES Net (Mich.)	50,418	1900	EST	M
Oxnard Area Emerg. Net (AREC) (Calif.)	3930	0830 1830	PST PST	Sn TTh
Pacific Area Net (PAN)**	3675	2030	PST	Dy
Pembina County AREC Net	1990	2100	CST	W
Pa. Civil Defense Net (PACD)	3503.5	0900	EST	Sn
Pennsylvania Fine Net (PFN)*	3850	1800	EST	M-F
Pony Express Net	3920	0830	MST	Sn
Post Road Emerg. Net (Mass.)	29,480	1900	EST	M
Potomac-Rappahannock Valley Net (PRVN)	3935	0900	EST	1/3Sn
Prince Georges AREC Net (PGAREC)	145,660	2100	EST	T
P.R. Amateur Emerg. Net	3925	1900	AST	W
RACES-Sector 1-B Net (Mass.)	50,745	2000	EST	1/T
Randolph Civil Defense Net	145,700	2100	EST	Sn
Red Cross Emerg. Net	29,093	2000	CST	W
The Red Rocks Amateur Radio Club Net (TRRARCN) (N. M.)	3980	2100	MST	S
Region 3 Calif. Disaster Net	3992	0900 0800	PST PST	M-F Sn
Rock Island County RACES Net (Ill.)	29,500 50,580	2030 1930	CST CST	Sn F
RTTY Society of Southern Calif. Net (RTNET)	147,850	2000	PST	T
San Diego Two Meter Net	145,500	1900	PST	T
San Joaquin County Emerg. Net (Calif.)	146,800	2000	PST	T
Sangamon County AREC Net (Ill.)	3877	1330 1900	CST CST	Sn Th
Santa Barbara AREC Net (Cal.)	29,550	1900	PST	M
Santa Clara County Emerg. Net (Calif.)	50,500	1900	PST	M
Satellite Data Link Net (SDL)	3820	1915	EST	MTh
Second Region Net (2RN)**	3690	1845 1945	EST EST	Dy Dy
Seneca Radio Club Two Meter Net	145,440	2030	EST	Th
Seymour Amateur Radio Club Net (SARC) (Ind.)	3750 147,300	1900 1930	CST CST	1/Sn 1/Sn
Sioux Falls Civil Defense Net (S. Dak)	144,900	2100	CST	SnW
6 Meter Cross-Band Traffic Net	50.850	1930	EST	MThF
Six Meter Traffic Net (Pa.)	50,850	2030	EST	Th
SKETO Net	3910	2000	PST	MWF
S. C. Area #2 — Piedmont Local Area Net (PLAN)	50,200	1930	EST	M-F
South Carolina CW Net (SCN)**	3795	1900	EST	Dy
S. C. Emerg. Fone Net (SCEN)**	3930	1930 0830 1530	EST EST EST	M-F Sn Sn
So. Dak. Wx Net	3870	0700	MST	M-S
South Texas Emergency Net	3860	1300	CST	Sn
Southern Alameda County Emerg. Net (SACEN) (Calif.)	3985 50,250	2100 2000	PST PST	Sn Th
Southtown AREC & RACES Net (Ill.)	29,640	1930	CST	M
Spokane Amateur Radio Club Net (Wash.)	29,600	1900	PST	T
St. Louis-St. Louis County RACES Net	50,550 29,640	2000 2000	CST CST	M T
Steuben County CD Net	50,580	0930 2100	EST EST	Sn Th
Tar Heel Emerg. Net (N. C.)**	3865	1930	EST	M-F
Tarrant County Disaster Control Net (TCDCN) (Texas)*	3970	1300	CST	Sn
10 Meter AREC Net	29,500	1900	PST	T
Topeka 10 Meter Emerg. Phone Net	29,600	0900	CST	Sn
Trans Continental Relay Net (TCRN)	3521 7042	2200 0215 0615 1600	GMT GMT GMT GMT	Dy Dy Dy Dy
Tri-State High School Net (THN)	3855	1700	MST	M-F
Trico Radio Net (Mo.)	3885	0830	CST	Sn
Trumbull County Emerg. Net (Ohio)	29,604	1845	EST	T
Tularex County Net (TCN) (Calif.)	3895	1000	PST	Sn
Tularosa Basin Two Meter Phone Net (N. M.)	146,160	1800	MST	M
Turlock ARC Alternate Tuesday Night Net (Calif.)	145,350	2000	PST	alt/T
Twelfth Regional Net (TWN)**	3570	1900	MST	Dy
20 Meter SSB Net	14,275	0900	CST	M-F
Union County N. J. Amateur Radio Emergency Corps Net	146,940	2000	EST	T
United States Coast Guard Auxiliary 1st District Net	3825	0900	EST	Sn
United Trunk Lines East West 7 Mc.	7093	2100 2200	CST CST	Dy Dy
Vermilion County Net (V.C.N.) (Ill.)*	3870 7170	1100 1000	CST CST	Sn Sn

Vermont CD CW Net (VTCD)	35001.5	1900	EST	Th
Vt. Emerg. Phone Net (VEPN)	3855	1730	EST	Sn
Vermont Phone Net (VPN)	3855	0900	EST	Sn
Vermont Traffic Net (VTN)**	3520	1830	EST	M-S
Virginia Net (VN)**	3680	1900	EST	Dy
Virginia Net (Late)	3680	2200	EST	Dy
Va. Slowspeed Net (VSN)**	3680	1830	EST	M-F
Washington Amateur Radio Traffic System (WARTS)**	3970	1800	PST	M-S
Wash. Area Traffic Net (WAT)	51,900	2030	EST	Dy
West Fla. Phone Net (W7PN)	3840	1700	CST	Dy
West. Penna. Traffic Net**	3585	1900	EST	M-F
West Va. Phone Net*	3890	1830	EST	M-F
West Va. Post Office Dept. Net	3905	1730	EST	M-F
Westmoreland Co. Sec 1 CD Net (Pa.)	29,360	2000	EST	T
Westpark Emerg. Net (Ohio)	29,520	2200	EST	M
Westside Amateur Radio Club Emergency Net (La.)	28,900	2000	CST	M
Winthrop Emerg. Net (Mass.)	146,250	1830	EST	M
Wis. Intrastate Net (WIN)**	3535	1915	CST	Dy
Wisconsin RACES Net	3505.5	0900	CST	Sn
	3993	0800	CST	Sn
Wyoming County C.D. Net (N. Y.)	28,600	2000	EDT	Th
YO Net (Wyo.)**	3610	1830	MST	MWF
York Emerg. Net (Pa.)	145,590	2200	EST	M

Briefs

In the Hawaiian hurricane "Dot," (see p. 75, Nov. 1959 *QST*) a few calls of participating amateurs were omitted. Just for the record, KH6BUM, WH6CZH and WH6CZI also participated in this emergency.

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Certificates for the 1959 ARRL International DX Competition and the 1959 June V.H.F. Party were mailed to the winners November 16, 1959.

DX CENTURY CLUB AWARDS

HONOR ROLL

W6AM....296 ZL2GX....296 W1FH....295 W8HGW....295 W3GHD....295 PY2CK....293 W2HUQ....293 W6ENV....293 W6BYG....293 KV4AA....292 W8JIN....292 W4BPD....292 W8BRA....292 W2AGW....292 G3AAM....292 W9NDA....291 W6GFE....291 W6CUQ....291 ZL1HY....291 W1ME....291 W3JNN....291 G2PL....291 W5ASG....290 W9YFV....290 W6DZZ....290 W7GUV....289 W7AMX....289 W7GBW....289 W6ADP....289 W6EBG....289 W9RBI....289 W8BKP....288 W8DMD....288 W3KT....288 W4DQH....288 W3BES....288 W2BXA....288 W4TM....287 W1CLX....287 W8UAS....287 W6TT....287 CE3AG....287 W6NNV....287 W8KIA....287 W6MX....286 W5ADZ....286 G4CP....286 W6TS....286 W9KOK....286

Radiotelephone

PY2CK....293 W8GZ....286 VQ4ERR....286 W8BF....285 ZS6BW....285 W1FH....284 W8HGW....284 W3JNN....283 W9RBI....283 W6YY....281 W8KML....280 ZL1HY....280 W6AM....279 W8PQQ....279 4X4DK....277 CX2CO....276

From October 1, to November 1, 1959 DXCC certificates and endorsements based on postwar contacts with 100-or-more countries have been issued by the ARRL Communications Department to the amateurs listed below.

NEW MEMBERS

VK3KB....263 JA3DY....169 W4IF....143 TG9AL....142 F8SC....150 K9PJN....126 DJ2MN....121 OZ2KD....120 W1MQV....118 W6HYG....117 OK1MG....114 W7JC....113 VK7LZ....111 LA6CF....110 W6FYM....109 ON4IX....109 YV1AD....107 W6OAZ....106 ZP5LS....106 K6OCX....104 JA1CB....104 W1MD....103 W2SQT....103 W5CYE....103 VE2OL....103 OK1ZW....103 PAØWOR....103 W6BJH....102 W3PYZ....102 OH1TD....102 W1ORV....101 W4DBJ....101 W8BCL....101 VE3XK....101 DJ3HW....101 DL6KC....101 SM2CSA....101 W2KIN....100 K2RDA....100 W2ZKQ....100 K3ALD....100 WØLNI....100 OZ4RT....100 SM4AEQ....100 ZS6ZF....100

Radiotelephone

K9EAB....162 TG9AL....141 SM5TR....141 PAØWWP....129 W9JET....125 W5ABY....117 PY7HS....113 ZE2JA....113 W7ZAS....112 LA1MB....112 CN8EH....110 VE5KG....110 K2ZNV....109 K6EWL....109 W2RWE....108 VE7MD....107 LA5HF....107 W5AFX....106 K6ZXW....106 I1AFG....104 CT1CC....103 W5PVA....102 K6AYO....101 K1BDF....100 W2MAF....100 W3VXE....100 F9KI....100

ENDORSEMENTS

K2GFQ....281 W6TI....280 W7GXA....280 WØDU....278 W9AMU....272 W2JVU....271 W3EPV....270 W5EGK....270 W6BVM....270 K6ENX....270 W9YSX....270 DJ1BZ....270 W5BZT....263 W2CTO....261 W7FB....261 W6CHV....260 W3ADZ....252 W9GIL....252 K4LNM....251 W2ZX....250 W4OM....250 W6CAE....250 W6GMP....250 W8SDR....249 W5PZL....246 W2UVE....245 W2AEB....241 W4DHZ....241 PAØFX....241 ZL2HP....241 K6ENL....240 CN8JX....240 ON4PA....240 W3LMM....235 W9GDI....235 K9EAB....234 KP4CC....231 W2EQS....230 W2QJM....230 W6SQP....230 W8WFB....230 W9EU....230 G8KS....230 OZ7BG....230 VE7MD....230 K6AYA....228 K4BVQ....224 W1BFT....223 K4LPW....221 HB9UL....189 W4PLL....187 W4CYR....184 W8PHZ....178 W3WSF....172 K5DGI....172 W1ZDF....171 K2VUI....170 W5LV....170 PY4OD....170 ST2AR....170 G2AJB....170 WØDGH....168 PAØVO....168 W3KJJ....167 K4EHA....166 KL7MF....165 W1JSS....164 W3MVQ....161 W7ZAS....160 W9GHK....160 HB9QO....156 W4SHX....154 DL8CM....154 K6LAE....152 X22TH....152 W8VGR....151 LA5HE....151 OK1AEH....151 K9ALP....150 DJ3BB....150 W6HAL....149 WØRSZ....149 OZ5KQ....148 K2PKT....147 VE2AYY....146 W1OHA....145 W2KIR....143 W1NF....140 K4TWK....140 K9IYW....140 KØESH....140 ZD2DCP....139 SM5BVF....136 DL1ES....135 W6JFV....134 W1YXD....133 K8HFO....132 W9LNQ....132 LA1MB....132 OA7I....132 W2AWH....131 K8EZU....131 W8ZNO....131 WØTPA....131 WØTGQ....131 K2UKQ....130 K2UBA....130 W4GUV....130 K6BX....130 W6GEB....130 W6SQX....130 F9TX....130 K6IXS....129 W8ZCQ....129 W8MTQ....128 KØITF....126 W9YZA....123 K6COP....122 DL3OC....122 W9BZW....121 W2AAU....120 K2EUH....120 W2QZI....120 W6PHF....120 W7OQO....120 K4ELK....119 W1UQP....114 W7EMY....114 W3LSG....113 KØPIE....112 K2FG....110 W4ZQK....110

Radiotelephone

W8BKP....260 HC1FG....257 W3ECR....242 PY2AHS....234 W5TIZ....221 W5HJA....220 PY1AQT....212 K2CJN....211 W8ZFT....210 W4MKB....207 W5JJA....201 W1DCE....200 W2BQM....200 W4OM....200 W1LLF....191 W8SDR....191 F3DJ....191 OZ3Y....191 W7MBX....190 W8PUD....190 I1UA....190 W8END....179 WØFUH....178 W2UTH....172 W3KVB....166 W2LKW....163 VE3MR....162 PAØFX....162 PY1FR....161 W1JSS....160 MP4BBW....160 ON4BX....160 DL7CE....155 W1AUF....152 W8GUZ....143 VE1DR....136 F8SC....135 GM3CIX....135 W1YXD....132 W3OGR....131 W1ZSU....130 K2FW....130 W2SUC....130 WØTGQ....130 K4LPW....128 W2NQR....126 W1ZW....125 W1OHA....124 K5GOT....123 W3VSU....122 K9ALP....122 W9BUJ....122 W9FVU....122 W2HQL....121 W3PGB....120 K4EHA....120 WØLBB....120 TI2IO....120 W3MVQ....118 W1BFT....116 W8SMQ....112 K9KYF....111

U.S.-Canada Area and Continental Leaders

WØELA....281 KH6IJ....259 KL7PI....231 VE1PQ....240 VE2WW....262 VE3DIF....250 VE4XO....180 VE5RU....185 VE6NX....241 VE7ZM....280 VE8AW....195 VO1DX....220 ZS6BW....285 4X4DK....284

Radiotelephone

W2BXA....250 W4DQH....264 W5BGP....251 W7PHO....264 WØAIW....260 KH6OR....254 KL7AFR....190 VE1NH....122 VE2WW....202 VE3KF....224 VE3QA....224 VE4RP....102 VE5RU....178 VE6TF....142 VE7ZM....253 G2PL....264

• All operating amateurs are invited to report to the SCM on the first of each month, covering station activities for the preceding month. Radio Club news is also desired by SCMs for inclusion in these columns. The addresses of all SCMs will be found on page 6.

ATLANTIC DIVISION

EASTERN PENNSYLVANIA—SCM, Allen R. Breiner, W3ZRQ—SEC: DUI, PAM: TEJ. RM: AXA. New officers of the York ARC are ZRJ, pres.; K3EMC, vice-pres.; NGN, secy.; EDO, treas. In the recent CD Party AXA made WASEC (Worked All Section Emergency Coordinators). CUL added KG6FAE to her list of traffic skeds. IVS is experimenting with d.s.b. HNK is now operating a new DX-100B. MFW is too busy with traffic skeds to make out monthly reports. The Delaware-Lehigh ARC is running a code and theory class for Novice Class licenses. New appointments are K3IMS as EC for Chester Co., K3EUG as EC for Adams Co., DTR as EC for Susquehana Co.; K3DEM as OES and OBS. UQV, better known as Joe Welch of the FCC, is an OO. AMC is an OPS and MFW an ORS. The Lancaster Transmitting Society erected a new antenna at the Red Cross headquarters. JYL received the Keystone Award. BES installed a separate set of antennas for the SS Contest. The 807 Society is issuing a certificate for working its membership. For details, write K3ALD. BPZ has a new 120-watt rig on 6 and 2 meters. K3GOO and K3GRY are now General Class. LEZ and his XYL have returned from a 3-week trip through Europe. EU reports good results on 160 meters. BNR will move out West after Jan 4. JDW raised a new Tribander beam and also is teaching code to a class of Boy Scouts. NNL's harmonics wreaked havoc in his shack and ruined a lot of equipment. He is presently on the air with half an ear-phone and is pounding brass with a sore fist. The Delaware Valley Council of Radio Clubs set up K3UN at the City Hall in Philadelphia and did a fine job in the commemoration of United Nations Week. RPG got a DXCC 200 sticker and WAZ. JNQ added a 3-band beam for the SS contest. YLL built a new electronic keyer. New officers of the Mobile Sixers RC are JBA, pres.; K3GXV, vice-pres.; UKG, secy.; K3JEZ, treas. Your SEC and SCM had the honor of being present at the Almo Show. We renewed acquaintance with a number of friends and witnessed the Mt. Airy V.H.F. Society get first prize for its exhibit. Lack of space prevents listing other club entries. It may be noted that the net skeds were omitted in this report. If space permits, they will be added every 3 months. Traffic: W3CUL 4714, IVS 685, VR 523, HNK 162, K3DCB 158, HLU 103, W3MFW 103, KMD 100, K3DFS 95, ANS 69, W3AXA 67, FKE 61, K3BHU 49, W3BUR 47, ZRQ 46, NNL 42, TEJ 20, BFF 19, AMC 18, K3DZB 10, ANU 9, W3ZXV 9, EAN 6, ELI 6, DEM 5, OY 4, PDJ 4, DUI 3, JSX 3, ADE 2, BES 2, K3GTZ 2, W3NQB 2, BPZ 1, JNQ 1.

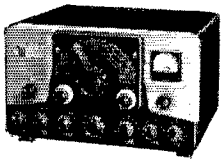
MARYLAND-DELAWARE-DISTRICT OF COLUMBIA—Acting SCM, Thomas B. Hedges, W3BKE—Asst. SCM Delaware: 3DQZ. SEC: PKC. The MDD Section C.W. Net meets on 3650 kc. Mon. to Sat. at 1915 EST. The MDDS (slow-speed) C.W. Net meets on 3650 kc. Mon. and Thurs. at 2030 EST. The MEPN (phone) Net meets on 3820 kc. Mon., Wed. and Fri. at 1800 and Sat. and Sun. at 1300 EST. New appointments: EIS, KA and K3AZC as OOs; K3CXX as ORS; W3IWJ as OES. *Maryland Report:* MCG has the 40-meter vertical atop his house after two attempts. IWJ handles traffic on 2 meters. EOV is experimenting with a Globe Scout. K3GZK is busy starting another slow net. His YXL GZL has passed the General Class exam. Congratulations, Doris. DCP was active at the Gaithersburg Hamfest. JJC is having luck with a 10-meter beam 10 feet in the air. ZNW is readying an 8JK for 10 meters. EAX, U. of Md. ARA, is now active on 160 meters with a Navigator. OYX is active in Hagerstown. K3CXX is burning the ozone with EQK's old rig. EQK is rebuilding. Sorry you had to leave the SCM post, Art; the entire section wishes you the best of luck in your new position. JME led Baltimore County and MAZ Baltimore City in S.E.T. activities. 4EXM/3 is a new arrival at Andrews A.F.B. and will have a kw. on. WV continues his many years of activity with a good traffic report. PZW is busy with his new house and new records are expected from kw. Gulch. BUD is busy with the MDDS Net. AHQ must be commended for leading the country in OO reports. TN makes BPL for the second consecutive month. Congrats Dave! UE keeps 3RN activity hopping and writes for *345 News*. FVK keeps the Carroll County Net going on 29.3 Mon. at 2130. K3CBQ had four interesting skeds with his Dad, 9YPP. Dales's move to Alabama will be W3's loss. ZAQ is active as an OO. Contest expert MSR is preparing for c.w. on 2 meters. TSG has been active in MDD but is going back to sea with MSTS. K5OEA/3 and XYL SPD/3, new in the section, have FB traffic counts. WZL renewed his ORS appointment. The Md. V.H.F. Society now is K3JUK. AZC was in the Oct. CD Party with 8 watts. KLA made a sortie into the W. Va. hills for v.h.f. work. *District of Columbia Report:* CN sold his Viking and the c.w. nets lost a good man. K3ANA turns in a good traffic total and is helping with SCM correspondence. PQ continues active work in the MDD Net. CDQ is happy with a new Apache. The Washington Radio Club is starting code classes at Gordon School, Wisc. & T Streets, N.W., Mon. and Thurs. 1930 to 2100, supplemented with practice on 1815 kc. *Delaware Report:* K3AMC is active in the Del. Emergency, Blue Hen and N. J. Phone Nets. HKS reports. KHU signed up 12 new members for the AREC. GEK is back on with a new rig. GKF went over the top for DXCC! Thanks to all members of the M.D.D. section for their assistance to BKE, Acting SCM. Would like more reports of club activities. Traffic: (Oct.) W3UE 374, PQ 180, K3ANA 155, W3TN 136, AHQ 115, MCG 64, EAX 55, K5OEA/3 55, SPD/3 52, W3PZW 49, COK 45, BUD 43, IWJ 40, K3CXX 37, W3BKE 36, TSG 33, ZNW 24, WV 21, EOV 16, K3DCP 13, AMC 11, W3CN 10, K3GZK 8, W3JME 2, W4EXM/3 2. (Sept.) K3ANA 241.

SOUTHERN NEW JERSEY—SCM, Herbert C. Brooks, K2BG—SEC: W2YRW. RMs: W2BZJ, W2HDW and W2ZI. New appointment: W2SXV, Hightstown, as ORS. The NJ Emergency Phone & Tfc. Net held its first annual dinner in October. NJN Net certificates were issued to W2BEI, W2PNA and W2TLO. W2RXL, NJN Manager, continues to issue an FB monthly bulletin. We regret the passing of W2HIR, Villas. Charlie was a member of the NJ Phone Net, Knuckle-head Net and the Coast Guard Auxiliary. K2DVE, Villas, also advises that an amateur radio club is being formed in Cape May County. K2DVE is president and K2MKB secretary. The Gloucester County ARC, as reported in its paper, *Cross Talk*, is increasing in membership and activities. K2SOL, Sewell, has resigned as Gloucester Co. EC. Several fine reports of Southern Counties ARA activities have been received from K2HBA, club president. All clubs in the State are pushing License Plate Bill No. 213, under the direction of W2JAV and K2HOD. K2YIB has been appointed SJRA's v.h.f. chairman. W2ZX edits the DX section of SJRA's *Harmonics*. W2ESX, Moorestown, is running high power on 144 Mc. W2ZI, Trenton, vacationed in Florida. A fine club paper was received from K2ZHK, Cranford, manager of the Eastern Area Slow Net. K2DEI, Maple Shade, continues his Baffin Island traffic handling. George also is K3DTT. W2RG, Camden Co. RACES Radio Officer, reports 218 licensed in RACES in that county. W2ZI reports a new antenna system. W2SXV, our new ORS, has been appointed c.d. comm. director for Hightstown. W2BEI, Audubon, has been helping with Greenland traffic. K2CPR, W2EET and W2VVX made outstanding scores in the recent Frequency Measuring Test. There has been a marked increase in Form 1 and club papers. Traffic: K2DEI 232, W2RG 132, W2ZI 59, W2PNA 29, K2OWM 18, WA2AXP 15, W2BZJ 15, K2JJC 14, K2SOX 14, W2SXV 14, W2BEI 10.

WESTERN NEW YORK—SCM, Charles T. Hansen, K2HUK—SEC: W2GBX. RMs: W2RUF and W2ZRC. PAMs: W2PVI and W2LXE (v.h.f.). NYS C.W. meets on 3615 kc. at 1900, ESS on 3590 kc. at 1800, NYSPTEN on 3925 kc. at 1800, NYS C.D. on 3509.5 and 3993 kc.

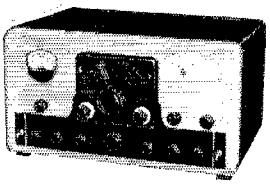
(Continued on page 104)

No matter what you expect from a transmitter...
You'll get more with a VIKING!



"RANGER" – 75 watts CW and 65 watts phone input. Bandswitching 160 through 10 meters. Built-in VFO or crystal control. With tubes.

Cat. No.	Amateur Net
240-161-1..Kit	$229.50
240-161-2..Wired	$329.50

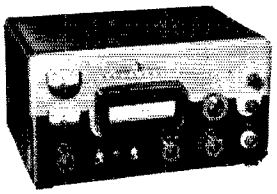


"VALIANT"—Instant bandswitching 160 through 10. 275 watts input CW and SSB (P.E.P. with aux. exciter) 200 watts phone. With tubes.

Cat. No.	Amateur Net
240-104-1..Kit	$349.50
240-104-2..Wired	$439.50

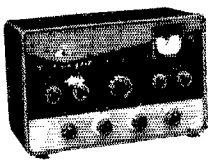
"FIVE HUNDRED" – 600 watts CW input; 500 watts phone and SSB (P.E.P. with aux. SSB exciter). Bandswitching 80 through 10. With tubes.

Cat. No.	Amateur Net
240-500-1..Kit	$749.50
240-500-2..Wired	$949.50



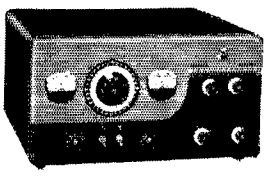
"THUNDERBOLT" AMPLIFIER—2000 watts P.E.P.* input SSB; 1000 watts CW; 800 watts AM linear. Continuous coverage 3.5 to 30 mcs. With tubes.

Cat. No.	Amateur Net
240-353-1..Kit	$524.50
240-353-2..Wired	$589.50



"6N2"—Instant bandswitching coverage of both 6 and 2 meters. Power input rated at 150 watts CW, and 100 watts AM phone. With tubes.

Cat. No.	Amateur Net
240-201-1..Kit	$129.50
240-201-2..Wired	$169.50



"6N2" THUNDERBOLT AMPLIFIER—Input rated 1200 watts P.E.P.* SSB and DSB, Class AB_1; 1000 watts CW, Class C; 700 watts AM linear, Class AB_1. Continuous coverage 6 and 2. With tubes.

Cat. No.	Amateur Net
240-362-1..Kit	$524.50
240-362-2..Wired	$589.50

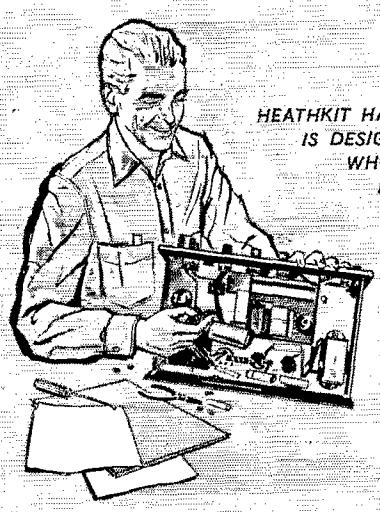
The world at your finger tips!

VIKING "KILOWATT" AMPLIFIER—This exciting unit is the only power amplifier available which will deliver full 2000 watts SSB* input, and 1000 watts CW and plate-modulated AM! Class C final amplifier operation provides plate circuit efficiencies in excess of 70%. Continuous coverage 3.5 to 30 mcs. Excitation requirements: 30 watts RF and 10 watts audio for AM; 10 watts peak for SSB.

Cat. No.	Amateur Net
240-1000..Wired and Tested	$1595.00
251-101-1..Matching desk top, back and 3 drawer pedestal, FOB Corry, Pa.	$132.00

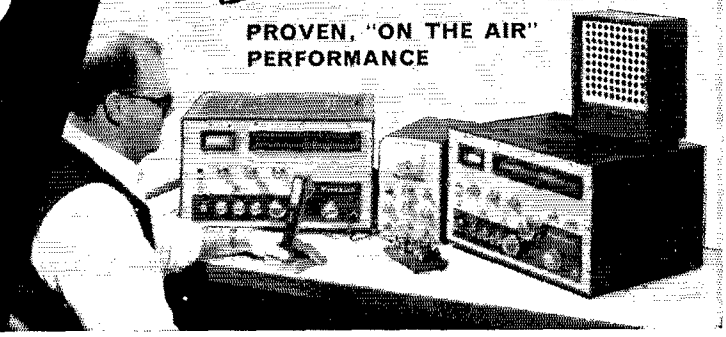
*The FCC permits a maximum of one kilowatt average power input for the amateur service. In SSB operation under normal conditions, this results in peak envelope power inputs of 2000 watts or more, depending upon individual voice characteristics.

BUILD YOUR OWN HEATHKIT® HAM GEAR



HEATHKIT HAM EQUIPMENT IS DESIGNED BY HAMS WHO KNOW YOUR PROBLEMS AND NEEDS.

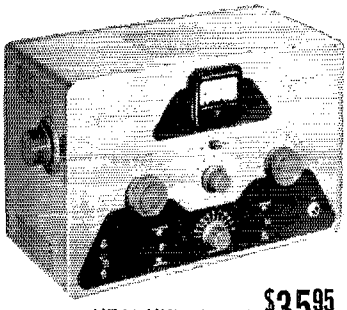
PROVEN, "ON THE AIR" PERFORMANCE



"SENECA" VHF HAM TRANSMITTER KIT

Beautifully styled and a top performer of highest quality throughout. The "Seneca" is a completely self-contained 6 and 2 meter transmitter featuring a built-in VFO for both 6 and 2 meters, and 4 switch-selected crystal positions, 2 power supplies, 5 radio frequency stages, and 2 dual-triode audio stages. Panel controls allow VFO or crystal control, phone or CW operation on both amateur bands. An auxiliary socket provides for receiver muting, remote operation of antenna relay and remote control of the transmitter such as with the Heathkit VX-1 Voice Control. Features up to 120 watts input on phone and 140 watts on CW in the 6 meter band. Ratings slightly reduced in the 2 meter band. Ideal for ham operators wishing to extend transmission into the VHF region. Shpg. Wt. 56 lbs.

HEATHKIT VHF-1 **$159.95**



HEATHKIT DX-20 **$35.95**

DX-20 CW TRANSMITTER KIT

Designed exclusively for CW work, the DX-20 provides the novice as well as the advanced-class CW operator with a low cost transmitter featuring high operating efficiency. Single-knob bandswitching covers 80, 40, 20, 15 and 10 meters using crystals or an external VFO. Pi network output circuit matches antenna impedances between 50 and 1,000 ohms. Employs a single 6DQ6A tube in the final amplifier stage for plate power input of 50 watts. A 6CL6 serves as the crystal oscillator. The husky power supply uses a heavy duty 5U4GB rectifier and top-quality "potted" transformer for long service life. Easy-to-read panel meter indicates final grid or plate current selected by the panel switch. Complete RF shielding to minimize TVI interference. Easy-to-build with complete instructions provided. Shpg. Wt. 19 lbs.

HEATH COMPANY Benton Harbor, Michigan — a subsidiary of Daystrom, Inc.

Mobile Gear...for the Ham on the Go!

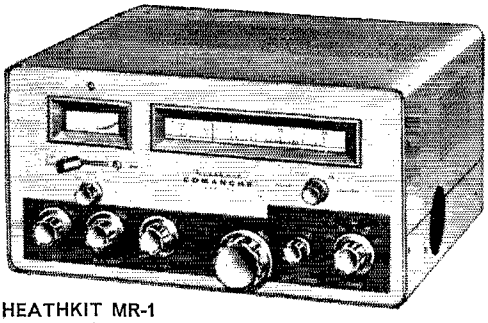
"CHEYENNE" MOBILE HAM TRANSMITTER KIT

All the fun and excitement . . . plus the convenience of mobile operation are yours in the all-new Heathkit "Cheyenne" transmitter. The neat, compact, and efficient circuitry provides you with high power capability in mobile operation, with low battery drain using carrier controlled modulation. All necessary power is supplied by the model MP-1 described below. Covers 80, 40, 20, 15 and 10 meters with up to 90 watts input on phone. Features built-in VFO, modulator, 4 RF stages, with a 6146 final amplifier and pi network (coaxial) output coupling. High quality components are used for long service life and reliable operation, along with rugged chassis construction to withstand mobile vibrations and shock. Thoughtful circuit layout provides for ease of assembly with complete instructions and detailed pictorial diagrams to insure success. A spotting switch is also provided. A specially designed ceramic microphone is included to insure effective modulation with plenty of "punch". Plan now to enjoy the fun of mobile operation by building this superb transmitter. Shpg. Wt. 19 lbs.

HEATHKIT MT-1
$99.95

"COMANCHE" MOBILE HAM RECEIVER KIT

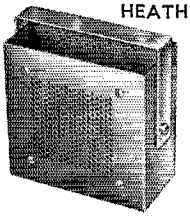
Everything you could ask for in modern design mobile gear is provided in the "Comanche" . . . handsome styling, rugged construction, top quality components . . . and, best of all, a price you can afford. The "Comanche" is an 8-tube superheterodyne ham band receiver operating AM, CW and SSB on the 80, 40, 20, 15 and 10 meter amateur bands. A 3 mc crystal lattice-type IF filter permits the receiver to use single conversion without image interference, and at the same time creates a steep sided 3 kc flat top IF bandpass characteristic comparable to mechanical type filters. The neat, compact and easy-to-assemble circuitry features outstanding sensitivity, stability and selectivity on all bands. Circuit includes an RF stage, converter, 2 IF stages, 2 detectors, noise limiter, 2 audio stages and a voltage regulator. Sensitivity is better than 1 microvolt on all bands and signal-to-noise ratio is better than 10 db down at 1 microvolt input. One of the finest investments you can make in mobile gear. Shpg. Wt. 19 lbs.



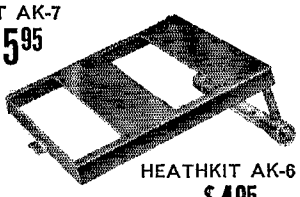
HEATHKIT MR-1
$119.95

MOBILE SPEAKER KIT

A matching companion speaker for the "Comanche" mobile receiver. Housed in a rugged steel case with brackets provided for easy installation on fire wall or under dashboard, etc. Uses 5 PM speaker with 8 ohm voice coil. Measures 5" H. x 5" W. x 2½" D. Shpg. Wt. 4 lbs.



HEATHKIT AK-7
$5.95



HEATHKIT AK-6
$4.95

HEATHKIT MP-1
$44.95

MOBILE POWER SUPPLY KIT

This heavy duty transistor power supply furnishes all the power required to operate both the MT-1 Transmitter and MR-1 Receiver. It features two 2N442 transistors in a 400 cycle switching circuit, supplying a full 120 watts of DC power. Under intermittent operation it will deliver up to 150 watts. Kit contains everything required for complete installation, including 12' of heavy battery cable, tap-in studs for battery posts, power plug and 15' of connecting cable. Chassis size is 9 1/16" L. x 4¾" W. x 2" H. Operates from 12-14 volt battery source. Circuit convenience provided by self-contained relay which allows push-to-talk mobile operation. Shpg. Wt. 8 lbs.

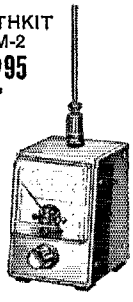
MOBILE BASE MOUNT KIT

The AK-6 Base Mount is designed to hold both transmitter and receiver conveniently at driver's side. Universal mounting bracket has adjustable legs to fit most automobiles. Shpg. Wt. 5 lbs.

POWER METER KIT

This handy unit picks up energy from your mobile antenna and indicates when your transmitter is tuned for maximum output. A variable sensitivity control is provided. Features a strong magnet on a swivel-mount for holding it on a car dashboard or other suitable spot. Has its own antenna or may be connected to existing antenna. Sensitive 200 ua meter. Shpg. Wt. 2 lbs.

HEATHKIT PM-2
$12.95



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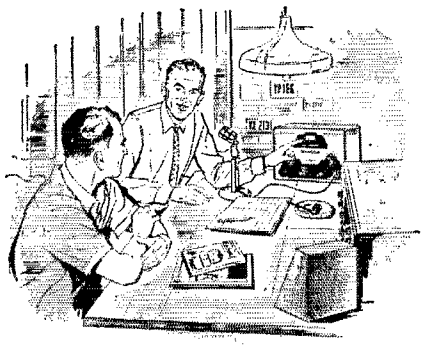
COMPANION UNITS

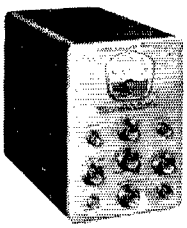


HEATHKIT TX-1 $234.95

"APACHE" HAM TRANSMITTER KIT

The many features and modern styling of the "Apache" will provide you with just about everything you could ask for in transmitting facilities. Emphasizing high quality the "Apache" operates with a 150 watt phone input and 180 watt CW input. In addition to CW and phone operation, built-in switch selected circuitry provides for single-sideband transmission using the SB-10 External adapter. The newly designed, compact and stable VFO provides low drift frequency control necessary for SSB transmission. A slide rule type illuminated rotating VFO dial with full gear drive vernier tuning provides ample bandspread and precise frequency settings. The bandswitch allows quick selection of the amateur bands on 80, 40, 20, 15 and 10 meters. This unit also has adjustable low-level speech clipping and a low distortion modulator stage employing two of the new 6CA7/EL34 tubes in push-pull class AB operation. Time sequence keying is provided for "chirpless" break-in CW operation. The final amplifier is completely shielded for TVI protection and neutralized for greater stability. A cooling fan is also provided. The formed one-piece cabinet with convenient access hatch provides accessibility to tubes and crystal sockets. Die-cast aluminum knobs and control panel escutcheons add to the attractive styling of the transmitter. Pi network output coupling matches antenna impedances between 50 and 72 ohms. A "spotting" push button enables the operator to "zero beat" an incoming frequency without putting the transmitter on the air. Equip your ham shack now for top transmitting enjoyment with this outstanding unit. Shpg. Wt. 110 lbs. Shipped motor freight unless otherwise specified.

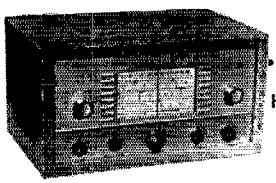
HEATHKIT SB-10 $89.95



SINGLE SIDEBAND ADAPTER KIT

Designed as a compatible plug-in adapter unit for the TX-1 "Apache" transmitter, this unit lets you operate on SSB at a minimum of cost, yet does not affect the normal AM and CW functions of the transmitter. By making a few simple circuit modifications, the DX-100 and DX-100-B transmitters can be used, utilizing all existing RF circuitry. Extremely easy to operate and tune, the adapter employs the phasing method for generating a single-sideband signal, thus allowing operation entirely on fundamental frequencies. The critical audio phase shift network is supplied completely preassembled and wired in a sealed plug-in unit. Produces either a USB, LSB or DSB signal, with or without carrier insertion. Covers 80, 40, 20, 15 and 10 meter bands. An easy-to-read panel meter indicates power output to aid in tuning. A built-in electronic voice control with anti-trip circuit is also provided. 10 watts PEP output. Unwanted sideband suppression is in excess of 30 db and carrier suppression is in excess of 40 db. An EL84/6BQ5 tube is used for linear RF output. Shpg. Wt. 12 lbs.

MODIFICATION KIT: Modifies DX-100 and DX-100-B for use with the SB-10 Adapter. Model MK-1. Shpg. Wt. 1 lb. $8.95.



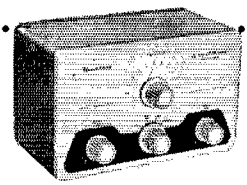
HEATHKIT AR-3 $29.95

(less cabinet)

ALL-BAND RECEIVER KIT

A fine receiver for the beginning ham or short wave listener, designed for high circuit efficiency and easy construction. Covers 550 kc to 30 mc in four bands clearly marked on a slide-rule dial. Transformer operated power supply. Features include: bandswitch, bandspread tuning, phone-standby-CW switch, phone jack, antenna trimmer, noise eliminator, RF gain control and AF control. Shpg. Wt. 12 lbs.

CABINET: Opt. extra. No. 91-15A. Shpg. Wt. 5 lbs. $4.95.



HEATHKIT QF-1 $9.95

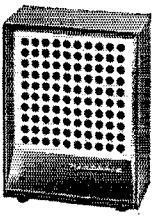
"Q" MULTIPLIER KIT

Useful on crowded phone and CW bands, this kit adds selectivity and signal rejection to your receiver. Use it with any AM receiver having an IF frequency between 450 and 460 kc that is not AC-DC type. Provides an effective "Q" of approximately 4,000 for extremely sharp "peak" or "null". The QF-1 is powered from the receiver with which it is used. Shpg. Wt. 3 lbs.

OF DISTINCTIVE QUALITY

ACCESSORY SPEAKER KIT

Handsomely designed and color styled to match the "Mohawk" receiver this heavy duty 8" speaker with 4.7 ounce magnet provides excellent tone quality. Housed in attractive ⅜" plywood cabinet with perforated metal grille. Speaker impedance is 8 ohms. Shpg. Wt. 7 lbs.

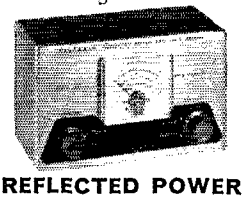


HEATHKIT AK-5
$9.95

HEATHKIT RX-1 **$274.95**

"MOHAWK" HAM RECEIVER KIT

Styled to match the "Apache" transmitter the "Mohawk" ham band receiver provides all the functions required for clear, rock-steady reception. Designed especially for ham band operation this 15-tube receiver features double conversion with IF's at 1682 kc and 50 kc and covers all the amateur frequencies from 160 through 10 meters on 7 bands with an extra band calibrated to cover 6 and 2 meters using a converter. Specially designed for single sideband reception with crystal controlled oscillators for upper and lower sideband selection. A completely preassembled wired and aligned front end coil bandswitch assembly assures ease of construction and top performance of the finished unit. Other features include 5 selectivity positions from 5 kc to 500 CPS, bridge T-notch filter for excellent heterodyne rejection, and a built-in 100 kc crystal calibrator. The set provides a 10 db signal-to-noise ratio at less than 1 microvolt input. Each ham band is separately calibrated on a rotating slide rule dial to provide clear frequency settings with more than ample bandspread. Front panel features S-meter, separate RF, IF and AF gain controls, T-notch tuning, T-notch depth, ANL, AVC, BFO, Bandswitch tuning, antenna trimmer, calibrate set, calibrate on, CW-SSB-AM, receive-standby, upper-lower sideband, selectivity, phone jack and illuminated gear driven vernier slide rule tuning dial. Attractively styled with die-cast aluminum control knobs and escutcheons. No external alignment equipment is required for precise calibration of the "Mohawk". All adjustments are easily accomplished using the unique method described in the manual. An outstanding buy in a communications receiver. Shpg. Wt. 66 lbs. Shipped motor freight unless otherwise specified.



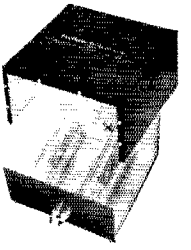
HEATHKIT AM-2
$15.95

REFLECTED POWER METER KIT

The AM-2 measures forward and reflected power or standing wave ratio. Handles a peak power of well over 1 kilowatt of energy and covers 160 through 6 meters. Input and output impedance provided for 50 or 75 ohm lines. No external power required for operation. Use it also to match impedances between exciters or RF sources and grounded grid amplifiers. Shpg. Wt. 3 lbs.

BALUN COIL KIT

Match unbalanced coaxial lines, found on most modern transmitters, to balanced lines of either 75 or 300 ohms impedance with this handy transmitter accessory. Capable of handling power input up to 200 watts, the B-1 may be used with transmitters and receivers covering 80 through 10 meters. No adjustment required. Shpg. Wt. 4 lbs.

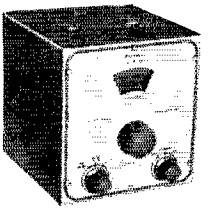


HEATHKIT B-1
$8.95

HEATHKIT VX-1
$23.95

ELECTRONIC VOICE CONTROL KIT

Eliminate hand switching with this convenient kit. Switch from receiver to transmitter by merely talking into your microphone. Sensitivity controls allow adjustment to all conditions. Power supply is built in and terminal strip on the rear of the chassis accommodates receiver and speaker connections and also a 117 volt antenna relay. Shpg. Wt. 5 lbs.

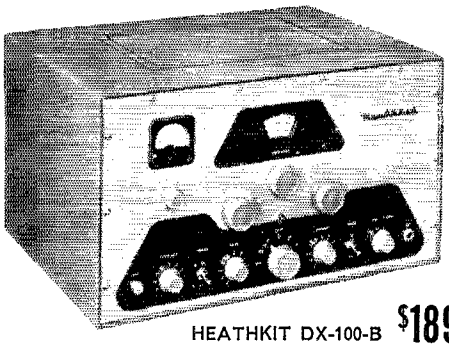


HEATHKIT VF-1
$19.50

VFO KIT

Far below the cost of crystals to obtain the same frequency coverage this variable frequency oscillator covers 160, 80, 40, 20, 15 and 10 meters with three basic oscillator frequencies. Providing better than 10 volt average RF output on fundamentals, the VF-1 is capable of driving the most modern transmitters. Requires only 250 volts DC at 15 to 20 ma, and 6.3 VAC at 0.45 a. Illuminated dial reads direct. Shpg. Wt. 7 lbs.

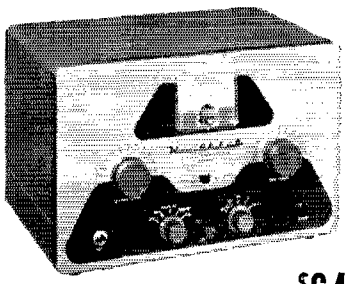
Save 1/2 or more...with Heathkits



HEATHKIT DX-100-B **$189.50**

DX-100-B PHONE AND CW TRANSMITTER KIT

A long standing favorite in the Heathkit line, the DX-100-B combines modern styling and circuit ingenuity to bring you an exceptionally fine transmitter at an economical price. Panel controls allow VFO or crystal control, phone or CW operation on all amateur bands up to 30 mc. The rugged one-piece formed cabinet features a convenient top-access hatch for changing crystals and making other adjustments. The chassis is punched to accept sideband adapter modifications. Featured are a built-in VFO, modulator, and power supply, complete shielding to minimize TVI, and a pi network output coupling to match impedances from 50 to 72 ohms. RF output is in excess of 100 watts on phone and 120 watts on CW. Band coverage is from 160 through 10 meters. For operating convenience single-knob bandswitching and illuminated VFO dial on meter face are provided. A pair of 6146 tubes in parallel are employed in the output stage modulated by a pair of 1625's. Shpg. Wt. 107 lbs. Shipped motor freight unless otherwise specified.

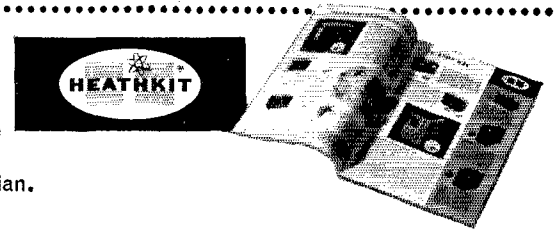


HEATHKIT DX-40 **$64.95**

DX-40 PHONE AND CW TRANSMITTER KIT

An outstanding buy in its power class the DX-40 provides both phone and CW operation on 80, 40, 20, 15 and 10 meters. A single 6146 tube is used in the final amplifier stage to provide full 75 watt plate power input on CW or controlled carrier modulation peaks up to 60 watts for phone operation. Modulator and power supplies are built in and single-knob bandswitching is combined with the pi network output circuit for complete operating convenience. Features a D'Arsonval movement panel meter. A line filter and liberal shielding provides for high stability and minimum TVI. Provision is made for three crystals easily accessible through a "trap door" in the back of the cabinet. A 4-position switch selects any of the three crystals or jack for external VFO. Power for the VFO is available on the rear apron of the chassis. Easy-to-follow step-by-step instructions let assembly proceed smoothly from start to finish even for an individual who has never built electronic equipment before. Shpg. Wt. 25 lbs.

Free Send now for latest Heathkit Catalog describing in detail over 100 easy-to-assemble kits for the Hi-Fi fan, radio ham, boat owner and technician.



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NAME

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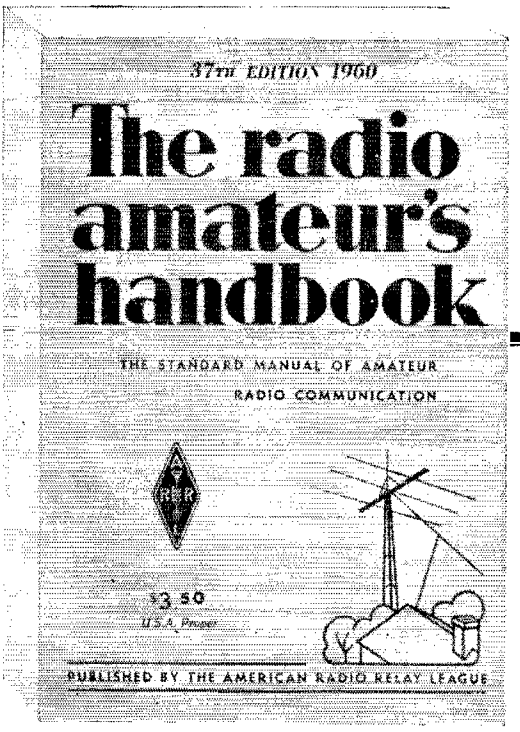
CITY ZONE STATE

QUANTITY	KIT NAME	MODEL NO.	PRICE

1960 EDITION



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Keeping pace with progress, this big, new edition of the ever useful *Handbook* contains many descriptions of new equipment. Semiconductor and vacuum tube listings and tables are brought up to date. Every important aspect of amateur radio is covered: transmitting, c.w., a.m., sideband, radioteletype; receiving; mobile; v.h.f.; propagation; antennas; construction; theory; charts; diagrams; transistors; vacuum tubes; station assembly and operation. The complete handbook!

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IS K6INI THE WORLD'S CHAMPION DX OPERATOR?

Judge for yourself! Read his letter and count the DX he has worked—with only 65 watts and a $16.95 Gotham V-80 Vertical Antenna.

2405 Bowditch, Berkeley 4, California
January 31, 1959

GOTHAM
1805 Purdy Avenue
Miami Beach 39, Florida

Gentlemen:

I just thought I would drop you a line and let you know how pleased I am with your V-80 vertical antenna. I have been using it for almost two years now, and am positively amazed at its performance with my QRP 65 watts input! Let me show you what I mean:

I have worked over 100 countries and have received very fine reports from many DX stations, including 599 reports from every continent except Europe (589)! I have also worked enough stations for my WAC, WAS, WAJAD and ADXC awards, and I am in the process of working for several other awards. And all this with your GOTHAM V-80 vertical antenna!

Frankly, I fail to see how anyone could ask for better performance with such low power, limited space and a limited budget. In my opinion, the V-80 beats them all in its class.

I am enclosing a list of DX countries I have worked to give you an idea of what I have been talking about.

Wishing you the best for 1959, I am

Sincerely yours,
Thomas G. Gabbert, K6INI (Ex-TI2TG)

List of 105 countries/stations worked with 65 watts and a V-80 vertical

BV1US	KG4AI	VK3YL
CE3DZ	KG6FAE	VK9XK
ZL5AA	KH6IJ	VK9AT
CO2WD	KL7BUZ	VKØCJ
CN2BK	KM6AX	VP2KFA
CN8FB	KP4ACF	VP2AY
CR9AH	KP6AL	VP2DW
CT1CB	KR6BF	VP2MX
CX2FD	KS4AZ	VP2LU
DL1FF	KV4AA	VP2SW
DU7SV	KW6CA	VP5CP
EA1FD	KX6AF	VP5BH
EI4N	KZ5CS	VP6TR
F8VQ	LA3SG	VP7NM
FB8ZZ	LU2DFC	LU1ZS
FG7XE	LZ1KSP	VP9BK
FK8AL	OA4AU	VR2DA
FM7WT	OE9EJ	VR3B
FO8AD	OH2TM	VS1HC
G3DOG	OK1FF	VS2DW
GC8DO	ON4AY	VS6LN
GI3WUI	KG1AX	XE1PJ
GM3GJB	OZ2KK	XW8AI
GW3LJN	PAØFAB	YN1JW
HA5KBP	PJ5AA	YU3FS
HC4IM	PJ2ME	YV5HL
HC8LUX	PY2EW	ZC5AL
HE9LAC	PYØNE	ZE1JV
HP1LO	SM5AQB	ZK1BS
IIMV	SP6BY	KH6MG/ZK1
JA1ANG	TI2LA	ZK2AD
JZØHA	UA1AU	ZL1ABZ
W1AW	UAØKKB	ZL3JA
KB6BJ	UQ2AB	ZM6AS
KC4AF	VE8OJ	ZS1OU

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ON THE GOTHAM V-80 VERTICAL

- If K6INI can do it, so can you.
- Absolutely no guying needed.
- Radials not required.
- Only a few square inches of space needed.
- Four metal mounting straps furnished.
- Special B & W loading coil furnished.
- Every vertical is complete, ready for use.
- Mount it at any convenient height.
- No relays, traps, or gadgets used.
- Accepted design—in use for many years.
- Many thousands in use the world over.
- Simple assembly, quick installation.
- Withstands 75 mph windstorms.
- Non-corrosive aluminum used exclusively.
- Omnidirectional radiation.
- Multi-band, V80 works 80, 40, 20, 15, 10, 6.
- Ideal for novices, but will handle a Kw.
- Will work with any receiver and xmitter.
- Overall height 23 feet.
- An effective modern antenna, with amazing performance. Your best bet for a lifetime antenna at an economical price. ONLY $16.95.

73,
GOTHAM

THE NEW RME 6900

The design and production of communications receivers today is considerably different than in past years for two principal reasons. Costs have risen precipitously; to manufacture a receiver in the face of this and keep the price reasonable requires good tooling, long runs, and little allowance for error. Secondly, there are greater demands placed on receiver operation than ever before, versatility . . . handling ease . . . yes, amateurs have come to ask for parameters of performance almost unheard of in past years.

RME in announcing the new 6900 states without equivocation that this receiver performance is unmatched by anything near its price class. The 6900 is engineered to give optimum service for all modes of amateur communications — not merely one. Engineered under the supervision of Russ Planck, W9RGH, the 6900 has as many advanced pioneering features as its extraordinary namesake, the world famous RME69, which was the first band-switching communications receiver ever produced — over 20 years ago and still widely used today.

What makes the 6900 so Hot? First, meticulous attention to details so that every circuit is performing in an optimum manner. Second, an ingenious function selector, the Modemaster. Every circuit in the 6900 is designed to provide high selectivity; frequency stability, sensitivity and low internal noise. Finally, inclusion of *all* function controls necessary for a modern communications receiver... vernier control knob with overide clutch for fast tuning; RF gain; AF gain; antenna trimmer; band selector, stand-by/receive/calibrate/transmit; ANL; T-notch filter; calibrate adjustment; band selector.

Whether you operate CW; SSB; or AM, you will have the almost uncanny feeling the 6900 was designed solely for you — this is the test of a modern communications receiver that we believe only ours can meet on the operating desk.

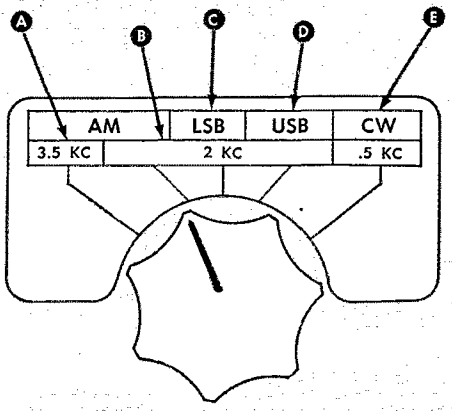
- **CONTROLS: 11½" Single Slide Rule Tuning Dial; Logging Scale.**
- **COVERAGE: 80, 40, 20, 15 and 10 on 5 bands plus 10 to 11 mc for WWV or WWVH.**
- **Peak Selectivity plus tunable "T" Notch.**
- **Internal 100 kc Hermetically Sealed Crystal Calibrator.**
- **500-ohm Output.**
- **Noise Limiter for SSB and CW, AM.**
- **Separate Detector for Single Sideband.**
- **S Meter Calibrated in 6 db Steps Above S9 for Better Reading.**
- **Improved Fast Attack AVC Circuit.**
- **Selectable Sideband.**
- **Panel of Attractive Grey "Clad-Rex" Vinyl Bonded to Aluminum with Charcoal Trim.**
- **Front Panel Controls Re-Grouped for Ultimate Operating Ease and Convenience.**
- **SENSITIVITY: 1 mv. 30% Modulation for 100 mw output.**
- **S-N-R: 10 db at 1 mv Input.**
- **SELECTIVITY: 500 cps, 6 db down, in CW mode.**

offers optimum performance on SSB, AM or CW with no compromises

NEW...VERSATILE

Model 6900

MODEMASTER SWITCH



Gives One Hand Knob Control of 5 Distinct Functions

A When in the indicated AM position, a *full-wave* diode detector is used. The IF frequency response curve is 3.5 kc wide at 6 db down and, the AVC system is switched for fast attack/fast decay operation. The AM band width for this area is 3.5 kc.

B In this AM position all of the conditions described for function A above remain the same except that the IF response curve is narrowed to 2 kc to reject nearby signals on crowded bands.

C In the LSB (Lower Side Band of SSB carrier) position a series of steps occur.

(1) The AVC system is switched to a fast attack/slow decay performance.

(2) The Beat Frequency Oscillator is turned on and positioned for desired sideband reception.

(3) The second conversion oscillator frequency also shifts for reception of desired sideband while the IF response curve remains the same.

(4) An advanced Product Detector switches in to replace the Diode Detector in all SSB and CW positions.

D In the USB (Upper Side Band) the changes cited in function C above also occur but are designed to accommodate the Upper Side Band.

E When switched to the CW position:

(1) The band pass of the IF System is reduced to 500 cycles (.5kc)

(2) The BFO Injection Control and BFO Pitch Control becomes operational.

(3) The AVC system is changed for optimum when operating under CW conditions.

(4) The second conversion oscillator is positioned for reception of the upper sideband beat note.

See your RME distributor or write to RME Electro-Voice®

Dept. 10Q, BUCHANAN, MICH.

Station Activities

(Continued from page 90)

at 0900 Sun., TCPN 2nd call area on 3970 kc. at 1900, TPN on 3980 kc. at 1600. Appointments: WA2CIG as OBS, W8PAB/2 as OO 1V. Endorsements: W2ZHU as EC Oswego Co., K2RTN as OPS, W2RQF as OPS. K2QDT as OPS. W2TPV made BPL for the first time. K2KTK's 20-meter ground-plane blew over in the Oct. CD Party. K2UZJ has a new NC-300 and is very pleased with the results. W2COB reports that CD Party activity is picking up. He has a new HQ-160. K2JXF is going push-to-talk. K2EQB is modifying audio on his Globe Scout. W2PVI reports that W2EDX has moved to HB9-Land. K2KQC handled 22 messages for the Red Cross during the S.E.T. K2ISD did a fine job on the Wyoming Co. Net during the S.E.T. W2RQF has built a mobile transmitter. K2RTN has been appointed C.D. Radio Officer for TWN of Bainbridge. They will have five 2-meter communicators and three 6-meter jobs. The Alfred Radio Club and Orleans County Radio Club are now affiliated with ARRL. Congratulations! W2RUF reports that her brother and his son are now WV6IVM and WV6IVN. K2SSX has a new Mosely ground-plane antenna. When is the RAGS spring party? K2QPC reports that too few stations on v.h.f. work c.w., consequently V.H.F. QSO Party scores are a lot lower than need be. W2EMW is back on 20-meter c.w. The V.H.F. Roundup at Three Rivers Inn was a tremendous success. Over 500 v.h.f.ers attended. The Syracuse V.H.F. Club really did a bang-up job. W2PTD now has the big three DX awards—DXCC, WAZ and WPX. The Northern Chautauqua ARC elected K2GDI, pres.; K2TKD, vice-pres.; W2SB, secy.-treas.; and K2TDJ, director. K2GDI announces that classes for FCC licenses will be conducted if there is sufficient interest. WA2AYI announces the Eastern Area Slow Speed Net, a part of NTS, which meets on 3748 kc. at 1800 on M.-F. All are welcome. The *Squaw Island Smoke Signal* is an interesting paper put out by the SIARC in Canadaigua. May the New Year bring you happiness and more time for improving your station and operating procedures. Traffic: (Oct.) W2TPV 516, K2SSX 409, W2EZB 242, K2IYP 177, W2RUF 176, K2RTN 143, K2QDT 134, K2JBX 111, WA2BEU 107, W2OE 103, K2AOQ 75, K2GQU 62, WA2CIG 38, W2RQF 38, W2PGA 35, K2IMK 34, K2RWV 34, K2BBJ 32, K2DOZ 32, W2QQK 30, W2BKC 28, W2FEB 28, K2EQB 18, W2PVI 18, K2JXE 16, W2COB 12, K2EE 10, WA2EOL 10, W2ZDL 9, K2UZJ 4, K2KTK 1, W2ZRC 1. (Sept.) K2UZJ 109, W2FZB 69, K2KQC 62, W2ZRC 35, K2MES 10.

WESTERN PENNSYLVANIA—SCM, Anthony J. Mroczka, W3UHN—SEC: OMA. RMs: GEG, NUG and KUN. It is with deep regret we record the death of CSL. The WPA Traffic Net meets Mon. through Fri. at 1900 EST on 3585 kc. The PFN meets Mon. through Fri. at 1800 EST on 3850 kc. New appointments: KUN as RM; LIV as EC; K3GHH as ORS and OBS. AJN is home from the hospital and getting back on the air from Gratztown. K3CLX/3 now is on 6 meters. LSS is moving to a new QTH. SYT is mobile on 10 meters with a DX-40. Congratulations to WRE, who did a fine job in the recent S.E.T. exercise. Father-and-son team, K3DDH and K3CMC, both bagged bucks during the archery season. KN3IAO recently received her Technician Class license. New officers of the Monessen ARC are KGR, pres.; WSX, vice-pres.; K3AOD, secy.; 1WD, treas.; RWA, UG and K3AFZ, trustees. This group is now conducting code and theory classes and recently applied for a station license after receiving a piece of land. The Horseshoe RC reports via *Hamateur News:* KQD received the LARK certificate; ROA went fishing at Erie; K3AHI is the new president of the Ivyside RC; GRO has a new YL in the family. The Steel City ARC reports via *Kilowatt Harmonics:* New Officers are FML, pres.; UUH, vice-pres.; ZDW, treas.; MPK, corr. secy.; UHM, rec. secy.; BEX has a cubical quad on 10 and 15 meters; a new Novice is KN3JVM; APN took first place in the mobile class of the Breezeshooters Ground Wave Contest. Up Erie way: K3EIU is on a mobile vacation in California; CSM has been named chairman of the RAE v.h.f. committee; a new YL operator is K3JFB, K3BLY is organizing a mobile group. A new award has been brought to our attention, a Worked All State Capitals (WASC) certificate. This certificate will be issued upon receipt of proof of confirmed contacts with amateurs in the capital city of each state after January 1, 1955, without limitation as to band, power or emission. For further details contact award manager H. L. German, IMN, 129 North 30th St., Camp Hill, Pa. The Eastern Area Slow Net (EASN) on 3748 kc. is looking for traffic stations in the area. LIV is NCS for the Altoona/Blair County C.D. Net. I wish to thank all club secretaries and many others who have been faithful in forwarding to me their club bulletins and items for this column. Please continue to do so. Traffic: (Oct.) W3KUN 250, K3GHH 116, W3WRE 62, LSS 56, K3CLX 22, W3CA 4, K3COT 4, W3UHN 2.

CENTRAL DIVISION

ILLINOIS—SCM, Edmond A. Metzger, W9PRN—Asst. SCM: Grace V. Ryden, 9GME. SEC: PSP. RM: PCQ. PAM: RYU. EC of Cook County: HPG. Section net: ILN 3515 kc., Mon. through Sat. at 1900 CST. Jack Stanton joins the ranks as the new SEC of this section and requests that all ECs forward their monthly reports to him for publication in the columns of *QST*. This is my first report of my second term and I want to thank all for their faith in me and for this privilege of representing you again in this section. CLH is separated from the Navy and is back on the air with a new 75A-4. PNE has graduated from an Adventurer to a Navigator transmitter. K9ISP advises that the new time of the Nite Owl (RACES Net) is 1930 on Thurs. 9RN certificates were issued to K9PLF, K9AIR and 5DTA/9. K9DTB is working hard for WAS on the u.h.f. bands and is in the home stretch. NIU has a new California kw. and had to run a new 220-volt service to handle it. The MARS gang in Quincy is sponsoring its first ham training course. CWH is mobiling with a Motorola f.m. unit. K9OKD has received his WAS and is sweating out his WAC award. JJD's new transistor v.f.o. helps to bring in the scores in the CD Contests. K9JMA is the new editor for *SCAN* (St. Clair County Amateur News). KFX has a new HQ-170 and JMY is now s.s.b. with an SB-10. K2DDC is now living in Park Forest with a new call, K9UNS. AA (Hamfesters-Chicago) is finally on 2 meters, so reports KN9RVG. The North Central Phone Net handled 130 messages during the month and the ILN cleared 327 messages in 23 sessions. KN9SGH has received his General Class ticket, is modulating a Heathkit DX-40 and is now building to go mobile. GDI has country No. 236 for his DXCC. K9IXK's new exciter is bringing in the tough ones for high scores in contest work. IDA reports that the new 20-Meter S.S.B. Net is FB in message handling. K9GSG and K9JIN are sharing their new SX-101A. TZN has built a Globe LA-1 amplifier and is using it to put out 300 watts. K9GDQ has a new Hy-Gain minitribander. Many reports were received on the S.E.T. activity and numerous clubs and individuals proved the reliability of amateur radio communications with praises from civil defense officials and the Red Cross. K9QYY's new shack set-up includes a GSB 100-GSB 101 and an HQ-170. K9OCU has received his 50 state WAS award. QKE attended the hamfest in West Hartford and reported that it was a fine affair. SKR's new antenna is a vertical put up by TKJ. K9SIQ is now a General. The following made BPL: PCQ, DO, IDA, TZN and K9PLF. Traffic: (Oct.) W9DO 1212, IDA 544, K9PLF 424, W9USR 398, PCQ 239, TZN 156, MAK 111, K9JIN 81, GDQ 80, W9SXL 61, JXV 50, K9QYY 40, IVG 39, GSR 38, JBX 38, OZM 30, IXK 27, QYW 27, OAD 20, W9FAW 17, UQT 11, EET 10, JJN 10, PRN 10, K9LXG 8, CIB 6, MWA 4, W9QQG 4, SKR 4, LGH 3, K9HWC 2. (Sept.) K9IV/9 24, JIN 14. (Aug.) K9IVG/9 40.

INDIANA—SCM, Clifford M. Singer, W9SWD—Asst. SCM: Arthur G. Evans, W9TQC. SEC: SNQ. PAMs: BDG, BKJ, MEK and UXK. RMs: DGA, JOZ, TT and VAY. Net skeds (all CST): IFN (a.m.) 0800 daily and 1730 M-F on 3910 kc.; ISN (s.s.b.) daily on 3920 kc.; QIN 1900 daily and RFN 0700 Sun. on 3656 kc. and QIN (training) 1800 M-W-F on 3745 kc. New appointments: TQC as Asst. SCM and K9DFK as EC of Clinton Co. Twenty-one clubs were represented at the Indiana Radio Club Council meeting held at Notre Dame U. on Oct. 18. New officers elected were BDG, chairman and FSA, MNO, PQQ, IHO, CDW, RTH and WTY. New clubs to affiliate with IRCC: Clay County Amateur Radio Club, Hoosier Amateuradio Membership Society (HAMS), Goshen Amateur Radio Club and Allison Amateur Radio Club. The Hoosier Amateur Women's Klub elected K9IXD as its new president at the annual Oct. meeting. Other officers are ILK, SUT and QJR. Congratulations to Will Perrine who, at the age of four score, is the proud owner of KN9ULX. K9LAY has a new HQ-150. DZC is new on 6 meters. K9AYI received a 35-w.p.m. CP sticker. New calls in the South Bend Area are KN9UOJ, UBM, UBS and UHY. The new AREC net in Hendricks County meets each Wed. at 2000 on 50.55 Mc. DGA is rebuilding a 20-meter DX rig using a 304TL. The new Michigan

(Continued on page 106)

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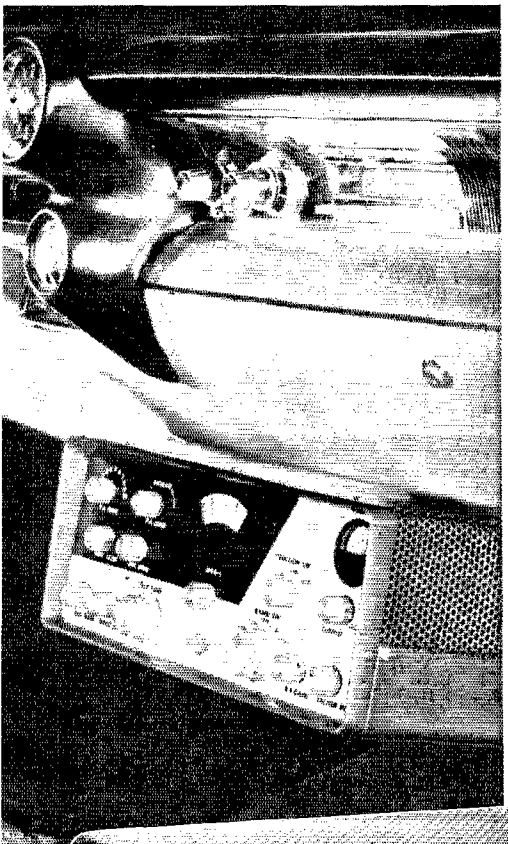

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City Net meets on 50.1 Mc. each Wed. at 1830. The Central Home Brew Club (Brownsburg) held a weiner roast with 100 present. K9AUE is leaving for Army duty. K9IXD has been drafted as secretary for the SCM. Please send your station reports *early*. Mail service at the SCM's QTH is below par. NZZ, ZYK, FJR, TT, ETM and DGA made BPL. October net report: BDG reports 378 for IFN, ISN as reported by MEK at 132, TT reports RFN totaled 213, QIN topped all Hoosier nets, reports VAY, with 620. *Amateur radio exists as a hobby because of the service it renders.* Traffic: (Oct.) W9NZZ 814, FJR 581, TT 553, VAY 423, DGA 250, MM 226, ETM 214, K9AYI 186, W9RTH 88, LIT 85, GJS 78, BKJ 75, MEK 69, BDG 59, K9LZJ 49, W9RVM 49, EGQ 45, K9IXD 45, W9TQC 44, K9JKK 39, W9PMT 38, CC 34, SNQ 33, DOK 30, NTI 30, K9PTS 29, BSU 25, KN9TCQ 25, W9YYX 22, ZPP 20, QVQ 18, VNV 18, K9OFP 12, W9BDR 10, K9GSY 10, W9NTR 10, EHE 9, ENU 8, FWH 8, EJW 5, OCC 5, HUF 4, MKF 4, K9AUE 2, W9AMW 1, YVS 1. (Sept.) K9PDE 61, W9QWL 17, K9DSY 1.

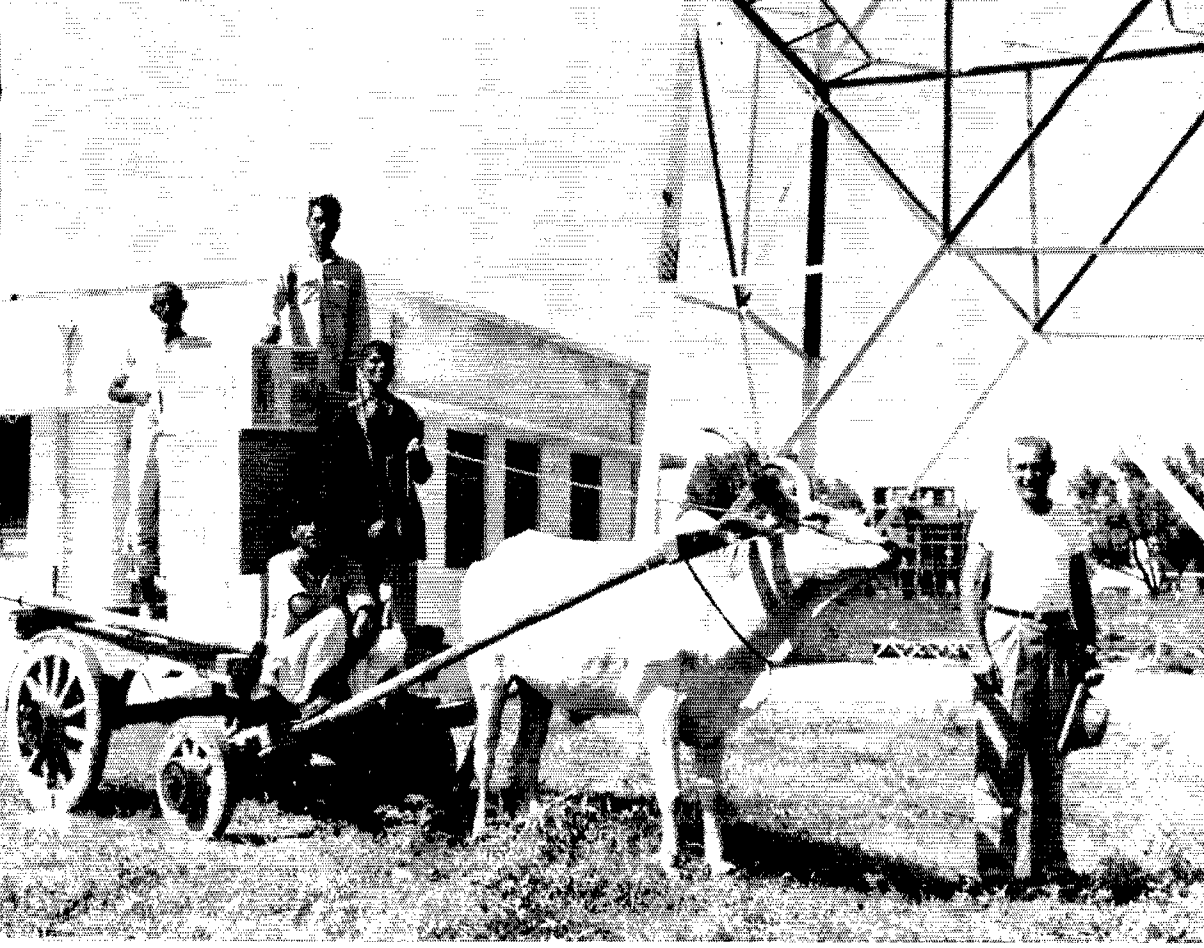
WISCONSIN—SCM, George Woida, W9KQB—SEC: YQH. PAMs: NRP, GFL and K9IQO. RMs: SAA and K9ELT. New appointees: K9LCK as OES, K9LWV as ORS. BEN certificates went to K9s OPF and OGT. Congratulations to the following on becoming members of the A-1 Operator Club: CBE, DKH, IQW, KKM, KZZ, NLJ, NRP, SAA and SZR. Official Observers GFL, RKP, K9JQA and K9GDF sent out a total of 126 signal observation notice cards, mostly of harmonic detection. BPL certificates were earned by CXY, DYG, K9DAC and K9PDJ. New officers of the Outagamie Club include UVZ, pres.; MCQ, vice-pres.; FBC, secy.; VTM, treas. The Mancorad Club's new officers are K9DIN, pres.; K9EOS, vice-pres.; and KN9PDY, secy.-treas. K9SIY is a new General Class licensee in Oshkosh. RUJ reports the following licensed YLs were in attendance at the Watertown "Ground Hog" Party: ZCR, WYJ, LGR, VIK, ZAD, MMO, RUJ, K9s GJC, CCO and TRP. The Badger V.H.F. Club of Milwaukee held its first Ham Festival with 68 in attendance. The food was good, the prizes were numerous and dancing rounded out the evening. A Wisconsin Association of Nets is being formed to coordinate all major net operations in the section. The following OOs participated in ARRL's Sept. Frequency Measuring Test. GFL had an average error of parts per million for measurements on 3 bands of 5.3, RKP 50.6, K9EZG 228.1, IKY 241.3, K9GDF 396.3 for 2 bands. Our section is in need of more OBSs with good coverage signals on all bands. Appointees, please check the expiration date of your appointment. If over 3 months past due, it has been cancelled because there was no answer to a request sent you to renew. Traffic: (Oct.) W9DYG 1109, K9DAC 818, W9CXY 521, K9PDJ 258, DTK 201 W9SAA 132, K9ELT 111, W9VHP 43, CBE 38, NRP 35, K9DOL 20, UKB 19, GSC 18, W9CCO 17, K9JQA 15, HDL 13, JIG 11, IQO 10, W9VIK 8, SIZ 7, K9LWV 5, W9GFL 3, KQB 3, MWQ 2, RKP 1. (Sept.) K9JQA 6, LWV 4.

DAKOTA DIVISION

NORTH DAKOTA—SCM, Harold A. Wengel, WØHVA—PAM: KØKJR. RM: KTZ. The North Dakota C.W. Net reports 12 sessions with 68 check-ins and 8 pieces of formal traffic. The N.D. 75 Meter Phone Net reports 28 sessions with 680 check-ins. The number on net roll was 57; highest number of check-ins 35, lowest 8; 61 pieces of formal traffic and 60 informal. The Minot Amateur Radio Association is now an ARRL affiliate. Meetings are held in the Pietsch Flying Service Building at the Airport. MARA had a booth at the State Fair in Minot this summer, using a Morrow receiver, transmitter and double antenna on 75 meters and included a display of ARRL literature. The only Novice in the MARA is KNØWIO. Officers are GNS, pres.; LNA, vice-pres.; PRN, secy.; QNW, treas.; and DOW, act. mgr. KØJEV is new on the phone bands in Buxton. ECX has moved into Kindred for the winter. Traffic: KØGRM 40, TYY 39, ITP 27, RLF 20, WØBHT 19, DNJ 18, KØGGI 16, PVH 15, IAB 14, KJR 14, WØPHC 11, KØADI 7, WØCAQ 6, KØMPH 6, WØKTZ 3, KØPLY 1, YVM 1.

SOUTH DAKOTA—SCM, J. W. Sikorski, WØRRN—SEC: SCT. SMV reports his DX count is now 171/162. PHR is operating a new Courier. KØACJ, Lead, and KØHSW, Hot Springs, were presented Section Net certificates for participation in the Colorado Weather Net. Ex-KØKJT is now WA6INC, Watsonville, Calif. KØORH received her General Class ticket and her first CQ was answered by an SM. KØDHA is now a nurse at Redfield State Hospital. KØVYY is a new ham at Ridgeview, near Gettysburg. ECs appointed by SCT include DVB, SIF, CMJ and SDP. KNØVJC is a new call at Iroquois.

(*Continued on page 108*)



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"Dad" bought her a TA33 beam, which he uses most of the time. ZWL called together and organized Meade County amateurs into the Hi-Lo ARC, meeting at Sturgis. Officers of the club are FKX, pres.; KØACJ, vice-pres.; Robert Merrit, secy.-treas.; KNØWJT, pub. chairman. The club will meet Sat. at 9 A.M. on 3717 kc. for practice sessions. The Sioux Falls ARC Civil Defense Net (144.9) has several members building 75-meter portables. KØSZJ built the pilot model. KØOXQ, Sioux Falls, was asphyxiated in a hunting cabin at Lake Madison. Traffic: WØSCT 437, ZWL 288, BMQ 169, DVB 115, KØAIE 54, WØOFP 32, KØSEJ 26, KLR 22, KDUR 12, WØDIY 8, RWM 6, KØLXH 5, WØNNX 5, RWX 5, KØVYY 5, WØDKJ 4, MTZ 4, QPK 4, YVF 4, KØCWJ 2, LKH 2, WØWUU 1.

MINNESOTA—SCM, Mrs. Lydia S. Johnson, WØKJZ—Asst. SCM: Rollin O. Hall, ØLST. SEC: TUS. RMs: RIQ and KØIZD. PAMs: QVR, TCK and TUS. AGL and his XYL, KØJXX, while in New England kept daily contact with Rochester with TJA and KØGLP (AGL's son) using a Gonset 77 rig. They wish to commend our ARRL officials at Headquarters for the wonderful job they are doing; also to thank IWPR, for a thoroughly enjoyable tour of IAW. The Rochester Club has thirty active members. The St. Paul Mobile club, REA, is conducting a slow-speed c.w. net on 3595 kc. Sat. at 1300 CST for drill practices. KJZ gave a talk on c.w. net procedure and NTS at REA. THY and IPN set up an amateur radio display at the Lowry Hotel for the Women's Council for C.D. Lots of luck to new ECs FGP, MXC, KYG, KØEPT, OBP, ICG and GIW. The EC certificates for YHR and OLB were endorsed. LST renewed his OBS appointment. WQY and WUJ have a new jr. operator. KØMTW and IYK enjoy DX on 10 and 20 meters. KNØWVN's signal can be heard in New Ulm. The NURC conducts code practice at its meetings. EC KØIKU has a mobile kw. for emergency use. KFN, EUI and KØCGE demonstrated amateur radio and commercial communications at the Pipestone Country Club. WMA is home from the hospital. KØQLM put up a dipole antenna. Glencoe has a new Novice, KNØVTG. Congrats to MBD and his XYL on their new baby daughter! KØMINY has 86 counties toward WAM. SEC TUS states that we have 500 AREC members. EC KØMEQ has kept regular skeds with JBT for two and one-half years. TUS, KJZ and KØGIW made BPL. *MRC Splatter* proudly presents a new look and a new editor, DQL. The MRC conducts theory classes at 1900 CST the 3rd Fri. of each month. 13-W.P.M. MJN meets daily on 3595 kc. at 1900 CST. Hamline Prof. Coss is KNØWKW. The Mankato, Blue Earth and Rochester Clubs were guests of the Faribault hams at a meeting conducted by OGP and BEI. Thirty-six counties participated in the S.E.T. The North Star YL Net meets on 3820 kc. at 1300 CST. DKE and SKQ became Silent Keys. Traffic: WØTUS 557, KJZ 425, RIQ 202, KØQLM 158, GIW 148, ORK 97, WØOPX 96, HEN 88, KFN 79, KYG 70, KØMAH 63, IKU 59, WØKLG 59, KØMAH/Ø 56, WØOJG 54, BUO 53, LST 51, DQL 46, KØIZD 46, EPT 45, WØISJ 44, UMX 42, PET 37, KØQVB/Ø 37, SNC 36, WØNNG 34, KØMGT 31, SNG 31, BFS 29, KYK 29, WØVBD 28, KØMINY 27, QVY 27, RGP 25, WØALW 24, KØJYJ 24, LWK 22, WØQVR 22, NYM 21, OJK 21, RQJ 20, OET 19, KØQVF 17, WØTCK 17, KØJCF/Ø 13, RPW 9, WØMXC 7, DYC 5, THY 5, KØPML 4, WØFGP 2, KØIDV 2, WØOMC 2, KNØVTG 1.

DELTA DIVISION

LOUISIANA—SCM, Thomas J. Morgavi, W5FMO—Your SCM and MXQ, newly-appointed SEC, made the trek to the Shreveport Hamfest, held at the Louisiana State Fair. About 100 amateurs were in attendance. The Parish emergency unit was on display as well as some c.d. equipment. The Shreveport clubs had a station in operation working all bands and handled quite a bit of traffic. ULI, AAX, K5RPH, SFG and QAT are having a 10-Meter QSO Contest. Bud is in front with Dusty bringing up the rear. ML is retiring to line up with the old-age pension and 2 meters. JSW is building a new 2-meter converter. KTD, an outstanding OES in Louisiana, is busy with 432-Mc. plumbing. SUM is his assistant, supplying praise and criticism. WYN assisted the Natchez amateurs by supplying during the Miss America Parade on Oct. 15 at Natchez, Miss. Four days prior to the opening of the Louisiana Gulf Coast Exposition, the Lafayette ARC was asked by the Lafayette Chamber of Commerce to set up a ham display in their booth at the exposition. Despite the short notice for a "show-off display," DDL/5 was set up with borrowed equipment and several people were "exposed" to 15-meter phone. CEZ dried out sufficiently from the N. O. Hamfest to make BPL again. Emergency

(Continued on page 110)

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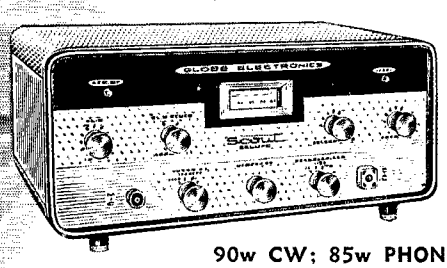

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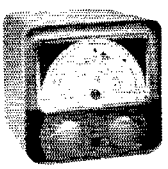

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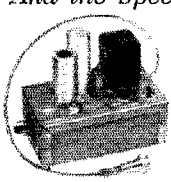

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Coordinators in Louisiana will please address their reports and other correspondence relative to AREC matters to A. L. Powell, W5MXQ, Section Emergency Coordinator, 224 Hollywood Drive, Metairie, La. Traffic: W5CEZ 653, MXQ 101, K5LKC 18, W5EA 8, K5OKR 2.

MISSISSIPPI—Acting SCM, Thomas C. Pate, K5HYO—We in the Delta Division want to congratulate 4RRV on his election as our new Director. We also want to congratulate BSR on his election as Vice-Director and praise him for the splendid work he has done as Delta Division Director. We pledge our full cooperation to the new Director. The Cleveland ARC put on a demonstration of amateur radio on the streets of Cleveland recently. I think these demonstrations would be well worth while all over the State to get the general public acquainted with ham radio. K5YLD, in Rosedale, is on the air with a Globe King and an HQ-160. We congratulate the members of the Mag. & Gulf Coast H. N. for the splendid job they are doing in handling traffic in and out of Mississippi. VGF is putting up a new Triband beam. Traffic: K5QNF 364, SQS 47, HYO 12, MFY 12.

TENNESSEE—SCM, R. W. Ingraham, W4UIO—Thanks to PAH, FX and K4OUK for net reports and to K4KYL for the OES report. Announcing new appointments: K4MYI as OBS for 6-Meter nets, WBK as OBS in Memphis, K4CNY as ORS. The Tennessee C.W. Net now comes under the Eastern Area Net with liaison to 4RN. UVS and DTI recommend the bathtub treatment for bugs. K4OUK is begging for more Tennessee QNIs on TNSN. DFR has designed and built a successful electronic key. Chattanooga reports: JVM is modifying a Heath Citizen Band Transceiver for 6 meters; DX activity is reported on the 20-, 15-, and 10- and 6-meter bands; 45 are attending a General Class instruction course. Traffic: (Oct.) K4CNY 324, W4OGG 308, VJ 175, FX 103, K4OUK 99, W4NHT 64, EIN 58, UIO 58, CXY 57, PQP 46, K4LLB 27, W4RRV 20, UVL 16, SGI 15, PAH 13, JVM 11, SJ 10, UVP 6, DFR 5, K4KYL 1 (Sept.) W4FX 81, SJ 15, DFR 12.

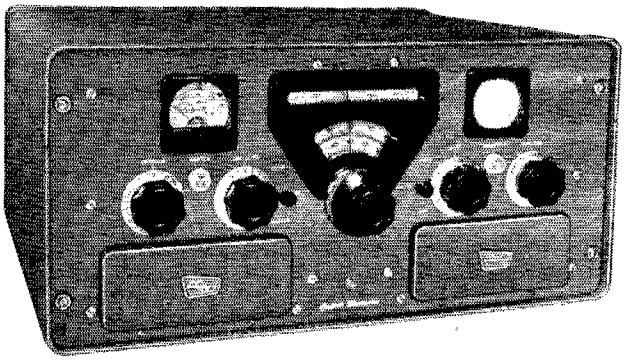
GREAT LAKES DIVISION

KENTUCKY—SCM, Robert A. Thomason, W4SUD—Asst. SCM: W. C. Alcock, 4CDA. SEC: BAZ. RM: K4CSH. PAMs: SZB and K4HCK. S.S.B. PAM: MMY. V.H.F. PAM: K4LOA Our SEC is now State Radio Officer. BAZ and ABK (Louisville c.d. station, HOJ chief operator) are keeping our section nets busy with c.d. and Red Cross traffic. Daily use of our nets by public officials is far better training for emergencies than a few annual tests. This also informs these officials of our ability. If your complaint has been lack of traffic for your area, try one of the section nets for your share of this traffic. V.h.f. activity remains high in Kentucky with OES reports from JUI, ADH, GSH, K4BPY and LOA. ADH has a 2-meter final using 100THs under construction. BPY has a 6- and 2-meter mobile. GSH is working on a 220-Mc. rig. LOA reports 100 per cent copy on all 50-Mc. schedules. OO reports were received from ELG, SZL and K4BUB. K4LSB and JVW gave a demonstration of amateur radio to the Newport Optimist Club. YL K4VDO from Glasgow is active on KYN. K4HOE is a big help on 9RN. More stations are needed for 9RN liaison. OBS ELG hopes to transmit ARRL bulletins on 6 and 2 meters soon. Traffic: W4ZDB 202, BAZ 196, K4CSH 161, W4SUD 66, SZB 51, K4HOE 41, W4CDA 37, K4QHZ 31, ZML 29, HCK 26, KIS 19, W4NUQ 17, KJP 16, MWX 16, YYI 13, K4HOJ 12, SBZ 12, MPV 11, IFB 9, W4TYP 9, K4LHQ 8, W4SYE 7, AOH 5, ELG 5, K4KWE 4, LOA 4, W4SZL 3, K4VDO 3, W4JUI 2, WVU 2.

MICHIGAN—SCM, Ralph P. Thetreau, W8FX—SEC: YAN. RMs: SCW, OCC, QQO and FWQ. PAMs: AQA and NOH (v.h.f.). New ECs are JXX and UCG. New ORSs are AUD, GKT and IV. SAY is a new OO. NYA is a new OPS. BFF is a new OES. Others who worked in the Women's Air Race are AQA, LTS, PCT, QBA, QOT, QPO and K8MOO. NOH's 2-meter beam came down—again. AQA has suggested that all NCSs on the BR/MEN Net apply for OPS appointment. UOQ reports the Shiawassee ARA is completely emergency equipped for all bands through 6 meters under the club call QQQ and has a DX-100, an SX-100, a Gonset and an Elmac w/1000-watt generator. UOQ works both a.m. and s.s.b. and suggests an OBS for s.s.b. ELW says the Kalamazoo Club now has 20 transceivers for 2 meters. BFF reports CVQ, EMD, GOV, K8AHX, KSZ, K8DQE and K8JZR are all on 220 Mc. BFF also is NCS for the Sun. 9 P.M. S.W. Mich. 6 Meter Net,

(Continued on page 112)

THOSE "DISTINCTIVELY NEW" SIGNALS...



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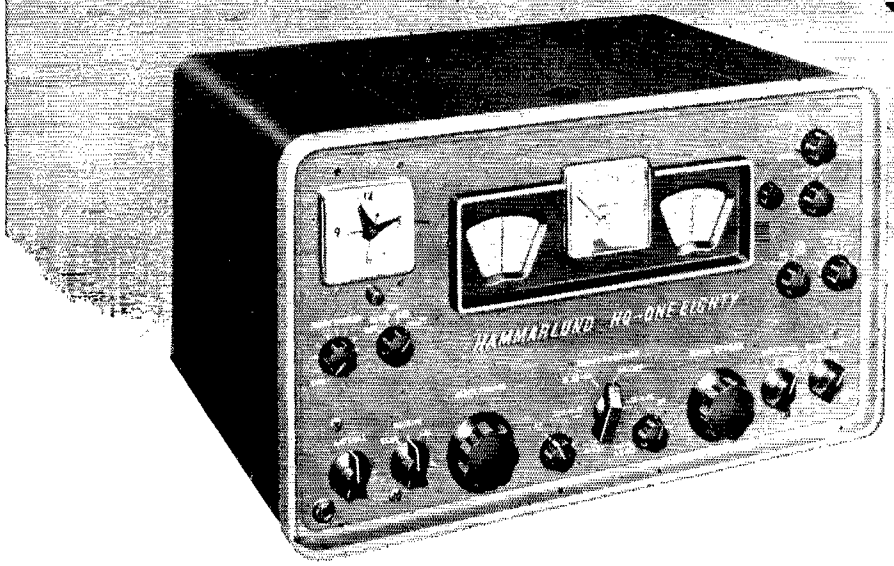
with emphais on traffic-handling. K8GKX says the Hillsdale ARC is working on emergency gear. DTY sends a report in from Alabama. OCC is working on a time sequence keying network. NUL is back with traffic. The Genesee County RC has an HQ-170. K8DJQ has a t.r. switch for break-in. K8GJD, whose brother just got the call KN8RDE, has a new Matchbox. K8EXE has a home-brew ZL special beam, with "strong-arm" rotator. K8HZU joined the USAF. IHN got the DXCC Award. PJS is working nights so is off QMN. K8KCO, on phone, gets into the church p.a. system. K8LPV and K8KYH have started a Dixieland band. TIC is going to Florida. PT says conditions are poor on 220 Mc. so he is looking for Maine and S. Car. on 144 Mc. K8ADD is going to school in Chicago. MGQ is working c.w. and s.s.b. because of TVI. MMB uses a.m. for the YL Net. Traffic: (Oct.) W8OCC 319, QQO 222, FWQ 122, YAN 121, NUL 111, FX 110, RTN 79, NOH 73, ILP 60, JKX 56, K8AEM 39, NAW 38, DJQ 32, W8ELW 29, K8GJD 27, W8EU 21, FDO 17, SWG 16, K8KMQ 15, W8QIX 15, K8EXE 14, W8TBP 11, K8HZU 10, W8IUJ 9, HKT 8, AUD 5, IHN 5, PJS 5, WXO 5, DSE 3, UOQ 3, EMD 2, K8KCO 2, LPV 2, W8TIC 2. (Sept.) K8JED 22, W8FOV 12, AHV 10. EU 1.

OHIO—SCM, Wilson E. Weckel, W8AL—Asst. SCM: J. C. Erickson, 8DAE, SEC: UPB. RMs: DAE and VTP. PAMs: HZJ and WYS. K8GWK received his Greater Cincinnati ARA certificate. Wright-Patterson Air Force Base RC officers are JSE, pres.; K8EVE, vice-pres.; and K8IET, secy. Findlay had over a thousand registered, with more than 500 amateurs attending. HOY joined Silent Keys. KJE is in VK-Land. At the Warren Hamfest 135 amateurs were registered, with K8LXA taking home the Apache rig, UUI the t.r. switch and an SWL the Mosley Tribander beam. Your SCM attended the Cleveland Amateuradio Convention, along with Vice-Director Dana Cartwright. There were about 1200 present including 900 amateurs, with 244 attending the banquet. K8KKO received awards for his rescue work during the floods in the Cleveland Area. The guest speaker was FKC, founder of the Sohio Satellite Tracking Station, who spoke on "The Founding and Development of the Sohio Satellite Station" and played back tape recordings of signals sent out from various satellites. Twenty-five took the Novice and Technician Class examinations. Those getting the major prizes were K8BFT, the Collins 75S-1 receiver; K8s: IPC and JHZ each an NC-188 receiver; TWO, a Globe Scout Deluxe; K8HNX, a Mosley TA-33 Tribander. This hamfest has grown into one of Ohio's largest. The Ohio Phone Net needs a Dayton outlet and many in Northwestern Ohio, so watsa you phone men. K8KBF received his General Class license. K8s KBF and NXN have a new Apaches. The Seneca RC saw a film slide and heard a talk in Europe given by IZF. K8GJU is mobile on 10 meters. BUM vacationed in California. Toledo's *Ham Shack Gossip* names K8CJS, of Michigan, as it's "Ham of the Month" and tells us the Fulton County ARC holds its meetings the 3rd Tue. of each month at UPR's home. K8BJL is mobile mostly on 160 meters. K8NBW received his General Class license. KN8s PTZ and QVW are new Novices. ZHO has a new Apache. MQQ recently was married. Columbus ARA's *Carascope* informs us that DMR demonstrated the many use of transistors, a school for Novice and Technician Class licenses only will be started the first of next year. New appointments are K8s GZG and MMO as OOs, K8JSQ as EC and DQG as ORS. GFE, our very active OO, spent eleven weeks in the hospital. Your SCM attended the Northeast Ohio 50-Mc. Group's banquet, which was held at the Swiss Club near Canton on Halloween night. There were 85 seated, 47 of them amateurs. The group had the pleasure of the company of two visiting YLs, 2THG and 2UCZ. The Seneca RC heard IJL speak on antennas and the club's 2-meter net meets at 1830 EST Thurs. on 145.44 Mc. The Cuyahoga County AREC, at the request of Olmstead Falls Police, set up patrols using mobiles with ADV, AEU BPE, LHX, LQD, LVM, NZI, PVQ, QBF, SLR, SUS, TRO, K8s ASW, EJH, IHZ, IPI, IUB, IXZ, IZL, KEM and MME participating. K8MUU moved back to Indiana. IBX was made a Tops C.W. Club member. UPH made BPL. The stork brought a baby girl to TZO and a baby boy to K8AEO. The first official meeting of the newly-organized Marion Amateur Radio Club was held recently. Officers are SSL, pres.; TV, vice-pres.; K8JPD, secy.; TSV, treas. Wish all of you a very Happy New Year. Traffic: (Oct.) W8UPH 1779, DQG 295, ZYU 274, DAE 238, BZX 104, K8IDH 81, HKU 80, DHJ 66, W8CTZ 58, AL 39, IBX 39, ID 28, K8JZZ 26, W8YGR 21, RTR 14, FFK 10, PZS 9, GAC 8, K8HVT 7, W8ILC 7, WYS 6, K8EKG 4, W8EEO 3, K8HEJ 3, W8WE 3, K8EBO 2, GVV 2, HDO 2, W8LGR 2, LMB 2, K8MHO 2. (Sept.) K8HGT 91, GWK 49, BDT 14, JIX 10, W8ZAU 8, K8HVT 3.

(Continued on page 114)

NEW!



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HUDSON DIVISION

EASTERN NEW YORK—SCM, George W. Tracy, W2EFU—SEC: W2KGC. RM: W2PHX. PAMs: W2IJG and W2NOC. Section Nets: NYS on 3615 kc. at 1900; NYSPTEN on 3925 kc. at 1800; IPN on 3980 kc. at 1530; ESS on 3590 kc. at 1800; ENY (emerg.) on 29.490 (Thurs.) and 145.35 Mc. (Fri.) at 2100; MHT (Novice) on 3716 kc. Sat. at 1300. Appointment: K2YZI as OPS. Endorsements: K2GCH as EC, WV2IMG as OES. Congrats to the Mamaroneck H.S. Club on its recent affiliation with ARRL. The A. B. Davis H.S. Club in Mt. Vernon has a DX-40 with folded a dipole and is managed by WA2EFY. Ten countries on 80 meters with 80 watts are reported by WA2BMB. The Albany Club had a conducted tour through the N. Y. Telephone Co. facilities. October was "auction" month with the Yonkers, IBM and Schenectady Clubs attracting large crowds. A new group is the Dutchess Co. V.H.F. Society with W2YPM, W2JFB, W2HZZ, K2GCH, K2OZT and K2UKE as charter members. They received a trophy at the Syracuse V.H.F. Roundup Oct. 10. Among the new calls are K2VNV, WA2IRK, WA2BKX, WV2FYU and WV2GWZ. New Hampshire makes 30 states for K2BGU. A new rig for 220 Mc. soon will be on the air at WA2EKE. Officers of the Mamaroneck H.S Club, WA2CRP, include K2YTK, W2BAC and K2YFI. The station includes an Apache, a GPR-90 and a vertical antenna. The *Yare-Mitter*, publication of the Yonkers Club, contained eight solid pages of editorials, reprints and technical topics. Our hats are off to the editor, K2BIG, for his fine efforts. K2CXJ is on both 144 and 220 Mc. A new eight-element beam for 144 Mc. rotates above the shack of K2BGU. Appointees: Send in those expired certificates for endorsement. Traffic: (Oct.) K2UTV 2515, K2YZI 596, K2OZT 157, W2EFU 85, W2PHX 83, K2YTD 80, W2ATA 61, K2MBU 40, WA2ALO 23, K2BGU 17, K2HNW 17, K2LKI 7, WA2EKE 6, K2CKG 2, WV2DRP 2. (Sept.) K2RKY 19, K2LKI 8.

NEW YORK CITY AND LONG ISLAND—SCM, Harry J. Dannals, W2TUK—SEC: W2ADO. RM: W2VDT PAM: W2UGF. V.H.F. PAM: W2EW. Section nets: NLI 3630 kc. nightly at 1930 EST and Sat. and Sun. at 1915 EST; NYC-LIPN, 3908 kc. Mon. through Sat. from 1730 to 1830 EST; NYC-LI AREC, 3908 kc. Sun at 1730 EST; V.H.F. Traffic Net, 145.8 Mc. Tue., Wed., Thurs. at 2000 EST. Our traffic nets extend a welcome to all interested amateurs. W2KEB is the sole BPL station this month. The V.H.F. Traffic Net, under W2EW, reports excellent activity. Hank would like to hear from net managers or NCSs of v.h.f. traffic and emergency nets in the section. His object, to provide additional v.h.f. coverage. K2JVB is now Wed. night NCS on the net. The NYC-LIPN has been averaging an attendance of 23 stations despite some rough QRM on the crowded 75-meter band. NLI continues to provide excellent traffic service. W2TUK once again is active on the nets. WV2HLE, active on 144 Mc., is planning to get his General Class ticket before expiration of his Novice license. W2AZC is Asst. EC. for the Queens 6-Meter AREC group. W2AEE has returned to activity with the regular school season and reports 82 countries worked toward DXCC. W2PF worked diligently on the preparation of a constitution and by-laws for the Hudson Amateur Radio Council, a newly-formed group fostered by Hudson Division Director W2KR for the purpose of promoting strong cooperation among Division radio clubs. K2GCE reports regularly to NLI. A 2- and 6-meter kw. rig is in the works at K2ACD. K2IUT worked England on 10 meters with his 9-watt mobile rig. W2LRJ is working on para-amps for 220 Mc. and reports increasing activity on that band. W2NUY completed his 6-meter v.f.o. and 2-meter rig. W2SEU/9 reports from Chanute AFB, Ill., where he is active with the MARS station. The Kings County AREC group visited a local missile base. W2LDC and W2OKU have been appointed Asst. ECs to aid K2OVN, Kings County EC for 2 meters. K2PTS is now using a Ranger. K2SJP is now using a Seneca on 2 and 6 meters. A new HQ-145 is in use at K2SLP. The Tu-Borr RC enjoyed a tremendous 25th anniversary celebration with a dinner-dance. K2JNC is now using a triband vertical for 10-15-20 meters. W2LGK announces the formation of the Queens Sunday Technical and Welfare Net, QSTW, on 29.52 Mc. at 1200 EST, for stations in the Metropolitan Area interested in technical and organizational problems. W2JTO and W2LGK are NCSs. It is with deep regret that I report W2AOD as a Silent Key. George was one of the section's most active OES reporters. Congratulations to W2OPM, who received the Silver Beaver Award, highest award of the Boy Scouts of America for his 20 years of service. New officers of the Mohawk ARC are K2TAQ, pres.; K2YQX, vice-

(Continued on page 116)

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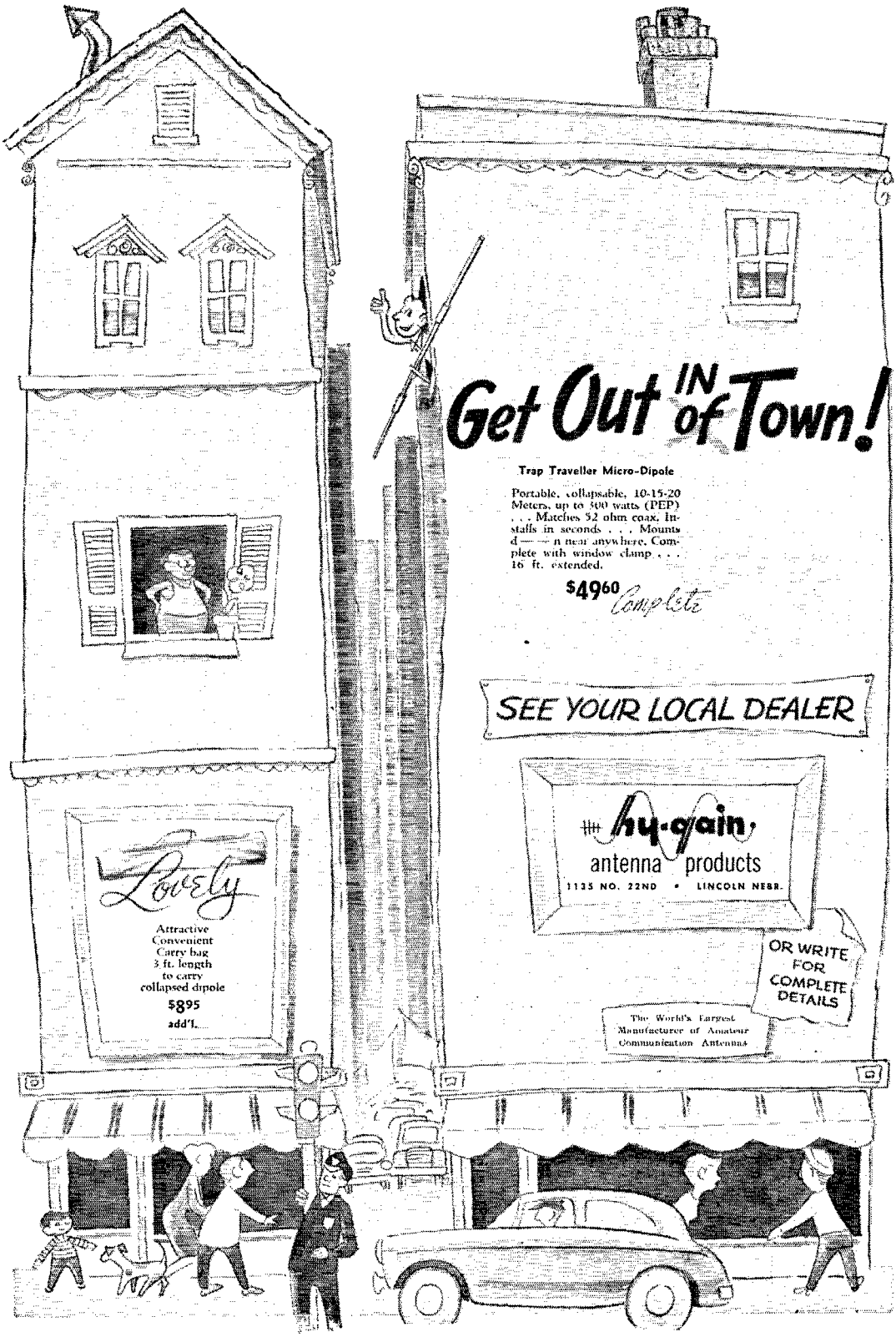
pres.; K2IUT, secy. and W2MGV, treas. The new officers at W2HJ, CCNY, are K2IYC, pres.; K2VBL, vice-pres.; WA2CPB, secy.; WV2DMB, treas.; and WA2DEP, QSL Mgr. K2HSY and his XYL are to be congratulated on the arrival of their fifth daughter. The v.h.f. bug has bitten the members of the Bethpage ARC. A new NC-300 replaced the veteran SX-17 at W2DQN. W2OTA reports increased 432-Mc. activity in the L. I. Area. A new practice of on-the-hour calling has resulted in 40 contacts covering 3 states. Stations active in the immediate area are W2NQZ, W2OTA, W2SCG, W2VSA and K2ASI. Possibly one of the first s.s.b. transmissions on this band was made by W2SCG to W2OTA on the receiving end. Let's make a special New Year's resolution to remember PICON in 1960. Traffic: (Oct.) W2KEB 4366, K2SJF 414, K2MIG 133, WA2BQK 69, W2EW 66, K2IRS 58, W2VDT 56, W2DUS 52, K2YQK 47, W2UGF 39, W2JBQ 34, W2GP 31, W2LGK 26, W2TUK 21, W2AEE 17, W2PF 15, K2GCE 13, WA2CSE 11, K2QBW 8, K2AZT 7, K2IUT 7, K2CMJ 6, WV2DXH 6, WA2BST 4, K2TPU 4, WA2BVH 3, K2JVB 3, K2GB 2, K2OHH 2, K2RDP 2, K2GFZ 1, W2LDC 1, K2MEM 1, K2PJL 1, K2QQH 1. (Sept.) WA2BQK 125, W2LGK 8. (Aug.) K2MIG 66, W2AEE 5.

NORTHERN NEW JERSEY—SCM, Edward Hart, jr., W2ZVW—SEC: W2CVW. RMs: W2RXL and W2ADE. PAMs: K2KVR, W2REH and K2SLG. Nets: NJN, 3695 kc., daily, 31 sessions, 549 attendance, 285 messages; NJPN, 3900 kc., daily, 31 sessions, 501 attendance, 75 messages; NJ6, 10 sessions, 172 attendance, 17 messages. At a meeting of the NJN in New Brunswick 23 members attended. W2RXL was reelected net manager with only one dissenting vote (W2RXL's). K2UKQ is recovering after a bout of illness, but still is on working DX. K2CBG is improving the p.p. 813s to go to higher frequencies. K2SRD took part in his first CD Party. He is expected to recover. K2OQJ is on s.s.b. W2NKD is spending most of his time on 40 meters. W2LRO participates in the weekly c.d. drill. WA2APY finally broke down and went on phone with a cathode modulator. K2UCY is having trouble getting on 10 meters but expects to make it about the time 10 goes dead. W2PTS, a new ORS, is working on a break-in system. K2JTU is trying a homemade beam on 15 meters. The NJSS went out of business and became the Eastern Area Slow Net. W2VMX reports his XYL, K2UXJ, gave birth to a boy Oct. 14 K2VAB expects to be on NJN regularly from now on. K2SLG is asst. mgr. of NJPN and has been appointed as PAM. W2RON got a new receiver and now he is a DX man! WA2COO, a new EC, was in the CD Party but had a drastic failure when the pilot light blew out. K2YJH is at R.P.I. Look for him at the key of W2SZ. K2UBW is working DX on 40 meters. K2PTI and WV2ITP are brothers. The NJPN held a dinner meeting Oct. 24 and probably will make it a yearly affair. K2SCU is working DX with a DX-40. K2CEP finally made WANJ after 2 years. The Tri-County Amateur Radio Club's officers for next year are W2SJU, pres.; W2JIB, vice-pres.; K2QWU, secy.; W2OPE, treas. WA2EBR worked 8 DX stations during October. K2AGJ has completed 100 skeds with W2WLQ, none lasting less than an hour! K2EQP is a MARS NCS. K2DER is using all kinds of tricks to feed a Windom antenna. Traffic: (Oct.) WA2APY 189 W2RXL 135, K2GIF 129, K2ZHK 120, WA2COO 89, W2RZO 79, K2MFF 77, K2UCY 70, W2EBG 51, W2CVW 47, K2LXL 41, W2ZVW 41, K2LWQ 39, K2VNL 30, W2DRV 18, K2VAB 18, K2JTU 15, W2EWZ 14, K2EQP 10, K2SLG 10, W2ANG 9, W2CFB 7, K2CBG 6, W2AZZ 5, WA2ABZ 5, W2RON 5, K2SCU 5, K2BHQ 3, K2DER 3, K2UBW 3, K2AGJ 2, W2CJX 2, K2QYI 2, W2VMX 1. (Sept.) W2BVE 16, W2PTS 8, K2VNL 8.

MIDWEST DIVISION

IOWA—SCM, Russell B. Marquis, WØBDR—The 75 Meter Phone Net held 28 sessions with 1475 QNS and 403 QTC. NGS is PAM. The TLCN held 27 sessions with 285 QNS and 437 QTC. LCX is RM. The 160-Meter Net held 31 sessions with 461 QNS and 27 QTC. The Waterloo Club station, DVL, originated 228 messages at the Dairy Cattle Congress to make BPL. The Luther College Club station, KØASR, originated 105 messages at the Homecoming and also made BPL. New appointments: KWT and KØGOT as ECs; RTF and GEY as OESs. FCE, of Topeka, is now in Cedar Rapids and is the newest TLCN member. KØCLS moved to California. The new calls of KØIGU and IGX are WA6INQ and INP. KØTOO was appointed Asst. EC for Guthrie County. The Tube & Shutter Club of Cresco has become an ARRL affiliate. WWM, FBY and KØAUU set up emergency stand-by communications for the State Plowing Match held in September near Anthon, Iowa. BSK got his WAZ certificate. The Ft. Dodge Club

(Continued on page 118)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has a 6-meter walkie-talkie building project. KØGEY has worked 14 states on 144 Mc. with 25 watts. SLG our SEC, reports AREC activity for the 1959 S.E.T. was quite good in various parts of the State. Traffic: (Oct.) WØBDR 2525, LGG 1909, SCA 1774, LCX 1425, NYX 259, DVL 228, KØKTP 214, WØJPJ 130, KØASR 105, WØSLC 80, GQ 63, KØMMZ 58, WØVQX 57, KØGEY 44, WØNGS 43, VWF 38, QVA 37, KØGXP 30, JSI 29, WØPGJ 28, BTX 24, KØSEW 24, WØIII 23, NTB 20, KØMFX 19, OTV 17, WØREM 16, KØEAA 12, IHC 7, JGM 7, OFK 7, WØADB 6, APL 6, KØJNK 6, KBX 5, WØPTL 5, KØQWM 5, AGJ 4, HFQ 4, WØQVZ 3, KØKAQ 2, RTF 2, WØUTD 2. (Sept.) WØPTL 6.

KANSAS—SCM, Raymond E. Baker, WØFNS—SEC: IFR. Asst. SEC: LOW. RM: QGG. PAM: VZM. V.H.F. PAM: HAJ. The KVRC at Topeka has started code classes. KØJTW is handling traffic for students at K.U. DNX has a new Apache and again is active on 75 meters. The Lawrence, El Dorado and Wichita clubs again assisted with Goblin Watch for which the City Officials expressed their appreciation. The S.E.T. was covered very wll in Kansas and we have reports in from the following participants: Zone 16, LNZ 31 stations participating; Zone 11, IZM 19 stations; Zone 4, KØJTW 6 stations; Zone 9, ONF; Zone 14, GJG; Zone 3, TTG. ONI, Asst. EC Zone 11, reports a fire drill was held at the El Dorado Refinery with mobile units ONI, BWB and BVP furnishing communications with fixed stations KTG and TSR, and directing traffic away from burning oil, chemicals, etc. At the invitation of KØBIX through the Lawrence Club we had the pleasure of having a very nice meeting with the club. AREC-C.D. and other matters were threshed out. While KØKBD is not a Kansas boy he is our next-door neighbor. Missouri works our nets, so we wish him the best of luck in his new job as manager of the Tenth Region Net and our cooperation is promised. In a QNC to the net recently we gave them PICON, then had to explain. We should all know and practice it. Traffic: WØOHJ 576, BLI 453, FNS 239, KØBIX 210, WØRJF 155, QGG 145, SYZ 75, KØIZM 74, HGI 70, WØABJ 66, TOL 61, IFR 60, KØKED 60, BXF 57, WØVZM 38, SAF 33, GJG 27, ORB 25, VUI 22, KØEFL 17, WØUTO 17, KØJVX 13, GIG 11, WØFDJ 10, STC 9, KØQOB 7, SMQ 7, LHF 6, WFD 6, WØBBO 5, KØJID 5, QWN 5, TNW 5, LPE 2.

MISSOURI—SCM, C. O. Gosch, WØBUL—Net reports (Sept.) MON (A.M.) 26 sessions, QNI 42, QTC 18, NCS OUD 25, K)PFF 1; MON (P.M.) 26 sessions, QNI 168, QTC 149, NCS OUD 7, KØKBD 5, RTW 4, KØQCQ 3, KØPFF 2, GEP 1, KØOJC 1, KØONK 1; SMN 3 sessions, QNI 7, QTC 12. NCS OUD. (Oct.) MON (P.M.) 27 sessions, QTC 189, QNI 170, NCS OUD 10, KØQCQ, RTW 4, ARO, GEP, KØKBD, PFF 2, KØOJC 1. SMN, QTC 28, QNI 11, NCS OUD. (Oct.) MEN 13 sessions, QNI 448, QTC 100, NCS OMM 7. OHC 3, OVV 2, VPQ 1. The following have been appointed by OMM (net mgr.) for MEN: NCS VPQ, OVV, OHC; ANCS KØOLW, EEE, KØDXL. A full complement of control stations is thus available for this net. The section was more active during the S.E.T. than it has been for several years. All nets were activated, several local tests were carried out and the major portion of reports and Headquarters traffic was cleared via KØLTP/Ø (SEC). Congratulations, fellows. KØQCQ reports a total of 81,270 points in the October CD Party. KØIHY has a new rig; a pair of 4-125As driven by an AF-67. WAP reports a nightly sked with JUR on 147.1 Mc. GEP reports the Bandhopper RC now is incorporated. KØDEW still is off the air because of lightning damage to his rig. KØJPL is QRL with a new traveling job. KØLWX/Ø is QRL with school work. IGU reports 50 stations reporting into 29.6, 50.5 and 147.3 Mc. in the St. Louis Area RACES nets each week. These nets are only a year old. Appointments: KØPFF as OPS, KØDEW as OES. Endorsements: KØHHG as EC, ORF and KØLHY as ORSs, OUD and WAP as ORSs. Traffic: (Oct.) KØKBD 699, WØOMM 302, KIK 194, KØSGJ 168, LTJ 138, LTP 137, WØOUD 97, KØQCQ 94, WØMKJ 85, OVV 53, BVL 49, VPQ 44, KØONK 39, WØRTW 29, BUL 27, ZBR 24, ARO 23, KØIHY 14, LGZ 12, OEP 12, WØWAP 8, GBJ 6, GEP 6, PXE 6, KØLWX 4, OJC 2, WØQMK 2. (Sept.) WØRTW 26, KA 3.

NEBRASKA—SCM, Charles E. McNeel, WØEXP—The Western Nebraska Net, on 3850 kc. daily at 0700 MST, has started weather reports on net roll call which has increased interest and traffic, making this month's report QNI 846, QTC 389. The Nebraska Section C.W. Net operates on 3525 kc. daily at 1900 CST and reports QNI 210, QTC 111. The 75-Meter Morning Phone Net, on 3980 kc. daily had QNI 740, QTC 130, reports KØDGW. RDN has a new Apache on the air. YYV has moved from Sutherland to No. Platte and will be oper-

(Continued on page 120)

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▲ A Self-contained 1 KW Transmitter-Receiver
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SPECIFICATIONS

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INPUT: Full 1 kw on Voice Peaks (Meters Read 2500 V at 400 ma) into a pair of 4 x 300 A's
UNWANTED SIDEBAND: 42 db down
DISTORTION (SSB): Third order products approx. 32 db down
FREQUENCY STABILITY: Drift less than 100 cycles.

CALIBRATION: Built-in 100 kc marker
AUDIO CHARACTERISTICS: 200-3100 cps

MIKE INPUT: High impedance
VOX: Built-in
LEVEL: Automatic level control
METERING: Screen, plate, and grid current, plus RF output
RF OUTPUT: 52 ohms
VFO's: Dual VFO's permit transmitting on the receive or any other frequency
CONTROLS: Vox, Qt, ALC, Grid Tuning, Plate Tuning, Antenna Loading, Audio Gain, Band Switch, Meter Switch

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SENSITIVITY: 1 microvolt for 6 db S/N
SELECTIVITY: 3.1 kc mechanical filter plus a T-notch filter
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TUNING KNOBS: Coarse gear ratio of 20:1, fine gear ratio of 100:1 gives a 1 kc dial reading per division
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MODE SWITCH: Selects up or low SSB, or up low AM, or CW
DUAL RECEPTION: Two VFO's permit reception of any two frequencies on one band with the flick of a switch
BFO: Crystal controlled
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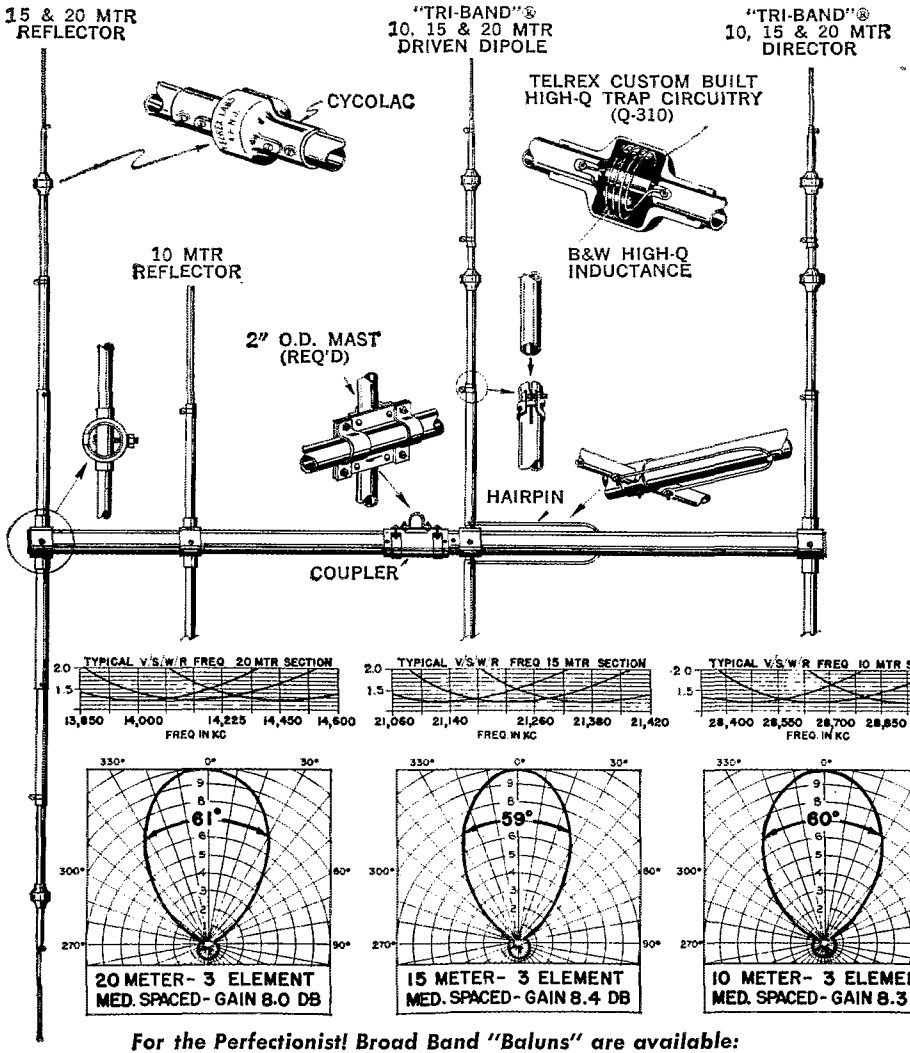
ating all bands on s.s.b. with the S-Line. KQX was awarded a Colorado Net certificate for participation in the Weather Net while in Colorado last summer. The Western Nebraska, Eastern Colorado and Northern Kansas s.s.b. boys attended a meeting in Phillipsburg, Kans. The report for the C.W. Net for September, which reached me too late for publication in last month's issue, is QNI 136, QTC 87. Traffic: WØNIK 330, NYU 258, RDN 117, KØRRL 106, DGW 84, BDF 75, CDG 71, WØZJF 64, KØIJW 59, DFO 47, SCM 47, WØGGP 43, KØQSK 43, MZV 34, WØBOQ 30, KØKUA 25, WØOKO 24, KDW 22. KØKJP 22, URR 22, WØVEA 22, KØELQ 21, LXS 21, GPR/Ø 19, ULQ 19, WØZOU 19, VZJ 16, KØBRS 12, WØHTA 11, KØHTZ 11, WØEGQ 10, UOV 10, AFG 8, KØMSS 8, UWK 8, WØYFR 8, OCU 7, FBV 6, KØPMB 6, ELU 5, WØURC 4, KØPTH 3, WØHOP 2, SPK 2, SWG 2, QKR 1.

NEW ENGLAND DIVISION

CONNECTICUT—SCM, Victor L. Crawford, W1-TYQ—SEC: EOR, RM: KYQ, H.F. PAM: YBH, V.H.F. PAM: FHP. Traffic nets: CPN, Mon.-Sat. 1800, Sun. 1000 on 3880 kc.; CN daily 1845 and 2200 on 3640 kc.; CVN, Mon., Wed. and Fri. 2030 on 145.98 Mc.; CTN, Sun. 0900 on 3640 kc. AW, BDI, KYQ, NJM, YBH and YU made BPL. KUK is chasing DX with a 3-band vertical. K1MLJ has settled in Wilton after 3 years in Brazil. KYQ reports the CN handled 872 messages, including 127 on the second session, during 31 sessions. Average attendance was 14.7 stations. High QNI goes to OBR, RFJ and K1HWF. IOW has a new Ranger. K1DPL has a new Apache. KN1MJM is a new Novice in Cheshire. QPD is active on RTTY and 20-meter s.s.b. BFS QSOed a YS and a 4X4 during the DX Contest. OKG is hunting DX with a kw. on a.m., c.w., and s.s.b. MHF is busy with RTTY. QVF is building a 64-element beam for 220 Mc. FNE is active using c.w. and s.s.b. on 10 meters. DCM is DXing on 20 meters. K1IIB is active on CN. K1JSO built a 350-watt grounded-grid linear. K1GHK added a Heath SSB adapter to his DX-100. FYF is attending college in Evanston, Ill. ZUQ is building a 4-400A linear. YBH reports that the CPN handled 429 messages during 31 sessions with an average daily attendance of 28 stations. High QNI were DAV, 30; K1CBV, 29; VQH, 28; K1BSB, IHG, TVU, 27; LWW, 26; K1CRQ, 25. EVH is on s.s.b. with 100 milliwatts PEP. At its annual banquet Oct. 22 the Southington ARA elected SBI, pres.; K1IRM, vice-pres.; GVT, secy.; K1CSH, treas.; GVZ, executive board. SBM hopes to be on 2 meters from his apartment soon. KN1MBF has a new Globe Scout 680A. K1KQV has a new 2-meter beam. K1IRM has a new 10-meter beam. GXG has finished his Mohawk receiver. IOB has a 20-A and a new HQ-170 receiver. ZZK is building an s.s.b. mobile rig. K1CSH has added a Heath SB-10 to his Apache. ZTQ is having transmitter trouble. The Manchester Radio Club and SBK are running code classes at 7 P.M. each Tue. at c.d. headquarters. VIY renewed his EC appointment. VW renewed his OO and OPS appointments. GFM is with Uncle Sam at Fort Dix, N. J. CWF is using a Valiant and a 75A-4. Reports received: OES from FVV and LGE; OO from K1DPL, EFW, IOW, AIBX and VW. Traffic: W1AW 2068, YBH 722, NJM 576, KYQ 506, OBR 460, BDI 334, EFW 294, QJM 212, K1HWF 171, W1YU 141, K1AAE 110, W1TYQ 87, ROX 85, K1BHM 77, JAD 59, W1RFJ 41, VIY 36, K1CBV 31, W1QVF 10, TUW 8, CUH 7, K1DGK 7, AQE 6, W1BFS 6, MHF 4, FPF 3, JZA 1, YBI 1.

MAINE—SCM, Jeffrey I. Weinstein, W1JMN—SEC: JMN. PAM: BXI. RM: EFR. The Sea Gull Net meets Mon. through Sat. at 1700 on 3940 kc. The Pine Tree Net meets Mon. through Fri. at 1900 on 3596 kc. JMN Bulletin schedule: Mon. through Thurs. at 2000 on 3600 kc. New appointments: K1DYG as EC. Renewals: LXA as OPS. K1BDQ has been elected president of the Androscoggin Amateur Radio Assn. K1IWN is a new ham in the Bath Area. The MSSN meets Tue., Thurs. and Sat. on 3726 kc. at 1730. The PTN is recruiting new members for c.w. traffic work. K1LEO and K1KSG recently dropped the "N." K1IXC is now operating from his new QTH in So. Portland. Your ACM is planning a statewide meeting for all official appointees. Keep watching your mailbox for further information. Station appointments are available to all qualified candidates. Write your SCM for more information. Does your county have an EC, and your town an Asst. EC? If not, you stand a good chance of becoming one upon application. The PAWA has some outstanding programs lined up for the coming year. All are welcome to attend. KN1MJN is a new Novice in Portland. Here's wishing all of you Happy Operating and Best of Luck for 1960! Traffic: K1DPM 108, W1UDD 54, ISO 46, K1GVQ 44, W1EFR 30, K1KSG 20, W1OTQ 15, LWD 14, K1BYE 10, DYG 9, BDQ 8, W1JMN 8, K1CJK 5.

(Continued on page 122)



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Max. power rating.....1.2 KW 100%AM
Boom length and diameter 16 ft. x 2" O.D.
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EASTERN MASSACHUSETTS—SCM, Frank L. Baker, jr., W1ALP—New appointments: EAE as RM for 80-meter c.w., NKA as OES, ZSS and K1BYM as OPSs. K1MMIQ, Fall River, is K1CIF of N. H. Sorry to have to announce the death of TYU. Heard on 75 meters: DY, AEB, EUE, UMC, ATP, BQL, IWA, ZXG and K1AFF. TBB is moving to California. Heard on 2 meters: PBM, ZAW, DNO, UFK, JCI, RQL, K1s GSU, DTJ, GVR and KN1LPK. Appointments endorsed: YVZ Randolph, MOJ Millis, LQQ Hamilton, BB Winthrop, TRC Maynard as ECs; ETH, LQQ and MD as OPSs; K1BUF and MEG as ORSs; K1BUF, LQQ, ALP and K1GRP as OBSs; LQQ, SAD, BB, WK and JNV as OOs; CTW as OES, SAD as RM. K1MHM has an SX-101 Knight v.f.o. and a high-power rig is being built. SIV has gone to Washington, D. C., and Virginia. BB is busy with DX on 160 meters. K1BUF is busy at school. K1LCQ has a Gonset on 2 and 6 meters and belongs to the Mobileer Emergency Net. 6-meter mobileers helping ISU out on Halloween patrol. K1AFA has a vertical 80-ft. antenna and worked 82 countries. LMU is very busy. QEM is working in Winthrop, MD is putting up a new antenna. BHD is doing lots of satellite listening. ZQQ took a trip to the West Coast. HXK has a new car and mobile rig. FFD is back on the air. IHC is building a rig for 3500 Mc. and studying for his E.E. degree in Boston. UE is away a lot. SS, PEX and VBG are in the Satellite Data Link Net on 3820 kc. Mon. and Thurs. at 7.15 P.M. SS gave a talk on satellite frequencies to the Pioneer Telescope Club at Three Rivers, Mass. K1LJK has his General Class license. KN1KPQ has an Adventurer transmitter and an SX-38E receiver. KN1LWN has a TCS transmitter on 40-meter c.w. and an SX-25. TRC was in a serious auto accident but now is got out of the hospital. COL and SAD have a new QTH. KN1MGC, in Belmont, is 8 years old. KRD is working DX on 20-meter c.w. YNF moved to Medford. K1AWP is on 75 meters. K1DUJ is on 2 meters. ETH is going to Harvard and says he operates at AF some. YHY, Fall River EC, says the following helped out in the S.E.T.: K1s KFK, ION, IWE, K6MLR/1, W1s YHY, NXH, HIQ and ZFS. AOG, our SEC, wants all ECs to send him reports of emergency drills, etc. CTW is working on a wide-band f.m. for 220 Mc. and higher and has a 40-watt 2-tube transmitter and receiver. The Framingham Club had a Halloween Party and K1HTK spoke on converters for 6 at the other meeting. QPT spoke at the Braintree Club. The QRA held an auction and HKG did the work again. K1BGX wants surplus equipment for 420 Mc. K1JIL has General Class and is on 10 meters. Code and theory classes are being held in Winthrop each Thursday night, reports DEL. MBA, K1s HSV, CZL, IXO, JMO, HLP, KYX, GVF and KWA, members of the 6-Meter Mobileers Unit 1 of So. Shore, put on a test run for ISU for Halloween. The North Shore Radio Assn. held a meeting. FOG moved to N. H. BYL has an Apache transmitter and will be on soon. K1JAW applied for ORS appointment. The T-9 Radio Club met at KON's IPK now is in Stonington, Conn. The Yankee Radio Club held an auction with AAT at it again. KN1MAK is new in Quincy. K1GLM is in Texas with the Air Force. Concord had 7 mobiles out on Halloween. MSW is going on 6 meter soon. K1JKS has a homebrew tower and beam and is on 10 meters. K1JKS and JTP are active at K1BCL, Swampscott High Club, and they have an SX-99 and an AF-67. K1GVR is on 2 meters with a 522. K1GGW is in the Air Force. New on 2 meters: KN1JZI, K1EES, IAU and KN1KMP. LVE is in the seminary studying for the priesthood. Our Eastern Mass. 2-Meter Net handled 408 messages this month. 4MMK is working in Waltham. K1BYL has been endorsed as ORS. K1GRP will be on 6 meters. Beverly hams were out on Halloween. K1BYV is going to go to N.U. K1DIO has 100 watts on 2 meters and a new beam. K1GYM is the new Winchester EC. A new club, the Attleboro Amateur Radio Club has been formed with K1HBH, pres.; K1EKA, vice-pres.; K1LJK, secy.; K1DCL, treas. Committees: New projects, KN1JPJ: TVT, K1s JHR, LJK and HBH: membership, K1JVA. Traffic: (Oct.) K1CIF/K1MMQ 704, GRP 669, W1PEX 637, EMG 388, K1DIO 216, W1OFK 212, ZSS 159, EAE 150, UTR 77, HGN/HGO 59, MSW 54, SIV 52, W2VZG/1 43, K1GYM 41, BYL 37, W1NVV 37, ISU 34, CZW 32, AKN 28, K1GQZ 25, W1QFO 22, TWG 19, K1BYV 17, KN1LLU 16, K1JAW 14, W1GEK 12, K1CMS 10, EJW 10, W1WU 10, ATX 8, K1MHC 8, W1RQL 8, TY 8, MIX 7, K1BUF 6, LCQ 6, W1HWE 5, K1JKS 5, W1NKA 5, ALP 4, IBE 4, K1MHM 4, W1AHP 2, DTB 2, K1IKX 2, W1NJL 2, AEQ 1, AUQ 1. (Sept.) W1AWA 439, EAE 123, K1DGI 79, W1AOG 29, CZW 28, K1BUF 8, W1BB 1. (Aug.) K1LCQ 4.

WESTERN MASSACHUSETTS—SCM, Percy C. Noble, W1BVR—SEC: BYH. RM: DVW. PAM: DXS. V.H.F. PAM; RFU. WMN meets on 3560 kc. at 7 P.M.

(Continued on page 124)

NEW YEAR'S RESOLUTION:

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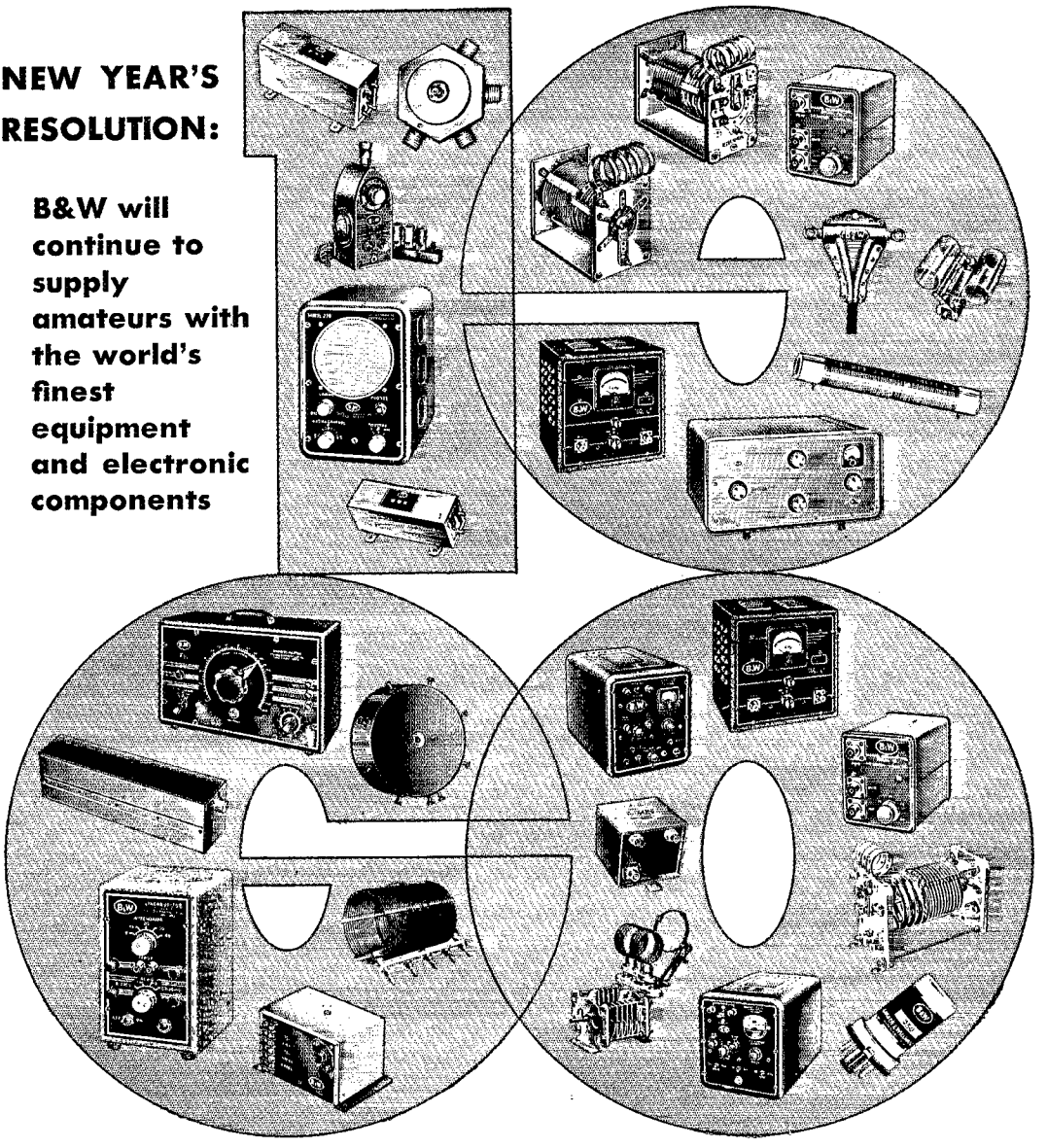

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daily except Sunday: MPN on 3870 kc. at 6 P.M. daily. Under new RM DVW, WMN really is going to town! Net attendance: DVW 24, BVR and ZPB 15, K1IJV 14, K1GCV and K1LLB 13, BKG 10, TAN 9, DZV 7, MNG 3, LLN, OSK 2, K1IJU and K1CAU 1. K1IJV is a new ORS. PAM DXS reports that MPN is improving, with 23 messages moved one session for a rate of .383—excellent for a 75-meter phone net! MUN, BKG, RLQ and K1GCV did fine jobs in the September Frequency Measuring Test. During the S.E.T. DXS operated mobile as 6-meter NCS at the Worcester Airport and made 16 contacts. DGA is running 300 watts on 6 meters. ZPB is turning into a 100 per cent traffic man. K1GCV, on 80 meters with 25 watts, contacted England on Oct. 30. Former SCM, HRV, is now 100 per cent 10-meter mobile with a 70-watt home-built rig. BVR added an outside antenna to his HQ-170 with about 400 per cent improvement in signal strength. OOY has a new Hornet beam. LKQ attended the V.H.F. Roundup at Syracuse. K1IKD has a new ground-plane for 20 meters. ACP has a new Gonset Communicator III. Officers of the Montachusett ARC are UDK, pres.; FOX, 1st vice-pres.; K1AVO, 2nd vice-pres.; K1DPP, secy.-treas. WMN had perfect attendance during October in its representation to the First Regional Net. Season's Greetings. Traffic: W1BVR 126, ZPB 120, DVW 75, BVH 69, DXS 56, K1IJV 37, W1AGM 34, K1GCV 20, W1TAN 13, SPF 4.

NEW HAMPSHIRE—SCM, Robert H. Wright, WIRMH—RM: K1BCS. PAM: W1HQ. V.H.F. PAM: TA. The Granite State Phone Net meets Mon.-Sat. at 1900 and on Sun. at 0900 on 3842 kc. The NHN (c.w.) Net meets daily at 1830 on 3685 kc. The Northeast V.H.F. Net meets daily at 1930 on 145.8 Mc. GVL and MTX have enlisted in the Air Force. MOI had a fine write-up on her ham and MARS activities in a recent edition of the *N. H. Sunday News*. PFA, of Salem, operated from St. Pierre and Miquelon Islands as FP8BH for several days during October. Bill made about 600 contacts and worked 46 countries on s.s.b. and c.w. K1JYI is now General Class. I would like to see a few more of you fellows qualify as Class I OOs. Also more OES appointees would be welcome. Anyone interested in these or other appointments, drop me a line. Renewals: MTX as OO and ORS. Season's best to all. Traffic: (Oct.) K1BCS 993, FDP 975, IIK 101, W1QGU 79, TA 63, K1CIF 27, CSJ 21, W1HQ 8, K1MID 7, W1AIJ 6. (Sept.) K1CIF 57.

RHODE ISLAND—SCM, John E. Johnson, K1AAV —K1BBK is a new ORS. VBR has been appointed alternate net control station of a MARS net. MUZ reports working W2- and W3-Land with 45 watts on 6 meters with 5 x 9 reports. RIN held 22 sessions, total traffic 143, total QNI 116, high QNI TGN, with a perfect record. K1ABE, who pokes a strong signal on 10 meters, has a new tower and beam to give him an assist. BPL certificates were issued to SMU for July (516), Aug. (567), Sept. (770) and Oct. (1012) and to K1LSM for Sept. (558). TXL has installed a 6N2 in his B & W 5100. He tells us that the Newport County Radio Club issues a beautiful certificate to those contacting ten member stations. As your new SCM I hope to meet several of you in the future. Trips are planned to several clubs and organizational meetings are to be held. Traffic: W1SMU 1012, K1LSM 303, W1TXL 145, BBK 53, W1VBR 33, YRC 18, K1AAV 11. (Sept.) W1SMU 770, K1LSM 558, W1TXL 37, VBR 24, K1BBK 18, W1HKN 10, WED 6.

NORTHWESTERN DIVISION

ALASKA—Acting SCM, Kenneth E. Koestler, KL7BZO—MF and his XYL just got back from the South 48. AMS plans on a trip to Europe and Continental U.S. on the way back. PJ and his XYL YG and BDG are hard at work with code and theory classes at the home of PJ and YG. 2-meter c.d. work is coming along fine. The Parka Club held its annual Progressive Dinner. It was a big success with 38 attending. There has been quite a bit of activity on 10 meters recently I would like news from the outlying area for this column. We hear MZ has a new HT-32. The visit of WL7DCF and his XYL WL7DEJ, CWO and his XYL and KN5VKW from Fairbanks brought news that AEQ, BET, DEJ, DCF and CFN are on 2 meters in that city and DEX and CUH are just about to make it using 522s. Traffic: KG1DT 421.

IDAHO—SCM, Mrs. Helen M. Maillet, W7GGV—Reports from ECs show AREC activity in Bannock, Nez Perce, and Shoshone Counties during the S.E.T. GCO and 16 Pocatello AREC members held a two-hour drill. Ten Boise hams on 2 meters, with CRE and ZBQ as net controls, worked with the City Police on Halloween patrol. The new Idaho weather net on 3970 kc.

(Continued on page 126)

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meets at 0715 Mon. through Sat. with K7AYU, Boise, as net control. The net is affiliated with the Spokane Weather Net, and supplies Washington and Idaho AAA with road conditions for traveling salesmen. DWE is net control for Contact Net at 0700 on 3935 kc., serving Idaho and Utah. OIP and family visited the SCM's shack. New hams are K7KBU and K7GSC, whose new son arrived the same day as his ticket. EMT is back on RN7 after a long absence. K7DMY is seeking news for the *Hambone*, now coming back into circulation. Traffic: W7GMC 106, K7BWV 42, W7VQC 24, GGV 15, EMT 4.

MONTANA—SCM, Vernon L. Phillips, W7NPV/WXI—SEC: KUH, PAM; EOI, RM: KGJ, MPN meets M-W-F at 1800 on 3910 kc. MSS meets T-T-S at 1830 on 3530 kc. K7BFJ married JAU. K7BKH made BPL for the fourth consecutive time. K7EXK is a new Conditional at Lewistown. IJW moved to Billings from Casper, Wyo. K7JQT, an ex-K3, is a new call in Billings. K7GHB moved from Great Falls to Hawaii. KN7JDF and KN7KOR are new Novices in Great Falls. K7JWC is a new call in Great Falls and is ex-WA6EZM. GHF moved to Great Falls from Portland, Ore. KN7HOP is a new call in Columbia Falls. K7GYE is a new call in Forsyth. K7ICM moved from West Yellowstone to Glendive. The 829 Club is a new radio club at Belt. The Electric City Radio Club is conducting code and theory classes. K7CYT was appointed Emergency Coordinator for Great Falls. Traffic: K7BKH 232, BYC 167, EWZ 100, GHC 10, W7COH 7, NPV 7, YQZ 6, IOJ 4, K7ECF 2, IHA 2, W7MQI 2.

OREGON—SCM, Hubert R. McNally, W7JDX—The new AREC Net on 3875 kc. Mon. through Fri. at 1900 PST is making great progress. We hope each EC will take it upon himself to see that his county is represented each week, either by himself or by some representative. Message-handling is now improving and the practice is well worth while. New ECs: DEM in Josephine County, ZQM resigned; WPW in Lane County, KL resigned; K7ADX in Clackamas County, GNC resigned; K7CJC in Morrow County, DUN resigned. Grant and Curry Counties have been eliminated until there is more activity there. UQI is doing a swell SEC job getting all of these counties lined up along with his work on the AREC Net. Many counties were active in the recent S.E.T. OSN, after a fine spring and summer, has sort of folded up but AJN, the RM, says it will pick up soon and the c.w. frequencies will buzz again. BDU and ZB made BPL again and K7CLL made BRAT. K7CSM is a new OBS on 3875 kc. PQJ and WNV have been dropped from the OO list and the section now has no OOs! DIC is running around the country again. JDX still is trying to land a salmon or something! GLZ has a nice report on OES activity around Portland and expects to sign up more OESs soon. MTW made a nice score in the CD Party. Traffic: W7BDU 638, ZB 553, K7CLL 126, W7AJN 45, ZFH 45, GLZ 41, LT 38, K7CNZ 37, W7DIC 30, WPW 20, DEM 17, MTW 16.

WASHINGTON—SCM, Robert B. Thurston, W7PGY—The Tacoma Evergreen Net meets at 0300Z on 51 Mc. IKG moved to a new QTH and is QRL with new antennas. K7ATD has a new Valiant. LIR is going around the world on a pleasure trip. RGD has a new Thunderbird and is installing new mobile gear. MFG won the pinochle cup for September from the Tacoma Radio Club. WLX won the ladies' for October. A new radio club formed in Seattle called the Boeing Employees Amateur Radio Society (BEARS) has HQM, pres.; Walter Speake, vice-Pres.; TSQ, treas.; JEM, secy.; K7JVX, trustee. K7APJ is working DX on 40 meters. JC made DXCC with 115 confirmed. The following assisted the TriCities and Benton County officials during Halloween: K7s BOY, EKE, CWO, W7s AKB/m, NZH/m, W7AKA and GHP. WHV transmits Official Bulletins after the RACES-AREC drills Sun. at 2100 PST on 29.510 kc. and 51.00 and 145.65 Mc. K7ASY is on 1215 Mc. with an APX-6 and 16 Elm broadside. AIB is back from a vacation in the South. K7GNA reports lots of ducks and geese flying at his QTH. AMC has the Ranger and Courier combo working with good results. DPW is slacking off on traffic for awhile. AHV has returned to W7-Land after a two-year absence. Welcome back, Ed. LFA works 10-, 15-, 20 and 75 meters now. RGL has a new antenna up on 40 meters and transmits Official Bulletins on 3700 kc. at 1830 PST Mon., Wed. and Fri. QLH made the BPL. OIV NCSes WARTS on Thurs. evenings. OEB is moving to a new QTH in Richland and will operate from OIH in the interim. TH participated in the S.E.T. drill from the Walla Walla Area. The following renewed their appointments: GSP as OPS, CWN as ORS, LFA and OEB as OOs, YFO and K7ASY as ECs. Two new ECs are RDL and K7EHP. IGF is using ART-13 as an emergency-powered rig for the AREC. K7AFU monitors the 10-meter

(Continued on page 128)

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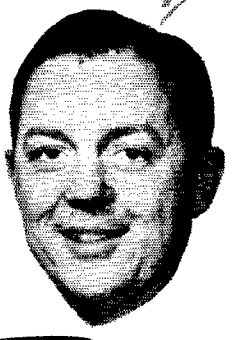

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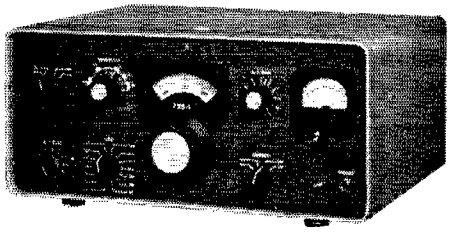

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AREC frequency. The Northwest Chapter of the QCWA has a movement on toot for an auxiliary and now boasts 221 members. QFR operates the Weather Net on 3900 kc. at 0640 daily. The Washington Amateur Radio Traffic Net had 27 sessions with 2207 check-ins and 239 pieces of traffic for October. A new traffic net on 3920 kc. at 1700 PST is called the Evergreen State Net. GFM left on a trip to Africa for the United Nations. Traffic: W7BA 1773, QLH 756, DZX 566, HUT 314, APS 140, DPW 135, AMC 96, K7ATD 81, W7OER 69, AHV 64, IEU 27, USO 25, EKT 22, K7GNA 19, AJT 14, CWO 14, W7LFA 14, OIV 11, AIB 5, UWT 5, K7ASY 4, W7EVW 2, RGL 2.

PACIFIC DIVISION

HAWAII—SCM, Samuel H. Lewbel, KH6AED—In a recent recap of KW6s we omitted K6QPG/KW6, the XYL of KW6CQ. Sorry, Mary. Mary is active in contests. KH6ARL is back from a trip to Russia where he had an hour-long eyeball QSO with a UA1. He says that TVI is the number one trouble the Russian hams are up against. Back on Kauai, NU is teaching a class of 35 future Novices. Report from Guam via KG6AIH: WG6AIJ is on with a DX-40 and 14AV vertical. WG6AIV has a Globe Scout 65, an SX-100 and a 15-meter folded dipole. W6OIQ is on with an HT-32. KW6CE/KG6 is active with an HT-32 and a Thunderbolt. KG6AHF will take traffic, and both KG6NAA and KG6NAB will be reoutfitted. Watch for announcement of the new "All Guam Certificate." The Honolulu Mobile Amateur Radio Club has revived the hidden transmitter hunts. Traffic: KH6AJF 36.

NEVADA—SCM, Charles A. Rhines, W7VIU—The NARA handled communications for the Carson City Admission Day Celebration and for the Pyramid Lake Regatta. The Boulder City AREC, under EC HJ, did a very fine job during the recent S.E.T. Thirteen AREC members participated with a final score of 125 points. MAH reports the recent meteor shower gave poor results on 6 and 2 meters in the Reno Area. The son of LXF is awaiting his call so he can get on 6 meters. JCY is back in Babbitt. BYR is back from Alaska. ERG has taken up falconry. CXQ returned from the Navy and is a new member of Boulder City AREC. VIU received the WJDXRC award. FLU and K7CMI were St. Mary's Hospital guests together. HRW is getting on 6 meters. GQL and GQM have a new mobile. KN7s JUV and JUW are new Reno hams, along with ex-WV6COL, now KN7JUN. The Nevada Net has abandoned operations because of lack of support. Traffic: W7HC 43.

SANTA CLARA VALLEY—SCM, W. Conley Smith, K6DYX—The Monterey Bay RC auction was a huge success. W6STY presented a program on commercial broadcasting at the SCARS. Thanks to W6DEF, W6WIS and WA6EIC for the extensive lists and reports. W6YHM has installed a TCS receiver for stand-by, also an anemometer salvaged from an Alaskan igloo. W6ZLO gave his daughter, Margaret, in marriage to Burton VanDyke on Oct. 31. Local hams seen kissing the lovely bride were K6EQE. W6RFO, K6GKG, W6STI and K6DYX. W6CBE keeps in contact with other Stanford Research Inst. hams on foreign projects. K6HCQ is moving to a new QTH with more antenna space. W6RLB and WA6CLT are building heterodyne exciter for 6 meters. CLT also is assembling a Seneca. W6TFH has a new linear and v.f.o. on 2 meters. K6HCP is going s.s.b. on 6 meters. W6FON is renewing transmitter parts. K6GID is working on electronic, transistor, keyer. K6ZCR reports an enjoyable Halloween party with the BAYLARCs. W6BMP is back in new equipment school for RCA. W6OFJ is back in business with new antennas. K6QCI has a new tower and 20-meter beam. W6CBX and K6TEH both have an SB-10. W6ASH has gear working on *nine* bands. In the Oct. C.W. CD Party K6DYX worked K6LSG briefly at the key at W1AW. Kurt had hitch-hiked to Headquarters for the week end from school in Maryland. W6WNI/5, also contacted in the CD Party, promises to visit us from Oklahoma. The new EC for Santa Cruz is W6NOE. Traffic: (Oct.) W6RSY 896, W6PLG 273, K6ZCR 256, K6DYX 177, W6AIT 129, K6GID 123, W6YBV 123, W6HC 72, W6DEF 69, W6YHM 21, K6VQK 19, W6BMP 15, W6OII 14, K6YKG 10, WA6CLT 8, W6RFF 8, K6HCQ 4, W6FON 2. (Sept.) W6YHM 36, W6ASH 27, W6OFJ 27, K6TEH 7.

EAST BAY—SCM, B. W. Southwell, W6OJW—SEC: K6DQM. ECs: W6LGW, W6ZZF, K6EDN, K6JNW and K6ESZ. K6OSO scored 7000 points in the C.W. CD Party. The Marin and Richmond radio clubs had a joint hidden transmitter hunt in San Rafael. K6QNZ has a new Apache. K6OSO is building an electronic keyer. K6ZBL is maintaining 7 traffic skeds weekly. K6QHC scored 93,571 points in the W/VE Test.

(Continued on page 130)

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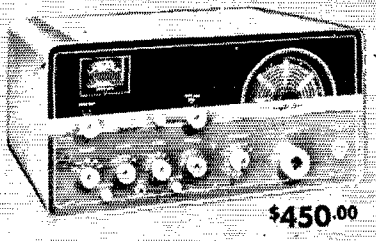

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and still is stationed at T.I. K6ZYZ is portable/7 in Bellingham, Wash., on vacation. K6JNW reports a good turnout in the S.E.T. W6RVC, W6PIR, K6IMV, K6TPO, K6DQM, WV6HYU, WA6AGA, WA6DKG, W6IT, K6QUG, WV6GFL, WV6HSA, W6JUW, K6JPR, K6DEL and W6LGW handled communications for the Annual Walnut Festival Parade in Walnut Creek. The CCRC held its October meeting at the QTH of K6AHW in San Leandro. W6HC and W6ZF were reelected as Director and Vice-Director for the Pacific Division. W6KG, W6BVM, W6YC and W6BVW have received their cards from all 58 counties for the WACC certificate issued by the Oakland Radio Club. K6CCZ and K6FCA transmit code practice on 7090 kc. from 3 to 5 P.M. daily. K6UID is building a new rig with 4-125As. K6SWY has a new mobile rig. W6LKA has a new Cadillac. W6LTM was QRL in the hospital but is OK now. WV6BBJ is now WA6BBJ and WV6AWW is now WA6AWW. Congrats. WA6GPY is a new member of the HARC. K6IFU, W6LTM, WA6BZA and K6OHJ visited the HARC. The Southern Alameda County Emergency Net is on 3985 kc. at 2100 PST Sun. W6IMC, W6SKM and K6HIJ attended the S.S.B. Convention in Santa Barbara. WA6AGA won the MDARC hidden transmitter hunt. WV6IMF, WV6FBS, WA6HJB, WV6HYV and WV6HYW are new members of the MDARC. WV6HSQ, WV6HSA, WV6HYU, WV6HYV, WV6HYW, WV6HSK, WA6GCS and WA6CMW are new licensees in the Walnut Creek Area. WV6DTZ is attending the U. of Calif. at Davis. W6LGW and his XYL took a fishing trip on the Klamath River. By the time you read this column, we will be starting a new year. This is the time to resolve to get your reports in to the SEC on the *first of each* month and to the SCM on the *third* of each month. Column news is written up and mailed on the *fifth* and all reports received after that date are held over until the following month. A further resolve to become an active Communications Department appointee in East Bay also would be in order. Drop your SCM a line if interested. Happy New Year and good hunting to all. Traffic: (Oct.) K6ZYZ 230, K6JNW 81, K6OSO 21, K6HQC 7. (Sept.) K6OSO 15.

SAN FRANCISCO—SCM, Leonard R. Geraldi, K6ANP—Asst. SCM: Jeri Bay, W6QMO. RM: K6PQG. PAM: W6PZE. ECs: K6EKC, Fortuna. W6OPL, San Rafael, W6CXO, San Francisco. OOs: W6GQA 1st Class; K6OHJ. OBS: W6GGC. ORSs: K6PQG, W6OPL, W6GGC, W6QMO, W6GQY and W6BIP. OPSs: W6PZE, W6GGC and K6OHJ. New officers of the San Francisco Radio Club are W6HZ, pres.; K6MUZ, vice-pres.; WA6ALK, secy.; WV6CVJ, treas.; W6AHH, W6GGC, W6CTH, W6KFS, K6OHG, W6GHI, W6BIP and K6ANP, board of directors. The San Francisco Club had its annual "Old Timers Night" at its October meeting and the usual "tall tales" were much enjoyed. The Bandspanners Club has undertaken a club project which is a 2-meter transceiver. The HAMS club and the Bandspanners jointly hosted the November meeting of the Central California Radio Council. The NCARTS had its November dinner-meeting in Oakland with a good turnout. The BAYLARC celebrated Halloween with a family pot-luck party. There were masquerade costumes for all and loads of fun for the entire family. The BAYLARC has organized a new 6-Meter Net open to all YLs in the area. The frequency is 50.5 Mc. and the net meets every Mon. at 2000. The NCS is K6UDT. W6GQY reports that he is back in the swing of things after a busy summer with local recreation programs. W6BIP, on his way to work, for two consecutive mornings assisted in notifying the State Highway Patrol, via mobile radio, of two head-on collisions. W6OPL, while mobiling, assisted State Highway Patrols in averting a suicide on the Golden Gate Bridge. K6PQG is hard at work with her studies at the California State Mental Hospital. W6QMO reports that the Northern California Net (NCN), on 3635 kc., now meets for one session at 1900 Mon. through Fri. Sat. remain at two sessions, 1900 and 2200. We encourage more interest in this C.W. Net for both experienced and slower operators. K6OHJ is putting up a 65-ft. tower and beam. W6ERS is burning the midnight oil looking forward to completion of his DXCC. He has only nine more confirmations to go. K6HIW and K6OHG visited VE-Land during their vacation. Upon their return they visited in Portland, Ore., where K6HIW attended a club meeting of the Portland Roses. The 6-meter hunt was won by W6KFS and the 10-meter hunt was won by W6BIP. K6GRX reports that the following "teen-agers" actively participated in the S.E.T. this year: K6GRX, K6RPC, K6TQP, WA6BBS, WA6EOH, WV6FKR, WV6HZA and WV6FCO. We are happy to see this report and would welcome more news from our teen-agers. Traffic: W6QMO 194, W6GQY 130, K6PQG 111, W6OPL 74, W6GGC 26.

SACRAMENTO VALLEY—SCM, Jon J. O'Brien, W6GDO—Asst. SCM: William van de Kamp, W6CKV.
(Continued on page 132)

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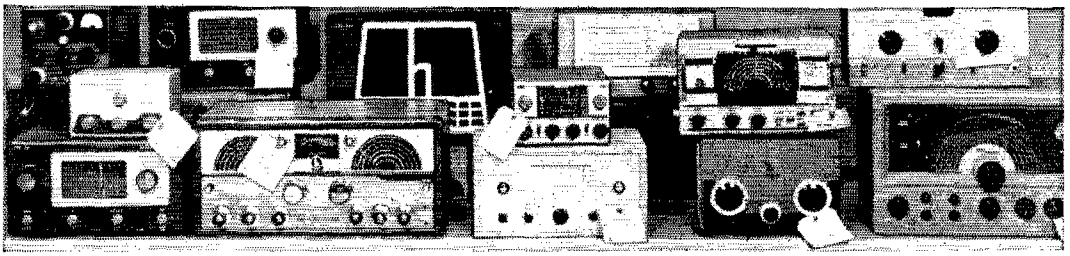

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ALLIED RADIO

100 N. Western Ave., Chicago 80, Ill.

SEC: K6IKV. RM: W6CMA. PAMs: W6ESZ and W6PIV. Happy New Year to all! At the time I am writing this W6GDO and K6HHD are temporarily but completely off the air. We have just moved into a new home. Hope to be back on the air by the time you read this but at present have *work* up to my ears (fence, lawns, tower, etc.). Please note my new address on page six. Sacramento Valley is losing its best OO to East Bay—W6WLI has been transferred to Berkeley. W6QNI now is on 2 meters. W6AF was hospitalized with pneumonia in October and November but is doing fine now. K6SXX completed WAC and needs only Alpine Co. for WACC. K6RRJ has new Heath mobile gear. Siskiyou C.D. has a new NC-303 and a Valiant. W6JDN was portable in Trinity Co. while working there. There are several new General Class tickets in the northern part of the section. That is it for this time. No doubt some reports have been delayed because they had to be forwarded to my new address. Best wishes to all in the New Year. Traffic: K6SXX 145, W6QNI 14.

SAN JOAQUIN VALLEY—SCM, Ralph Saroyan, W6JPU—I would like to take this opportunity and time to wish each and everyone of you a very Happy New Year. W6CUH has moved to Monterey. W6ARE is converting 6-meter gear. K6GOX worked KH6CNI for his 50th state on 6 meters. K6OZL has a Hornet tri-band beam. K6ROU made 120 contacts during the CD Party. WA6FUF got his General Class license and is on 40-meter c.w. with his sights set on v.h.f. W6LOS has the only HRO-60 with a dual diversity tuning capacitor. W6PSQ is heard on 75-meter s.s.b. K6LRZ is on 40-meter s.s.b. with a 20A. W6JUK has a better understanding of his HT-32A. W6SVM operated portable on Black Mountain during the summer with 10 watts on 75 meters. The Fresno 2-meter repeater is on the air in Fresno. W6GQZ is looking for 6-meter openings. W6JPU lost his tower and beams during a windstorm. K6AYL is rebuilding. W6VLR is taking up flying. W6RRN is on 220 Mc. K6UJG is using an abandoned phone line 5 miles long for an antenna. W6UWY still is inventing perpetual motion. W6KGO is in Alaska. K6QLW is having modulation troubles. K6VAZ is a guard at San Quentin. K6SWT has a Viking II. K6RUQ is going after his General Class license. The SJV Net had 27 sessions, 510 check-ins, 122 traffic count. WA6CUZ got his General Class license. The Fresno Radio Club handled traffic from the County Fair to all parts of California. The MARSFEST was held in Fresno Oct. 24, with 150 in attendance. Traffic: K6EJT 188, W6TO/6 134. K6ROU 69, W6ARE 20, K6CZO 2.

ROANOKE DIVISION

NORTH CAROLINA—SCM, B. Riley Fowler, W4RRH—SEC: HUL. PAM: DRC, V.H.F. PAM: ACY. We need a Route Manager. K4YEP has been appointed ORS. ECs AJT and K4DVE report much activity in Districts 7A and 8A. District 8A reports a need for a second frequency for drills. Districts 9C and 10A are now operating on 2 meters. Twelve of fourteen ECs made reports this month. The following members of the 6-Meter Net received net certificates: K4LVV, K4KDY, K4JYF, K4TUS, K4UMF, K4VUG, K4GMP and K4RUI. Net secretary K4SFN reports good attendance each session, but failed to mention the frequency. The SCM has long been an advocate of v.h.f. for local nets and the report from K4VUG indicates that 6 meters is a good medium for a State net. Area "F" of the North Carolina RACES program is exploring 40 meters as an area net. Preliminary tests show that it works very well, at least we are free of kw. interference. Cliff Blalock is working on combining many RACES Plans in most areas and surely has the endorsement of the SCM. Hear-say reports for the North Carolina S.S.B. Net on 3895 kc. indicates rapid growth. Checking the calls of the net members indicates that the net has members outside the State. This is excellent; glad to hear a net with liaison stations listed on the net roll. I assume that these stations have the same privileges as members within the State. 3, 4 and 5RN news indicates that North Carolina was present at 56 per cent of the net meetings. Not so good, fellows.

SOUTH CAROLINA—SCM, Dr. J. O. Dunlap, W4GQV—PAM: K4IIE. RM: K4AVU. EC: K4PJE. K4BLF got the big prize at the Annual Rock Hill Hamfest held at Joslin Park Oct. 12. The Hamfest was well attended and short talks were given by Director MWH and Vice-Director AKC. Awards of new 50 star flags were made by GQV to outstanding stations on the nets during Hurricane Gracie. AKC, PED and K4AVU attended the Roanoke Division Convention. The DX ARC of Camden has an excellent disaster plan to be published in *Scarab*. K4FGB is now at KG1AA looking for South Carolina contacts. An organizational meeting

(Continued on page 134)

TO SAVE, OR NOT TO SAVE

(A soliloquy in Three Acts, with a happy ending.)

Cast: A hep Ham, who has just decided to get more fun out of life by enjoying some better equipment in his shack.

Act I

(Our hero is in his shack. He has called CQ seventeen times, and is listening to the other fellows working the DX)

"To save, or not to save. That is the question. Whether it is safer to stick to new equipment, or wiser to get some better used gear for a lot less money.

. . . Come to think of it, **every** rig on the air is a **used** one! And, if I could be sure of getting a really **good** one, there's no reason why I can't have a bigger one, save a lot of sheckels, and still have the same performance and results of a brand new job.

. . . Aye, there's the rub! How can I be sure of getting a good one? . . . Mustn't buy a pig-in-a-poke.

Pig-in-a-poke? . . . that's what Bil Harrison has been saying in his ads about his used equipment! . . . All my friends tell me that Harrison Radio is the most reliable, and stands squarely behind everything it sells. That's the main reason they have grown to be called 'Ham Headquarters, USA'.

. . . No point in taking a chance. I'll get in touch with Harrison right away."

(Curtain)

Act II

(The world-famous Harrison Trade-In Center. Our hero is rapturously inspecting the rows upon rows of shelves stretching into the distance, loaded with the greatest array of ham gear ever displayed under one roof.)

"**WOW!** . . . Never saw so much ham gear in my life! . . . There's several of the very model I want . . . Every piece has a green tag on it . . . shows Service Lab verification of performance . . . certainly no 'Pigs-in-a-poke' here! . . . And just look at the prices on those tags! . . . Never thought they could be so low.

There's Bil, W2AVA, and Ben, W2SOH, and Ray, W2QYS, and Bernie, K2IMD, and Bob, K2JVQ, all bustling about like busy bees, helping make the crowds of hams look so pleasantly happy.

. . . No wonder they do such a brisk business in the Harrison Trade-In Center . . . there's such a wide assortment to choose from . . . and most of those trade-ins can hardly be told from new! . . . Here's their Clearance Section, where any unit which does not pass their high performance standards is yellow-tagged at a give-away price, and sold 'as-is'.

. . . All the boys are so friendly and helpful . . . they'll fire up anything I select, and let me prove to my satisfaction that it is perfect before I take it home.

. . . There's certainly no risk here! . . . Everything is unconditionally guaranteed . . . if anything should go wrong, their experienced service lab will competently fix it without any charge for parts or labor during the first ninety days . . . And, if for any reason I am not entirely delighted with my purchase, I can return it at any time up to three whole months later and get a brand new one of the same or any other model for only the difference in price.

. . . They really gave me a swell allowance for my old stuff . . . the swap cost a lot less than anywhere else! . . . And if I want to, I can spread the balance over many months . . . Their low carrying cost lets me enjoy now, pay later.

. . . Those new roads make it a snap to drive to this convenient, central location only 12 blocks straight downtown from the Holland Tunnel . . . plenty of parking, too.

It's sure great to deal with Harrison!"

(Curtain)

Alternate Act II

(For the ham who cannot visit "Ham Headquarters, USA", so trades by mail.)

(Time: A few days later.)

"Here's Harrison's speedy reply by return mail! . . . He gives me a choice of the models I asked about . . . the prices look real good. . . . More important to me, it's the values that are guaranteed to be unequalled!

. . . He says I can enjoy all the advantages of those hams who come in to the Harrison Trade-In Center . . . they'll fire up and check it out before carefully packing and safely shipping it to me . . .

. . . I have the same privileges of returning it, even for full cash refund within 15 days. . . . He offers a really top allowance for my old gear . . . and I can take up to 24 months on the balance.

No question about it . . . for the best deal, every time — my order goes to Harrison!"

(With look of well justified happy anticipation, he seals envelope.)

(Curtain)

Act III

(Back in the shack, a few days later)

"Please stand by, VQ1SSB. I have 9M2DB on the hook, and he says XZ2AD has been calling me."

". . . This is certainly FB gear I got from the Harrison Trade-In Center . . . and their boys gave me some good dope on how to get the best out of it. . . . Never heard of values to equal this . . . and the money I saved let me make the little YF happy with a new mink coat.

Golly, we **both** are glad I always deal with Harrison!"

(Curtain, sustained applause)

Epilogue

Honestly OM, I can't promise you'll make DXCC right away, just because you get your gear from me. At least, not in the first few days!

But I do tell you sincerely that whether you want to save with safety on my like-new equipment, or if you want the very latest new production, you'll always get more real value for your money and you'll always feel more comfortable at "Ham Headquarters, USA".

Come on in, and bring your old gear. I guarantee you'll return home happy with your trade. Or, drop me a line telling what you want, what you have to swap and the terms you would like.

TNX 73

Bil Harrison
W2AVA

of amateurs in the PeeDee Area will be held in Florence. K4AQB is EC for Moncks Corner. The smooth functioning and cooperation of the state and area nets as demonstrated in Hurricane Gracie again was shown in the October S.E.T., with many new members participating and taking an active interest. Formal traffic on all nets is greatly increasing much to the satisfaction of all net managers. Traffic: (Oct.) W4AKC 656, K4PIA 290, AVU 284, HJK 244, BVX 216, PJE 215, WCZ 214, W4FFH 169, K4HDX 118, LNJ 94, BWZ 83, CIY 63, BLF 54, W4CHD 45, PED 45, GQV 42, ZAP 17, K4MBN 13, IIE 12, W4VIW 12, K4DFX 8, W4YOS 3, TLC 2. (Sept.) K4HQK 15, HDX 12.

VIRGINIA—SCM, John Carl Morgan, W4KX—An emergency session of the VFN the Oct. 31 week end assisted CAP and local authorities when a Piedmont Airliner crashed in Central Virginia. VFN Mgr. BGP reports there was perfect cooperation all around. VSN had a Halloween party which turned out to be a surprise party for outgoing VSN Mgr. OOL. K4QES succeeds OOL as VSN Mgr., taking over a lusty and active operation, thanks to Pete. ATQ has a class of some 20 aspiring hams. BCT has QSY to W6-Land. Ex-K4YPR, now K3JYY, reports he's QRD Ft. Monmouth, N. J. K4DWP reports from M.I.T. where he expects to be heard on 1MX. K4QIX is NCSing the Washington Area Traffic Net on 6 meters. The new White Oak Mt. V.H.F. Society (KDH) is completing a new club house and has an OES appointment. PVA reports several good transmitter hunts were held in the Arlington Area as an AREC activity. Attention of all is called to the newly-instituted 2200 EST session of VN/VSN. Speed will be kept within very reasonable limits to accommodate all and sundry. 2200 sessions were used a number of years back but were washed out during persistent short-skip conditions during the last sunspot peak. The plan is to keep this session very short, 15 minutes if possible, and encourage a get-together rag chew immediately following for those interested. All are invited; the more the merrier. Traffic: (Oct.) K4QES 873, QIX 670, W4QDY 247, K4ADD 107, SSA 100, W4SHJ 98, DVT 96, OOL 65, K4QER 59, JKK 41, W4KX 40, BGP 34, K4TFL 32, AET 22, IIP 19, W4ZM 19, K3JYY/4 17, K4VJB 15, W4ATQ 10, PVA 4, K4LIB 3, RZJ 1. (Sept.) W4QDY 245, K4JKK 66, W4BRF 30, K4TFL 13, W4PRO 4.

WEST VIRGINIA—SCM, Donald B. Morris, W8JM—SEC: HZA, PAM: K8BIT. RMs: GBF, HID and PBO. WVN (c.w.) 3570. Phone Net, 3890 kc. Officers of the East River ARC, Bluefield, are SSA, pres.; HNK, vice-pres.; K8BHG, secy.; HNC, treas. K8OLY is now General Class and operates 420 Mc. with K8ELJ. K8ELI is going to W.V.U. KN8PQQ is a new Novice at Rupert. The Logan ARC's officers are K8HMC, pres.; K8CMW, vice-pres.; K8MGY, secy.-treas. The Tri-State ARC at Huntington has club station KEG in operation. SET received WACWV No. 17. The Northern Panhandle ARC at Wheeling meets on 50.1 Mc. Fri. at 10:30 P.M. ENI attends the U. of Cincinnati. K8CSG moved into a new home and has a 75A-3 receiver. K8CRM is EC for Taylor and Barbour Counties. K8MQB is active in the YL Cross-Country Net. K8BIT is now a PAM. K8LGT and K8AON are active on 6 meters. K8AEN and WHQ have new beams for 10 and 20 meters. NYH moved 400 feet and still uses the same antenna. OIV moved and has a new 814 rig. ESH and K8BLR missed HC1JW during the v.h.f. opening. K8GAG is planning a radio club for 14 amateurs in Braxton County. K8KZF has a new Hy-Gain vertical on 28 Mc. GBF, TVO and K8JLF were active in the F.M.T. Program. Comments toward a 40-meter phone net will be appreciated. Traffic: K8JLF 88, W8HZA 73, K8CNB 56, HID 54, W8NYH 34, ELX 31, K8BIT 29, W8BWK 20, K8KZJ 11, CSG 10, W8DFC 10, SNP 7, K8MMZ 6, GAH 5, W8GBF 5, JM 4, K8AEN 2, W8OIV 1.

ROCKY MOUNTAIN DIVISION

COLORADO—SCM, Carl L. Smith, WØBWJ—SEC: NIT. RMs: WME and KØEDK. PAMs: CXW and IJR. OBSs: KQD and KØDCC. New appointments: ULZ and KØOVQ as Official Observers and KØDTK as ORS. EC reports for the S.E.T. show 40 participants in the Denver Area and 17 in Montrose. IA, DUA and KZO are Asst. ECs for Boulder County. Section Net certificates were awarded to 23 members of CWXN and 12 members of CEPN. Twelve members of CWXN have received the Public Service Award certificate from U.S.W.B. for 500 or more reports. Three "iron men," DXF, IA and NVU have made over 1000 QNI in CWXN. Because of efforts of the RMs, PAMs, net managers and members, traffic activity is at an all-time high and Colorado leads this Division. New officers of the Pikes Peak ARA are KØLZF, pres.; SWM, secy.;

(Continued on page 136)

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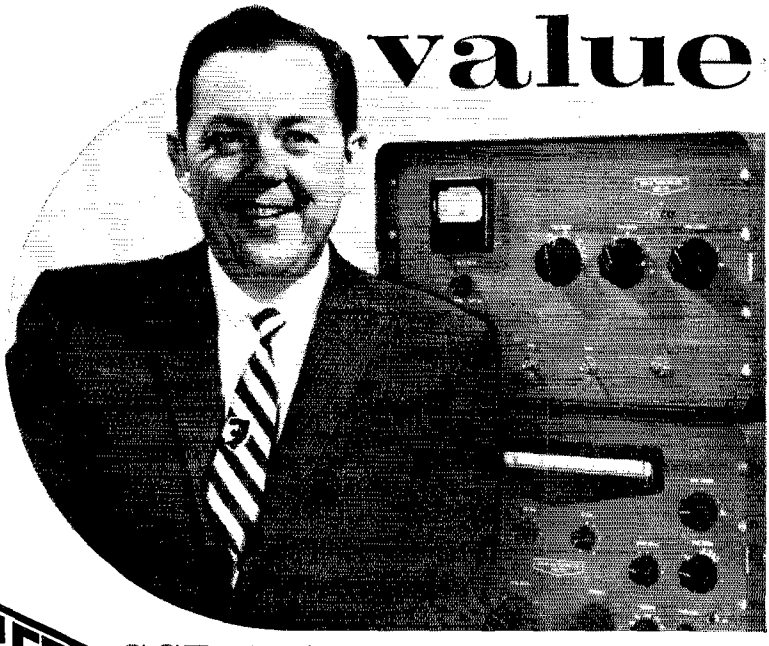

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499.50

GSB-101

SSB 1000W P.E.P. input RF linear amplifier. Uses stable, efficient grounded-grid circuitry. Has pi network output, bandswitches 80-40-20-15-10 meter bands. Supplies for power and bias and antenna relay are built-in. Linear drives by GSB-100 or other equipment supplying 60-70 watts driving power.

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KØDSI, treas. *Zero Beat*, with BTO as editor, is a new publication of the Highbanders Net. KØJSD conducts C.D. Net practice on 50.35 Mc. each Tue. at 1900 for the Denver Tri-county Area. KØs TFP and SLD, father-son team, are first in Colorado to receive WWCNY and W-Conn Counties. The Steel City ARC station, KØUDM, has roll call on Wed. at 2100 on 29.4 Mc. BPL awards went to ANA, KQD and KØDTK. Traffic: WØANA 531, KQD 526, KØDTK 503, EDH 431, EDK 414, WØWME 120, EKQ 116, KØRTI 110, WØBWJ 93, KØDCW 90, RQF 67, WØENA 44, CBI 40, KØSHG 40, TMM 31, EVG 23, QAN 22, SLD 18, WØIA 16, KØLCZ 12, CEN 11, SUH 7, WØSIN 2.

UTAH—SCM, Thomas H. Miller, W7QWH—Asst. SCM: John H. Sampson, 7OCX. SEC: FSC. RM: JBV. PAM: BBN. V.H.F. PAM: SP. The Beehive Net now meets daily at 1230 MST on 7272 kc. K7BDX is the Acting NCS. K7DVT and K7GGS have earned Beehive Net certificates. OCX was off the air for a period of 40 hours because of a severe windstorm in Northern Utah. K7BDX and NHY are building an amplifier with 811s. QWH has been reelected to the office of SCM. No balloting was needed since only one valid nominating petition was sent in. SAZ now has two sons licensed—K7BBZ and KN7JYG. AREC nets in Salt Lake meet every Mon. at 2000 MST on 1977.5 kc., 28.7 Mc. and 21,175-Mc. cw. Traffic: W7OCX 256, K7DVT 5, W7ZWJ 2, QWH 1.

NEW MEXICO—SCM, Allan S. Hargett, K5DAA—SEC: CIN. PAM: ZU. V.H.F. PAM: FPB. RM: ZHN. The NMEPN meets on 3838 kc. Sun. at 0730, Tue. and Thurs. at 1800 MST. The Breakfast Club meets on 3838 kc. Mon. through Sat. at 0700 MST. The NMBP Net meets on 3570 kc. Mon., Wed. and Fri. at 2000 MST.

FIRST NEW MEXICO QSO PARTY
January 23-24, 1960

The Sandia Base Radio Club of Albuquerque announces its first New Mexico QSO Party and invites all amateurs to participate. New Mexico hams are urged to work as many out of state stations as possible, so that those interested can earn credit towards WAS and the Sandia Base Fellowship Award.

Rules (1) Time: 36 hour period from 0800 MST Saturday Jan. 23 to 2000 MST Sunday Jan. 24. (2) No time limit or power restrictions; all bands can be used. (3) Scoring: New Mexico stations count 1 point per contact and multiply total by the number of states, U. S. Possessions, Canadian Provinces, and countries worked. Non-New Mexico stations count 3 points for each New Mexico station worked; multiply total by number of counties in New Mexico worked. (4) Stations can be worked once *per band*. (5) A certificate will be awarded to the 1st, 2nd, and 3rd highest scoring station in each call area, and to the highest scoring station in each country, Canadian Province, and U. S. Possession; plus a certificate to the highest scoring non-New Mexico station in the U.S.A. A certificate will be awarded to the 1st, 2nd, 3rd, and 4th highest scoring station in New Mexico. (6) A Sandia Base Fellowship Award is given to any station who contacts 25 different stations in Albuquerque. Party logs showing required data will be accepted in lieu of QSL's. (7) General call: "CQ NM." New Mexico c.w. stations should identify by signing "DE NM (call) K." Phone stations say: "New Mexico calling." (8) Exchanges: New Mexico stations send QSO number, RS or RST, and county. Non-New Mexico stations send QSO number, RS or RST, and state, possession, province or county. (9) Logs must be sent postmarked no later than Feb. 15, 1960 to: Sandia Base Radio Club, c/o John C. Kanode, K5UYF, 1900 Madeira Drive N. E., Albuquerque, New Mexico.

The TWN meets Mon. through Sat. on 3570 kc. at 1900 MST. Try to meet as many of these nets as possible. Two new calls in Carlsbad are K5YTN and K5YUA, ex-ØTYB and ØGQY. Congrats on the 5 area calls. New ECs are K5EJW for Los Alamos and K5MNL for Santa Fe. Notice to all New Mexico hams: Be sure to get in the QSO Party Jan. 24 and 25. Information is obtainable from K5UYK, Albuquerque. K5LFE and K5MSE have moved to Clayton from Gallup, New Mex. New officers of the Caravan Club are K5CQH,

(Continued on page 138)

Leo I. Meyerson, WØGFQ

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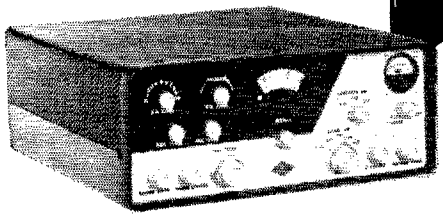
"the house the hams built"

MOBILE - SIDEBAND TRANSCEIVER the Gonset MSB-1

NEW



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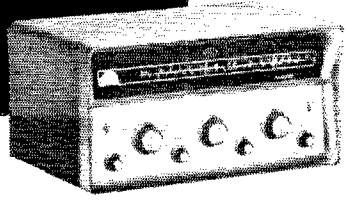

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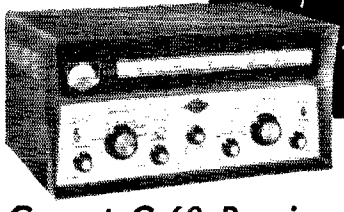

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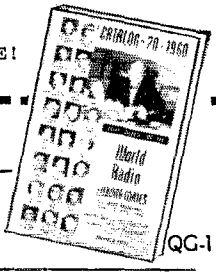

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master; LQM, emergency master; K5LRY, secy.-treas.; K5GOJ, program director; WZK, asst. program director. Three candidates for SCM have been nominated: ZHN and K5GOJ of Albuquerque and K5IQL of Roswell. Traffic: (Oct.) K5WSP 1334, W5ZHN 408, W7AVN/5 177, K5IPK 41, GOJ 26, DAA 15, LWN 11, IQL 8, W5VC 7, K5GYZ 6, LWJ 6, W5CIN 4. (Sept.) K5VLG 39.

WYOMING—SCM, Lial D. Branson, W7AMU—SEC: CQL. The Pony Express Net meets Sun. at 0830 MST on 3920 kc. The Wyoming Jackalope Net meets Mon. through Fri. at 1200 MST on 7255 kc. for traffic. The YO Net is a c.w. net on Mon., Wed. and Fri. at 1830 MST on 3610 kc. BHH modified the DX-100 to grid blocking keying and made the neighbors happy. AEC moved back from Fremont Lake Cabin to Pinedale. IDO has been on the sick list but is back in fair condition now. CQL, the SEC, is busy appointing ECs and AREC members. Wyoming has 34 AREC members now. K7HKD, at Cheyenne, is the new EC for Laramie County. BWJ, Colorado SCM, is a pilot for Western Airlines Denver-Billings through Casper and calls AMU, Wyoming SCM, quite often. Traffic: W7BHH 116, CQL 33, JHO 17, SZZ 10, NMW 5, AMU 4, LKQ 4, BKI 2, CRL 1.

SOUTHEASTERN DIVISION

ALABAMA—Acting SCM, Harvell V. Tilley, K4PHH—SEC: WJX. PAMs: K4BTO and PHH. RM: RLG. Congratulations to K4YGS and UEE on receiving ORS and CP-20. Alabama was 95 per cent in representation on RN5 in September. Welcome to AENB, K4SAV. Jefferson County AREC participated in the 1959 S.E.T. AENJ and AENX Nets are active with 28 stations. A 30-minute S.E.T. was held Oct. 24 at Mobile using 6, 10 and 75 meters. K4IPF reports they still meet locally each Sun. at 1400 on 3970 kc. Anyone wishing to get into Selma for any reason may call in. CIU is trying to get on 6 meters. K4SSB would like to see more activity from Alabama stations in ARRL contests and CD Parties. K4BWK has a new QTH. Jefferson County AREC was represented at the Alabama State Fair on a.m., s.s.b and c.w. 1 P.M. to 10 P.M. each day. We appreciate the effort put forth by amateur radio clubs and individual amateurs in the State who worked against the House Bill affecting amateurs in this State. DS underwent surgery in a New Orleans, La., hospital recently. The Net Control Stations on the AENP for this quarter are doing fine jobs. Traffic: (Oct.) W4RLG 318, K4PFM 223, ZXX 187, YGS 102, W4PVG 67, K4SSB 52, W4YRO 52, K4JDA 50, RIL 47, UEE 40, W4MI 29, K4PHH 29, SAV 28, AOZ 27, W4OKQ 27, CIU 22, K4BTO 19, IPF 12, HFX 9, W4CIN 8, K4HVN 5, JSP 5, DJR 1, W4FUT 1. (Sept.) K4SSB 52. (Aug.) K4SSB 63.

EASTERN FLORIDA—SCM, John F. Porter, W4KGJ—SEC: IYT. RM: K4SJH. PAM: TAS. V.H.F. PAM: RMU. Section nets are FPTN, 3945 kc. 0700 Mon. through Sat.; FMTN, 7230 kc. 12 noon Mon. through Sat.; TPTN, 3945 kc. 1730 daily; FN, 3650 kc. 1830 Mon. through Sat.; GSSN, 7115 kc. 1000 Mon. through Sat.; FEPN, 3910 kc. 1830 Tue. only. The FEPN had a workout during the small tropical storm that passed across the state in October. Several stations were on over 24 hours. How about some of you fellows who showed up for the real thing checking in with our emergency net on Tue. evenings? The Sperry MECARC will provide instructors for the radio course organized by the Explorer Scout Troop at Tarpon Springs. The members put out a nice little paper called the *PC Scentinel*. IEH has received certificates for D.U.F., WBE and BERTA, all on c.w. Ft. Lauderdale: The ARC will hold its annual auction Feb. 13, same place and time. The ARCACS, K4IWT, was manned 2 days for S.E.T. under EC SJZ with 12 operators. Daytona Beach also reports a good turnout for the S.E.T. Your SEC, IYT, enjoyed two visits during October, one with the JAX group and the other at Ft. Myers. Your SCM met with the W. Palm Beach Club and also the St. Petersburg Club. The Naples ARC has a new home at the County Airport. K4ANR is now a Technician. Congrats, Ruth. DVT and K4LCF kept the Coastal Emergency Net alerted on 3795 kc. during the recent hurricane. LVV and K4DRO received their D.U.F. awards in September. The Flamingos held an outing at the S. Miami Riding Academy Nov. 6 with well over 200 attending. Traffic: (Oct.) K4SJH 957, QLG 450, W4SDR 380, K4IWT 262, LCF 203, FMA 124, ILB 124, W4GJI 112, K4LCD 112, KDN 110, W4HMU 86, K4ODS 85, W4DVR 82, IYT 74, K4BY 65, W4KGJ 63, LMT 60, K4COO 54, EHY 54, RNS 53, W4SJZ 48, K4JJZ 24, W4SGY 22, FE 19, K4MBB 13, MTP 11, OSQ 9, W4EHW 6, KN4GLI 4, K4ZNC 3. (Sept.) W4LVV 2.

(Continued on page 140)

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NEW RADIO SHACK PAY-PLAN

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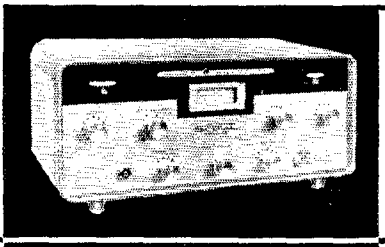

GLOBE SCOUT DELUXE
6-80 meter transmitter

Most outstanding low-cost transmitter today! New RF circuitry. Separate shielding of final amplifier and meter. Ship. wt. 35 lbs.

$149.95 wired/tested

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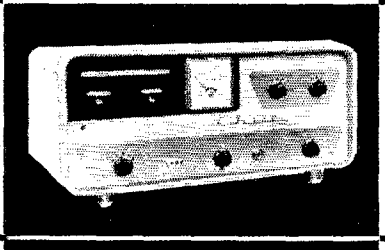

GLOBE CHIEF DELUXE
90-watt CW transmitter

For CW. Bandswitching 10-80 meters. Factory-wired and tested — or kit with all parts, tubes, manual for easy assembly. Ship. wt. 31 lbs.

$59.95 kit **$79.95** wired/tested

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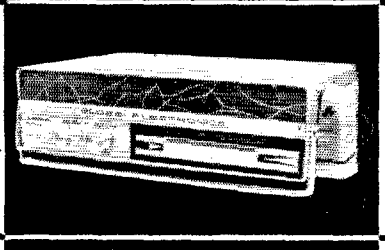

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- ☐ Send FREE Radio Shack Bargain Catalogs for one year

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WESTERN FLORIDA—SCM, Frank M. Butler, jr., W4RKH—SEC: PQW. RMs: ANP and BVE. Tallahassee: New officers of the TARC are YUU, pres.; ZAE, vice-pres.; and K4MZT, secy.-treas. GAA is active as OBS, Madison: High winds disturbed the antennas of RDQ and RCO, but they and PBO held an FB c.d. drill. Port St. Joe: K4RZF is our new PAM. He is acting as net mgr. for the W. Fla. Phone Net on 3840 kc. Panama City: The PCARC's new officers are K4GVV, pres.; K4PTP, vice-pres.; Margie Morfu, secy. FIU, treas.; and K4QWF, sgt. at arms. KN4FQQ and BOE have dropped the "N." Bay H.S. ARC's new officers are K4OID, pres.; K4CEF, vice-pres.; K4GYH, secy.; and K4VRT, treas. OID issued an FB newsletter on NWFN and Panama City activities. AHV has been in the hospital. Defuniak Springs: JOZ reports the code and theory class has 18 regular members. He and QVL keep Walton Co. well represented on the ham bands. Ft. Walton/Eglin AFB: Through the efforts of UBR and BVE, the NWFN and FN (East Fla.) c.w. nets have merged into one. The net meets daily at 1730 CST on 3650 kc. BVE has opened a new electronics parts store in town. UBR ran up a high score in the CD Party. The Eglin ARS had another FB picnic at SMM's QTH, Pensacola: K4SWQ has moved here from Marianna. The NAS Club is starting a training course. HYL is now OO. Traffic: K4UBR 721, OID 33, W4GAA 16, PBO 2.

GEORGIA—SCM, William F. Kennedy, W4CFJ—SEC: PMJ. PAMs: LXE and ACH. RM: DDY. GCEN meets on 3995 kc. at 1830 EST Tue. and Thurs., 0800 Sun.: GSN Mon. through Sun. at 1900 EST on 3595 kc., DDY as NC; 75-Meter Mobile Phone Net each Sun. at 1330 EST on 3995 kc., K4JTC as NC; GTAN Sat. at 1000 EST on 7290 kc.; Atlanta Ten Meter Phone Net each Sun. at 2200 EST on 29.6 Mc., KWC as NC; GPYL Net Thurs. on 7260 kc. at 0900 EST; GAN on 7105 kc. at 1800 EST Mon. through Fri., K4KZP as net mgr. ZKU and K4LVE made BPL this month. This is K4LVE's third time and he is eligible to receive a medallion from ARRL. K4TFY is nearing completion of a new 150-watt 6-meter rig employing high a.f./r.f. ratio modulation. FWH transmits ARRL bulletins on 144 and 54 Mc. regularly. K4HDR is working nice DX on 15 meters. The Georgia Teen-Age Net welcomes all teen-agers to check in with them each Sat. at 1000 EST on 7290 kc. K4IFF is moving from Jacksonville, Fla., back to Savannah, Ga. The Peaches welcome her back. Also you gals, don't forget each Thurs. morning the Peorgia Peaches holds its net session on 7260 kc. at 0900 EST. There are a few openings for ECs in Georgia. Register your county with PMJ, your SEC, for appointment. You must be a League member to hold this appointment. K4YDP and K4ZSX are new AREC members. Remember, in an emergency listen before you transmit. Traffic: W4ZKU 415, K4MIH 175, EJI 134, BVD 128, LVE 122, BAI 121, VHC 80, OSL 20, PHA 20, W4FTB 5.

WEST INDIES—SCM, William Werner, KP4DJ—SEC: AAA. New AREC members are CK, CL, SR, NY, AAB, AAN, ABN, ATS, ALY, AMG, AHQ, AOD, AOF AQQ and API. The 50-Mc. Net, with ABN as NCS, conducted a Simulated Emergency Test with twelve stations filing messages. DJ relayed messages to W1AW on 80 meters. AAN operated with emergency power during the S.E.T. MARS KP4USA is reactivated as Fort Brooke, operating mostly on 21 Mc. with K7JIE at controls. The Antilles Weather Net, on 7245 kc., discontinued weather observations with the close of the hurricane season but continues with routine traffic on 7245 kc. at 7 A.M. and 3815 kc. at 5:30 P.M. AMU, our OO, has sent several notices to W stations operating phone below 21,250 kc., and to s.s.b. stations who fail to identify as required. AMU is now MARS AH2CV and checks into ANTMARS every Mon. on 7305 kc. at 1800 AST. New hams at the radar tracking station in San Juan are ASX, ASV and ATO. AND is now in Denver, Colo. AAB has a new 7-lb. Hy-Gain five-element beam on a 30-ft. tower. AMG also put his 6-meter beam on a 30-ft. aluminum tower. ABP has a new Gonset G-50. WP4ASN is on 15 meters with a TBS-50. AAM has the Stancor mobile rig 2E26 final operating 80, 40 and 6. AOD has a sked with Cleveland on 21,360 kc. at 8 P.M. AKH burned out the plate transformer in the DSB-100. ALY has a VHF-152 converter for 6 and 2 meters. RD is using an HT-32A on 75-meter d.s.b. with carrier (a.m.). ATZ is a new Tech. at Juncos using a Globe Hi-Bander on 50 Mc. with a Hy-Gain beam and a VHG-152-HRO combination. CK has worked 43 LU stations on 50 Mc. in the past few months. ACH converted the DX-35 for 50-Mc. operation. WLU now is located in HP-Land visiting KP4-Land. AST received a new Gotham 10-meter beam. DJ is building a separate antenna coupler for 21-28 Mc. URO added a modulator to the DX-20 and is active

(Continued on page 142)

BULLSEYE BUYS at ARROW!

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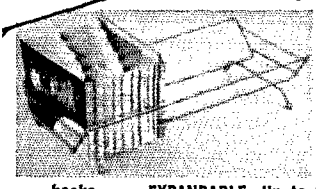

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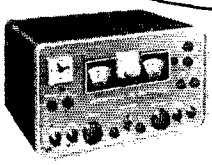

Hammarlund Model HQ-180

SSB, full coverage — .54 to 30 MCS. Band spread cal. for 80, 40, 20, 15 and 10 meter bands. Triple conversion 18-tube superhet. with ANL and AVC, adjustable 60db notch filter. Separate linear detector. Tuned IF amp. with 7 selectivity positions. Selectable upper, lower or both side-bands. ± 2 KCS BFO control. Built-in 100 KCS xtal cal. Dial scale reset.

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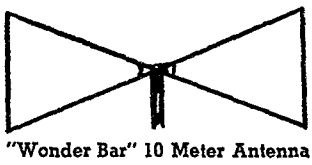
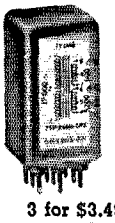


"Wonder Bar" 10 Meter Antenna

As featured in Nov. 1956 QST. Complete with B & W 3013 Miniductor. Only 8 ft. long for 10 meters. Wt. 5 lbs.

Amateur Net $7.85



Versatile Miniature Transformer

Same as used in W2EWL SSB Rig — March 1956 QST. Three sets of CT windings for a combination of impedances: 600 ohms, 5200 ohms, 22000 ohms. (By using center-taps the impedances are quartered.) The ideal transformer for a SSB transmitter. Other uses: interstage, transistor, high impedance choke, line to grid or plate, etc. Size only 2" h. x ¾" w. x ¾" d. New and fully shielded.

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Sub-Miniature 0-200 Microampere Meter

A high quality instrument made by International Instrument Co. (Model 100). Only 1" in diam. Ideal for limited space applications. A natural for transistorized grid dip oscillator as described in QST.

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1½" square 0-500 microamperes. Bakelite case. By Dejur.
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1½" square (ruggedized) 0-100 microamps.
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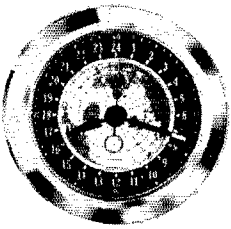

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24 hr. chrome plated 8" metal wall clock. Inner dial with south polar projection map of world indicates time around world. Polar projection dial adjustable for various time zones. Shpg. wt. 2 lbs.

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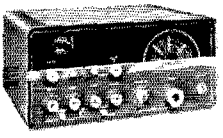

Hallicrafters HT-37

SSB A.M., C.W. Transmitter

Rated by Hallicrafters as low cost twin to their HT-32A. Same Power, VFO and VOX. 144 w. plate input (P.E.P. two-tone) 70-100 w. P.E.P. output CW or SSB 17-25 w. carrier AM phone. Sideband suppression down 40 db at 1 kc. Carrier suppression down 50 db. Distortion products down 30 db or more. Instant CW Cal. from any mode. 5 band output (80, 40, 20, 15 & 10 meters).

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on 40-meter phone. UW, our FCC engineer, is on a Stateside vacation. WR., Aguadilla, has moved to a new QTH. WV is president of the Aguadilla Lions Club. Traffic: KP4WT 71, ABN 27, CK 27, DJ 24, AMU 4, AAN 2, AHQ 2, AMJ 2, ASH 2, AJK 1, ALY 1, AMG 1, AQQ 1, SR 1.

CANAL ZONE—SCM, Ralph E. Harvey, KZ5RV—In lieu of the Annual S.E.T., Canal Zone hams established a security network for the use of the Canal Zone Security Force. Various tests were made to establish communication from various points in the Pacific Area to command headquarters. Equipment used were hand-carried battery-operated units on 47 Mc. On Oct. 31, amateur radio operators established a control station in the Balboa Theater for the purpose of dispatching mobile units to various homes to make collections for the United Fund Telathon. LC reports that he worked 189 CD stations in 50 sections in the October CD Party. Canal Zone has several new Novices, one of whom, PRN, is the Executive Secretary of the Canal Zone. The youngest General Class operator in the Canal Zone is CR, who is 12 years of age. The youngest Novice is HRN, who also is 12. New Hams: HK, ET, FO, HN, OA, RA, VV, WB and WP. New Novices: ATN, DTN, GCN, HRN, PRN, WCN, WHN and WWN. Traffic: KZ5KQ 123, AD 80, OB 57, OA 50, HQ 30, LL 24, KA 23, VR 23, RR 22, RM 19, CD 12, LC 12, VF 9.

SOUTHWESTERN DIVISION

LOS ANGELES—SCM, Albert F. Hill, jr., W6JQB—SEC: W6LIP. RMs: W6BHG and K6HLR. PAMs: W6BUK and W6ORS. The following stations earned BPL for October: K6HLR, W6GYH, K6MCA, W6WPF and WA6EEO. Congrats, fellows! K6UYK has been called back to sea duty in the Navy. WA6EEO is on RTTY with a Model 26 printer. W6NKE is doing an FB job with a new 10-meter beam. W6BES is building a new shack. W6CK visited many hams and clubs while on a trip East. W6AM worked VP8BBB on Brandon Island. W6BUK had a nice trip to Arizona. K6LVR is in a new home and sporting a new NC-303 and a Thunderbolt. WA6FXJ worked a UN5 with 25 watts! W6SYR has a new RTTY rig. WA6DWP is doing an FB job on the traffic nets with a low antenna! W6CMN is QRL with the printer's ink. W6IBD did very FB in the VK/ZL Contest. K6OJV rebuilt the shack and gear. K6GLS is getting the rig going at a new home. K6OQD is back on again after a long absence. The Douglas-El Segundo Radio Club is conducting code and theory classes on the 3rd Thurs. of the month. W6MDQ is prexy. New officers of the South East Radio Club are K6KCU, pres.; WA6CGV, vice-pres.; K6MBQ, treas.; WV6FCY, secy. W6ORS is back on 2 meters from a new QTH in Altadena. W6CIS is sporting a new RME 4350-A receiver. New officers of the Ramona Radio Club are K6TVC, pres.; K6VNX, vice-pres.; W6OIV, treas.; W6ORG, secy.; and K6KUB, director. Support your section nets: On c.w., the Southern California net meeting on 3600 kc. at 1900 PST daily, and on phone, the SoCal 6 Net meeting on 50.1 and 50.4 Mc. at 1900 PST Daily. Traffic: (Oct.) K6HLR 1118, W6GYH 1021, K6MCA 1014, W6WPF 976, K6OZJ 490, WA6CKR 253, WA6EEO 249, W6SYQ 242, K6JSD 200, W6BHG 167, K6LVR 167, K6OJV 152, WA6DWP 128, K6HVC 54, W6USY 37, K6EA 32, W6JQB 14, K6SIX 14, W6SRE 12, W6BUK 4, K6PLW 4, K6VGH 2. (Sept.) K6OJV 262, K6GCC 212, W6CIS 9, K6GTG 8, K6SIX 7, W6SRE 4.

ARIZONA—SCM, Cameron A. Allen, W7OIF—PAM CSN 3880 kc.; FMZ, CEN Tucson meets on 29,600, 29,627 and 145,800 Mc. CAF is the new SEC. The Catalina Radio Club held a transmitter hunt. Jay Sims came in first with Howard Douglas second. Jay won by tripping Howard in the dark. Jim McClanahan ended up in Benson. CRC handled communications for the Sports Car Club recently. The members are repairing and keeping serviced motor generator sets for the CAP. For this service they are allowed to use them. K7ELZ passed away Oct. 29. CAF made 139,128 points with 731 contacts and 66 sections in the Sweepstakes. AARC members UDI, QZH, YWF, MAE, UXZ and K7AWI handled communications for the Big Car Race at the State Fairgrounds. AMM is back with us after a 3-year stay in Italy. Traffic: W7OIF 51, AMM 40, DRI 37, CAF 26, FMZ 24, K5LOV/7 4.

SAN DIEGO—SCM, Don Stansifer, W6LRU—New Novices in Escondido include WV6s HHJ, IDK and ILW. K6BPI made a traffic count of 1113 in October. The XYL of W6ELQ, WA6ATB, is now an ORS. Our Division Director, W6MLZ, attended the October meeting of the San Diego Council of Amateur Radio Organiza-

(Continued on page 144)

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the ALL-NEW HQ-180 *for general coverage*

An advanced design 18-tube superheterodyne receiver with full dial coverage from 540 KCS to 30.0 MCS. Bandspread on all amateur bands within frequency range of receiver.

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No amateur receiver has ever gained as fine a reputation as the HQ-170. A 17-tube superheterodyne receiver tuning the 6, 10, 15, 20, 40, 80 and 160 meter amateur bands.

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tions. New officers of the El Cajon Valley High School Radio Club are K6EUF, pres.; K6DWH, vice-pres.; K6KEB, secy.; and WA6CDD, treas. W6OME is now a civilian working for Convair after 30 years in the Navy. W6VQF, of Escondido, also is a recent Navy dischargee. W6IAC, the Escondido Union High School Radio Club, reports the following new officers: K6LKD, pres.; WA6BGD, vice-pres.; and WV6HOW, secy.-treas. Your SCM attended the Newport Amateur Radio Society meeting in November and spoke on the organization of the League and DX. K6BX continues to be the most active OO in the section. W6CAE, recently moved, is now back on the air. The San Diego Council authorized a committee to organize a local hamfest to be held after the first of the year. Included on the committee are W6SK, W6BKZ, K6BPL and two others. The November meeting of the San Diego DX Club was held at the home of a former member, K6BHM, who was home on leave between assignments from the Coast Guard. W6ZVQ is now active from a new location. Happy New Year and good hunting in 1960. Traffic: W6YDK 3591, K6BPI 1113, W6LAB 908, W6EOT 859, W6ELQ 132, WA6CDD 37, WA6ATB 34.

SANTA BARBARA—SCM, Robert A. Hemke, K6CVR —SEC: K6EAQ. The Poinsetta RC meets the 3rd Wed. of each month. WA6IAV is a new member of the Poinsetta RC. K6ER1 made DXCC. Santa Barbara AREC held an S.E.T. drill on Sun. morning with the Breakfast drill being held after. 2- and 10-meter mobiles and 75-meter portable were used. Many old-timers showed up to make the drill a success. The Poinsetta RC had an "off-the-cuff" hamfest at Wheeler's Gorge with about 15 members and their families present. K6RWP was on 75-meter mobile to guide in other mobiles. Eyeball QSOs were so enjoyable the following week another was held at Lake Cachuma. K6JRT was the guide-in station. K6JHA, K6JGA, WA6CMD and his XYL showed up from Atascadero at about 1 A.M., promptly waking up the whole camp. WA6BLM made BPL again. Traffic: WA6BLM 511, K6RWP 49, W6YCF 18, W6FYW 5, K6CVR 2.

WEST GULF DIVISION

NORTHERN TEXAS—SCM, L. L. Harbin, W5BNG—Asst. SCM: E. C. Pool, 5NFO. SEC: K5AEX. PAM: BOO. RM: K5ETX. October seemed to be activity month for Northern Texas with all the hamfests and emergency tests taking place and hams getting ready for the Sweepstakes held in November. Ham Day at the Dallas Fair was a great success with more than five hundred in attendance. The Ft. Worth Hamfest held Oct. 24-25 had 650 registered. This was a let-down from the 1500 that were registered last year. NFO reports 326 hams at the Free Brownfield Swapfest Nov. 1. Gladys, K5MBS, thinks they may have established a new record of some kind, as the OMs had to wait for the XYLs to finish their gabfest to go home. It looks like the XYLs are taking a more active part in our favorite hobby. Mr. Joe Satterwhite, Manager of the Brownfield Chamber of Commerce, praised the ham for his willingness and ability to render a public service during ice storms and other local disasters. Sixty-two YLs attended the TYLRUN Birthday Party at Shangra La Dude Ranch near Ft. Worth over the week end of Nov. 7. New officers are K5ALF, pres.; FFH, vice-pres.; K5MJW, secy.; and K5JXD, treas. K5RJC is drafting instructor in the high school at Overton. K5PHT (Perfect Horn Tooter) is a band director and his name is John Horn. Thanks for the news and I am sorry that I could not use all of it this time. Traffic: W5UTW 360, GY 115, BOO 98, K5TER 62, W5GSN 45, K5ACD 20, W5CF 12, K5PXV 10, IBZ 9.

OKLAHOMA—SCM, Adrian V. Rea, W5DRZ—UYQ is doing a good job as SEC of Oklahoma. The need for a good AREC was demonstrated again when flood plagued the State in early October. Three AREC groups had a good workout. IZM and his group, K5PRY, IDO, UND, LYM, OVD, W8KFY, K4GSG and AAW did a bang-up job furnishing communications at Lake Altus in the search for a drowning victim. Muskogee AREC was called out to patrol the Arkansas during the flood threat there. Mobile units were K5CAT, PRW, RCW, OQV and WAX. EC, EJK was used as the base station. Public Service Awards have been recommended for forty-one amateurs who put in twenty hours or more each during the crises along the Arkansas at Tulsa. We hesitate to mention calls as space does not permit naming all. Among the first mobiles were K5KUX, DVE-DVF, NS, OOV and HDO. K5KTW is EC. JJR is emergency chairman of the mobile club and ZBI is president. QPJ was civil defense station and

(Continued on page 146)

OPQ fixed NCS. K5EJC received special recognition from 1GY. K5CNJ is a new General Class licensee at Idabel. We had wonderful meetings with the Bartlesville, Ft. Sill-Lawton and North Fork Clubs in October. Traffic: (Oct.) W5DRZ 191, VVQ 188, K5JGZ 171, CVU 116, W5JXM 88, UYQ 88, EJK 83, K5ELG 73, QNO 62, QEF 43, W5MFX 38, DLP 33, WAF 33, USA 26, KY 24, SWJ 19, CCK 17, K5JOA 17, W5WAX 15, K5DJA 14, W5MGK 13, VLW 13, PNG 11, CJV 10, WDD 9, K5YGW 9, BNQ 6, BAT 5, EZM 5, INC 5, CBA 3, W5EHC 2, K5OJD 1. (Sept.) W5JXM 36.

SOUTHERN TEXAS—SCM, Roy K. Eggleston, W5QEM—SEC: QKF, RM: K5BZS. It's a boy for VPQ and TSE. Congratulations, George and Ella. EJT, WXT, THU, K5OFR and XE2IX were heard visiting with RKI out Eagle Pass way. Our deepest sympathy to K5ALF on the loss of her mother. THU has the mobile in the new Rambler. K5DMK lost his tower and beam in a twister that hit his QTH. CTL has a new 2-meter, 6-meter and Triband beam all on the same tower. Will be listening for you on 6 and 2 meters, John. New officers of the Houston Amateur Radio Club are AIR, pres.; K5BVH, vice-pres.; K5ALF, secy.; LSE, treas.; ITA, parliamentarian: and SHD, program chairman. There was lots of activity in Southern Texas in the S.E.T. Thanks, fellow and gals, for a job well done. MWN and EYV are on a fishing trip(?) to Mexico. Don't be surprised at anything you hear coming out of XE-Land. QEM is the proud possessor of an A1 Operator certificate. The Austin Amateur Radio Club still is working on its new club house. The club has applied for the call W5KA in memory of Paul Hargis. Traffic: W5ZIN 78, BHO 44, K5MXO 34, ABV 3.

CANADIAN DIVISION

MARITIME—SCM, D. E. Weeks, VE1WB—Asst. SCMs: A. D. Solomon, VE1OC and H. C. Hillyard, VO1CZ. SEC: BL. Newly-elected club officers are as follows: Dartmouth—FK, pres.; VB, vice-pres.; Mark Cummings, secy.; OC, treas. Goose Bay—VO2RC, pres.; VO2EB, vice-pres.; VO2GB, secy.-treas.; VO2AB, awards mgr. Halifax—SP, pres.; RJ, vice-pres.; YQ, treas.; AFN, secy. Loyalist City—EE, pres.; GE, vice-pres.; BY, secy.; Doug Kerr, treas. St. Croix—DP, pres.; K1HNF, vice-pres. W1EOP, secy.; LT, treas. Don't forget the VE1 Contest, Jan. 30-31. G3MRC recently visited VE1OM, ER and LT now have new GRP-90 receivers. VO2AW reports that ex-VO2MK is now VE2YH. VO2AE has returned to Scotland from Cape Harrison. VO2AK has moved to Edmonton, Alta. New calls include K0OHQ/VO2, W5BVW/VO2 and VO2RN. OC has acquired a Collins 32V-3 transmitter. 0NI now is inactive as Jean (JJ) has been transferred to another ship. Reports from OC would indicate that

(Continued on page 148)

SIXTH ANNUAL VE1 CONTEST

January 30-31, 1960

All VE1 amateurs are invited to participate in a contest sponsored by the New Brunswick Amateur Radio Association. The highest-scoring contestant will be given an engraved cup, the New Brunswick Amateur Radio Association Trophy, and will have permanent possession of same.

Rules: 1) The contest will begin at 8:00 P.M. AST, Saturday, Jan. 30 and end at 8.00 P.M. AST Sunday, Jan. 31. 2) Any and all amateur bands may be used. Phone-to-c.w., phone, c.w. and cross-band contacts are permitted. 3) The same station may be counted but once for credit, regardless of band worked. Mobile, portable and home stations covered by the same station license constitute the same station. 4) The general call will be CQ VE1. 5) Exchange signal report, county and province and operator's name. Local QTH is not required. 6) Logs should show band, signal reports, county, province, time and date. 7) Score one point for information received and one for information sent. Multiply total points by the number of individual counties worked in the three provinces concerned, to determine final score. 8) Decisions of the contest committee will be final. Logs must be postmarked by Feb. 8 and should be in the hands of the committee not later than Feb. 15. Send them to W. H. Smith, VE1FC, Contest Committee Chairman, 173 Broad Street, Saint John, New Brunswick, Canada.

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the Halifax gang has antenna fever! The Loyalist City group recently participated in a very successful c.d. exercise. Traffic: VE1AEB 26, ADH 24, OM 4.

ONTARIO—SCM, Richard W. Roberts, VE3NG—The London Convention of the ARRL Ontario section, sponsored by the London ARC, was a huge success from all angles. Well over 200 sat down to the dinner on Sat. evening. Alex Reid, Canadian Division Director, just a few days back from the Convention at Geneva, gave the gang the latest information from there. F. E. Handy, W1BDI, ARRL Communications Mgr., also was in attendance. Over thirty candidates were initiated into the Royal Order of the Wouff Hong at the midnight hour. A successful S.E.T. was held by the Ontario AREC members in October. AVS, from Kapuskasing, was in the hospital in Toronto. IB had an accident to his eye. Get well, Wally. DPO is a new RM with the Grey-Bruce Net (75 meters). The Ontario Amateur Radio Assn. now has over 500 members. Members of the R.I.T. Radio Club operated an s.s.b. station at the I.R.E Convention in Toronto QE, our QSL Mgr., reminds you that he has over 8000 QSLs. Send him a self-addressed stamped envelope. Some of them may be yours. May I remind *all* of you who hold ARRL appointments to get them to me soon as you can and have them reendorsed if they are overdue. Too long a delay may cause cancellation. AEJ works FB DX on 28 Mc.; DKO likewise. BQL was a visitor to Hamilton. NZ is back on 75 meters. RH has a new Apache. GH visited NG and AJA at Meaford at Thanksgiving. Kingston voted ATL, pres.; EIJ, vice-pres.; CVD secy.-treas. DH has a new HRO. The daughter of BXC is Miss University of Toronto. NF was a visitor to Toronto. ARF, ELC and BIV were portable at Lake Mazinaw while deer-hunting. DTO is in VE6-Land until Christmas. Traffic: VE3DPO 107, AOE 78, NO 78, NG 62, CFR 59, TM 53, AUU 46, GI 31, EAM 27, BZB 26, DZA 23, DVG 19, DTO 9, DLC 8, DWN 5, VD 3.

QUEBEC—SCM, C. W. Skarstedt, VE2DR—BE is back from Geneva. HX is leaving for Ontario. QSL cards for FP8BG/JC go to ABE, who promises 100 per cent replies. VK2ZJV, who also is FP8AE, ZB2N, ex-K6EUV and ex-XE2AE, now expects a VE2 call. Letter "Z" after the numeral in VK calls denotes v.h.f. operation. VE2AZI now signs /W1 from Derby Line. AIG/SU operates from Ghasa Strip with a strong signal on 21 Mc. Ex-VE2XR now signs VE7XN. ATL attended a Civil Defense course. ANQ is a newcomer in St. Laurent. ABE has 99/86 toward DXCC. "Le Cercle des Amateurs de la T.S.F.," with the club call DN started up activity with a new committee and meets every 2nd Mon., 8 P.M., at 2275 Laurier East. French speaking hams are invited. BY, the club station at Hull, will operated remote control via the 220-Mc. link. The transmitter is located 12 air miles north of Ottawa. CJO Club elections were held in December. Your SCM enjoyed visits from 3EU and 3EAM. YA is the proud owner of a 75A-4 receiver. CP likes CD Parties, both phone and c.w. WY snaps up good DX on 28 Mc. VE1AAW is active in the VE2 section. ABZ reports excellent maritiming during the summer. TK and ANY are enthusiastic newcomers at Louisville. OA is ex-APP. AOL keeps the 75-meter mobile ready for any emergencies. TI operates on 75-meter phone at 0750 and is QRX for any traffic. BAT is ex-G3DGN and ex-VS7IT. Ex-PX, who signed 3AUP, now has a new call, 3TR. VE8 stations north of Quebec are invited to send reports. Traffic: (Oct.) VE2WT 200, DR 98, EC 19, ABE 10, AFJ 4, CP 2. (Sept.) WA2CNS/VE8 75.

ALBERTA—SCM, Gordon W. Hollingshead, VE6VM—I wish to thank those of you who have contributed to the task of filling this column. My term of office will have expired at this printing and I sincerely hope that you in the Alberta section will continue to support your next SCM. I have pledged myself to establishing a crack c.w. net in Alberta and will continue to work at it until it is a reality. MF is sporting a new Cheyenne. HM has recently returned from Nova Scotia and has installed a 75A-4 for his northern traffic skeds. AAY is keeping a nightly sked with her daughter K5VIM, Oklahoma City, on the new Apache. AAP now is sporting a new Hy-Gain all-band vertical. New executives of the CARA are KM, pres.; RV, treas.; IM, secy.; RJ and FB activities men; HM, BW, KC and EH, directors. License plates again are being distributed by the NARC. Many thanks, LY, for the fine job you are doing, and a belated Merry Christmas and Happy New Year to all. Traffic: (Oct.) VE6VM 98, YE 27, CA 24, TG 9, TT 7, FS 6, OY 6, OC 3, YQ 3, IP 2, ES 1. (Sept and Oct.) VE6HM 161.

BRITISH COLUMBIA—SCM, Peter M. McIntyre, VE7JT—The following news was submitted by AOT.

(Continued on page 150)

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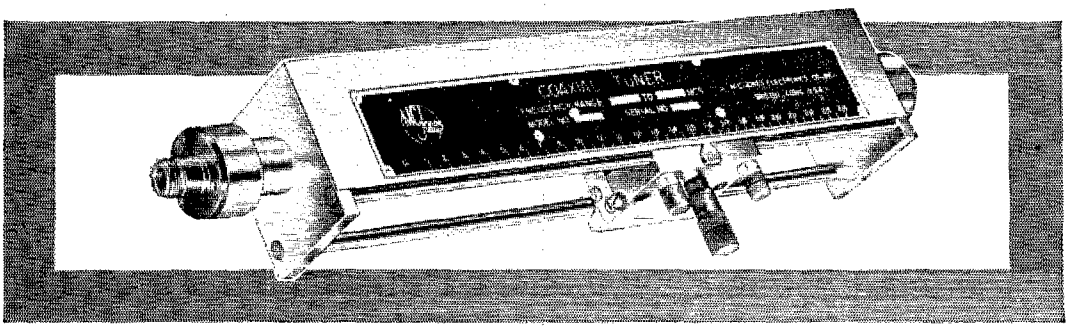

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AQU is busy building a new rig to replace the 2E26. AAF has gone big time, is now on TCC, and is planning an 813 rig for the big push. The BCEN has started operations at 1900 to 1930 PST, to help increase coverage and speed the delivery system, which has been sadly lacking. The late session BCEN-2 continues, handling leftover traffic and late filings. MW has been handling traffic for the Saskatchewan boys and also has worked several New England states lately. An open invitation is out for all stations to join the BCEN on 3650 kc. at 1900 and 2200 PST, Okanagan, Kootenay, Cariboo and north are especially needed. Traffic: VE7AAF 198, JQ 65, AOT 54, AEC 19, MW 4.

MANITOBA—SCM, James A. Elliott, VE4IF—4RD has been ill as the result of a stroke. He is going to QSY to the U.S.A. JE has been on 75 meters from his home station. CB and BR, Ethel and Bris, have their DX-100B on the air and working FB. TW, OS and HD are back on 75 meters after a long silence. It's nice to have George, AN, and Janet back home from a trip to England. PH has been working out very well on 20 and 10 meters. The mobile gang has been quite active with newcomers such as EJ, MV, AS, ZK and EK. XJ and CP have been active on 2 meters, while on 6 meters we hear BI, GN, TX, DI, HS, SH and WS. JW and his Beausejour Radio Club have been quite active raising money to obtain a power plant for emergency work as well as for Field Days. EH, of Wabowden, has been busy on the higher frequencies and also answers into the Manitoba Net. We congratulate Larry and his XYL on the birth of their son. MJ has a new Wonder Bar constructed and has been working 10, 20 and 75 meters with FB results. IF finally has the 4-250 rig working 48 hours of the day. PW, at Flin Flon is most consistent on 75 meters. MN is also putting a fine signal on 75 meters. AY and RB are back on 75 meters after a silent spell. SO, IF, KP and PE are mobiles that have been working out the farthest from Manitoba on 75-meter phone. Traffic: VE4PE 23, EF 7, IW 6, QD 6, EH 4, XP 4, AN 2, PA 2, PW 2, EG 1, MJ 1.

QST

How's DX?

(Continued from page 102)

trip to Indian Ocean islands decided he cannot go. At 120 dollars a day he can do much better on other charters. VQ4GT and myself have not given up, although things aren't bright at the present time. VQ8AJA should be on from Agalega and there will soon be a new station in the Chagos A new one is active in the Comoros with 150 watts and a cubical quad. VQ8BBB continues busy every day on 14- and 21-Mc. c.w. and phone, 1200-1400 GMT with 100 watts. There now is a permanent station on 14 Mc. in the Seychelles, a resident. . . . . K9EAB informs, "ZD2JM vacationed in Scotland, returning to Nigeria in mid-November to finish his last ZD2 hitch. John should be operating until October, 1960, from Kano, Ikeja or Kaduna." . . . . . EL4A communicates, "Managed to break my monthly record with 1435 DX contacts in October, 441 of these on phone. I'm still trying to work Novices but they don't seem much interested. YL Mary Knowles, 12, probably will use my rig daily on 15 phone between 1400 and 1600 GMT, looking for YL-DXCC hunters." . . . . . Via W9MAK, K4WCZ tells us that VQ2WR seeks Ky, N. H. and Vt. on 28 Mc. to complete WAS . . . . . From W1ZJ: HP9FC/mm, *SS Vema* with K1AJQ aboard, is sailing and dieseling around the world on an oceanographic tour. Tom expects to QSO the brethren with a KWM-1 on 10, 15 and 20 sideband for the next eight months. Rififi island was a recent stop and it's hard telling where the *Vema* will put in next. Be alert! . . . . . W8KX and KØJPJ ran into OQ5AA who operates his DX-40 and Super Pro on 15 c.w. or phone aboard a Congo River boat assigned the task of clearing the shipway of obstructive growths. Pierre appreciates a QRS but his English is probably much better than your French or Flemish . . . . . WGDXC and VERON offer these Africa tips: Renewed FB8YY action is in the cards. . . . SU1IM expects to conclude his desert mission and return to the air by March. . . . Libya kept no DX secrets from 5A5TO who goes back home with a 222/210 tally.

Oceania—ZK1BS should be back at his dials by now after a lively Stateside visit. "Kindly convey my sincere appreciation of the wonderful hospitality shown by so many hams and their families — too many to mention individually — to my wife and myself during our never-to-be-forgotten visit to your wonderful country. I regret I was unable to visit many good ham friends who extended kind invitations to stay with them but time did just not permit." Fine, OM, and come again . . . . . "FO8AC is now very active daily around 0300-0700 GMT and at other times as well," writes W4KWC. "Georges usually is on about 14,040-14,050 kc. with a fine signal and fist. Please, no schedule

(Continued on page 152)

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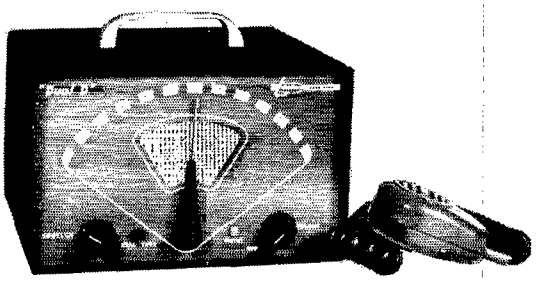

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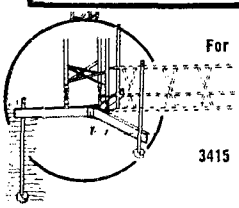

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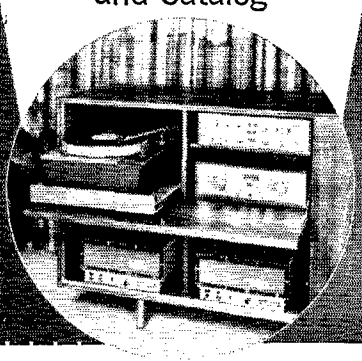

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City.....State.....

requests — he's easy enough to work." . . . . . K6QPG/KW6 continues to bang away at DX from Wake. "So many still want to work KW6 and there is so little activity here — but I'm doing my best. I hear KB6BH and KC6GJ of Ponape complaining about the same difficulty I have: DX stations will not tune for us in the U.S. phone band, so the only time we can work DX on 10 and 15 meters is after the W/Ks have passed out. Twenty c.w. has been punk, and our rotator broke so I have our beam stalled east at present. We rag-chew with plenty of HLs JAs VKs ZLs, etc., but Europe is rough. In March we head for California — I hope!" . . . . . K5JVF and W7PQE commend VK7ZZ's outstanding 7-Mc. performance with a mere 10 watts, man . . . . . WGDXC and VERON add Pacific patter: ZK1AU, now vacationing in New Zealand, should be back at his DX-40 by April. . . . VR3V's 30 watts on 10, 15 and 20 are widely worked; Don receives with an AR-88. Neighboring VR3s W and X expect to join VR3V in a club-style combine. . . . JZ0HA, currently slapping 15 meters around 1000-1300 GMT, intends to remain active through 1960.

Hereabouts — From noon the 23rd to early afternoon on the 24th of this month the Joint Northern and Southern California DX Conference will jam Fresno's Hotel Californian with a rollicking pile-up of thirsty country-hunters. A star-studded program is planned, and K6LAS stands by to handle inquiries . . . . . "We DXers around Atlanta have formed the Southeastern DX Club," warns W4JII, dipping his pencils and sharpening his final . . . . . WA2GWF notes that W6ITH is up to his PJ2MC tricks again, especially delighting the single-sideband pack . . . . . "Radiomen Conquer Islands," shouted a New England daily as W1PFA and party returned victoriously from a 900-contact 46-country October adventure as FP8s BH and BI. Nice two-column spread with pictures . . . . . W8KX's friend W8FEI, one-time C1MCC, busily clears lake shore property preparatory to erecting *two* sets of rhombics . . . . . VE8NY of Resolute Bay expects to remain active on 10, 15 and 20 with his RME-4350, QF-1, 32V-2 and trap vertical until June, according to K2YFE. The near-by KWS-1 of VE8MB is used mainly for traffic work . . . . . W4HSR finds ex-YN4CB now signing TG5HC around 28,400 kc. with his Ranger and Windom . . . . . Overseas Utah hunters can bump into W7STC near 14,080 kc., 1600 GMT or so . . . . . "A couple more lousy winters like the past two and I might become KV4BK again," shivers W5RX. Chas. keeps fluent in Japanese radio code by frequent skeds with JA7KH/mm on 20. Weird-sounding stuff, that . . . . . W8KTL thinks ZL2KJ's mysterious ground stake (p. 97, October *QST*) may have been caused by a temporary reversal in mains polarity. "The connecting wire of comparatively low resistance would dissipate little power but the high-resistance earth, dissipating high power and thermally insulated by surrounding earth of low thermal conductivity, could reach incandescence." See? Life isn't so spooky after all . . . . . VERON reports VP2VB/mm, involved in many a DXpeditionary venture, now in the States attending to plans for his next Pacific voyage aboard *Yasme III*. W2HQL and ZL1AV may join Danny as crew and communicators.

Ten Years Ago in "How's DX?" — In our opening remarks for January, 1950, CQing rare-DX phones are urged to supply specific tuning instructions for the W/K throng . . . . . W4BRB notched his 63rd 3.5-Mc. country among such game as FA9RZ, HA48A, LU3EL, MD2GO and TA3GVU . . . . . On 40 we find EA6AF, EK1AO, I1NU/Trieste, MD7DC and ZB1AJX in much demand . . . . . Twenty c.w. rings with the pursuit of FE8AB, FN8AD, FY8s AA UD, HE1EU, HS1SS, LX1AS, MDs 2PJ 4GC 7MR, MP4s BAD BAL, PKs 2ZZ 6XG, ST2TC, SV7AA, VK1VU, ZDs 6DH 8B and ZS6OS/ZS7. Fashionable 14-Mc. phones: CR5UP, PZ1QM, VRs 3A 3C 4AC, VS7SN, VT1RF, ZK2AA and ZS8A . . . . . Ten phone is running riot because of ET3AF, F9QU/FM8, HA5BC, HE1HY, HL1BJ, LX1AI, MD2AC, MF2AA, MI3SC, MP4BAE, PK5HL, TA3FAS, W2EJV/PK3, YO7WL, ZC6DZ, ZD1PW and ZS9F. Even 10 c.w. is in on the act with EK1FM and ST2AM . . . . . Grapes off the vine: SARL announces a South Africa DX Test. . . . Poland authorities give SPs the green ham light. . . . Civil difficulties plague East Indies PKs. . . . VR5s AF IP and JA go QRT on Tonga but VR5s GA and PI still flourish . . . . . Jeeves gyrates as a mobile beam rotator, while Norfolk VK9s NR RH and popular DX-bander ZS6SG enter the "How's" picture album. QST

Correspondence

(Continued from page 79)

bands are and what a mess this problem has brought upon our hobby. I have heard many a ham say "Why don't we get more or larger bands to accommodate our needs?" It is pretty obvious by now that this is becoming rather impossible since more and more frequencies are given to the broadcasting field.

When you get to the bottom of this mess we see that the

(Continued on page 154)

whole cause is that it is quite easy for anyone to get an amateur radio license. Who can't pass a novice exam? I'm sure this is pretty obvious since one out of every 900 Americans is an amateur.

What I would suggest is taking away the novice license once and for all. This will probably cut the number of oncoming amateurs by better than 95%. In conjunction with this, I would suggest cutting down the code speed required to pass a General to about 10 w.p.m. I am sure that in due time our bands will be again at peace and all of us can pursue our hobby without struggle.

— *Peter V. Guidi, WA2BMB*

STATESIDE DX

1001 N.W. 17th Court
Miami 35, Florida

Editor, *QST*:

Regarding the letter from W7VX in the November issue, I can't see that any purpose would be served by granting hams outside the U. S. separate country credit for each state worked. Granted that Europe is crowded with little countries, but the ham population of each of them is small. Certainly their number of licensed amateurs doesn't even begin to approach the number in any of our states. A ham outside the U. S. can sit back and pick off the states one by one with relative ease. The U. S. hams, on the other hand, have to fight pileups even to work into so common a DX country as Great Britain. With the U. S. counting as one country credit, all the world's amateurs are put on much the same footing, and this makes patience and good operating a prime requisite. DXCC is meant as a test of operating skill. Let's keep it that way.

Tom Fleming, K4KSZ

CULTIVATE MANNERS

2566 Dandurand Street
Montreal 36, Que., Canada

Editor, *QST*:

After thirty years in amateur radio I am sorry that my first letter to *QST* has to be a complaint. When working on 20m SSB 14,300 kc and above, several other Canadian amateurs and I have been told very rudely to get off the frequency. To the one or possibly two American amateurs I say this, "Try to cultivate manners the way you accumulate equipment." My station is homemade with a vertical ground-plane antenna and I do not hear all of the DX stations. If I am causing QRM, give me a polite call on c.w. to QSY up or down 5 kc. and I will be very pleased to do so. This hobby is for relaxation, not for heart attacks or ulcers.

M. A. Pearce, VE2AMP

BE A HELPING HAM

RFD
Bowen, Illinois

Editor, *QST*:

Recently, in my duties as an Official Observer, I sent a cooperative report to a KN9 in Indiana. It was concerning a bad chirp. Not anything unusual, but in a few weeks I received a card (not just a card, but a QSL card) from him. He informed me that he was glad to get the report card and had remedied the trouble with the help of a W9. The remedy was a larger bypass on the key, and better filtering in power supply.

In many months as an OO, I have wondered what has happened to some of those report cards. Were they torn up and thrown in the waste-paper basket to be forgotten? Could it be that the person on the other end thought that one of these days he would look into the trouble (but never found the time) or didn't think it was worth the paper it was written on? Or was he just plain petrified at the thought of it and stayed off the air a few days until the trouble just "floated" away?

I listen to the many "sour" signals on the air; and I ask myself, "Doesn't he have any feeling for his fellow amateur?" But worst of all I look at the list of repeats.

Then I receive the card from the KN9 and I realize that there are some good operators even among the Novices (you know, the class of operators that all the other operators stick up their noses at).

But one of these more experienced operators took out time to help a lowly Novice. The end result was better than

(Continued on page 156)

if that W had just stuck up his nose and left the matter.

So, I leave you with this: why doesn't one ham help another ham, and help himself?

Kenneth W. Bowles, K9OCU

CONTESTS *VS.* TRAFFIC

2274 University Avenue
New York 68, N. Y.

Editor, *QST:*

After listening in to the bedlam and chaotic conditions that prevailed during the "Sweepstakes" contests, I feel that some improvements in rules and conduct are very much to be desired. It might be compared to week-end traffic congestion on the highways. Unleashing all the contestants at the same time on all portions of each band causes the bottling up of all channels so that it is not possible to get any traffic through the mess.

The effect of the contests as they are now conducted by the rules is to choke off the regular flow of traffic, resulting in a break-down of communications via ham radio.

I had some urgent traffic for Philadelphia, but could not get through the 40 meter mess. (I resorted to the Bell System and got my message through that way.) It doesn't seem like good sportsmanship to deprive the non-contestant of the use of any amateur band by hogging all the frequencies in the various bands for contest use.

Would it not be fairer and more sensible to share each band 50–50 when the contests are run? One half of a band to contest allocations, and the other half to the normal amateur activities.

I don't think that the FCC ever intended to deprive any duly licensed amateur the use of any of the bands, but the contests (as they are now conducted by the rules set up by you) do just that. It is evident that these so-called contests certainly are nothing for you to be proud of. You have succeeded only in concocting a hideous mess. Just try and find a spot and hold it long enough to get a message through the contestants! . . .

Frederick B. Haas, W2SF

Novice Roundup

(Continued from page 61)

5) *Reporting:* Contest work must be reported as shown in the sample form. Reporting forms and a map of the United States will be sent gratis upon request. Indicate starting and ending times for each period on the air. All Roundup reports become the property of ARRL and must be postmarked not later than March 5.

6) *Awards:* A certificate award will be given to the highest-scoring Novice in each ARRL section.

7) *Disqualifications:* Failure to comply with the contest rules or FCC regulations shall constitute grounds for disqualification. ARRL Contest Committee decisions are final.

QST

Table-Top Half Kilowatt

(Continued from page 27)

"flattening" region as an s.s.b. linear. (It can be operated this way on c.w., however, since linearity is unimportant here.) If the loading is too heavy, the grid current will be low when the cathode current reaches the proper value, but the efficiency will be low and the tubes will overheat.

Getting the knack of it takes a little practice, but when the job is done right the tubes will run cool on all bands in regular operation. Running key-down over a period of time may show just a trace of dark red color on the plates since the input and dissipation are somewhat over ratings under these operating conditions, although perfectly satisfactory with ordinary keying or s.s.b. voice.

(Continued on page 158)

That's about it. Once you get it built and learn to operate it, you're in the high-power class — with a table-top job that takes up no more room than a good communications receiver. Nothing under the table, either. QST

Radioteletype Conversion

(*Continued from page 35*)

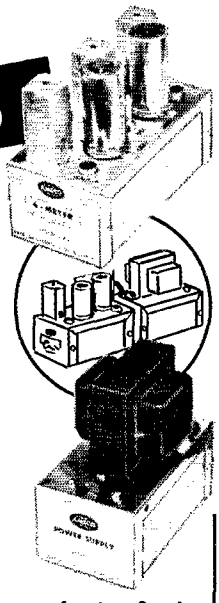
cycles lower. The 50–0–50 microammeter should show equal readings either side of zero. A smaller-range meter could very well be used for a more sensitive indication, but the one shown was already on hand.

For a more precise indication the vertical deflection circuit of the CV-57 scope monitor was built into the unit. The circuit is shown in Fig. 3. It obtains the deflecting signal from either the discriminator or the output of the second audio amplifier, whichever is selected by a push-button switch, S_4, on the front panel. The circuit also provides an adjustable vertical centering voltage, by means of R_7, when the deflection is taken from the discriminator. The external scope must have a 60-cycle sine-wave sweep and a balancing d.c. voltage must be applied to the second vertical deflecting plate to permit adjustment for linear deflection. For calibration and for a sensitivity check on the second audio amplifier and scope, a small 60-cycle voltage taken from the filament supply is applied to the grid of the second amplifier through S_1, and the deflection from this voltage, when viewed on the scope, should correspond to 17 volts peak-to-peak at the plate of the second amplifier. Deflection by the discriminator output should be approximately the same, and can be adjusted by R_6.

The power supply is a conventional regulated supply with the addition of a 6X4 rectifier to provide − 45 volts grid bias to cut off the 6AQ5 keyer tubes, along with − 150 volts for the scope monitor circuit. There is also a separate 125-volt supply using a selenium rectifier for the plates of the 6AQ5s.

The polar relay, a Sigma 7JOZ-160T, was used because of its compactness. The standard WE 215A may be used if chassis space permits. If desired, the polar relay may be eliminated entirely and the printer magnets operated directly from the 6AQ5 plates, using the loop power supply with proper polarity. It will be found, however, that this is adequate for only one machine, while relay keying can be used for more than one — for example, a printer and typing-reperforator. QST

NEW AMECO 2 & 6 METER CONVERTERS



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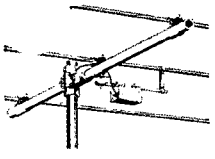

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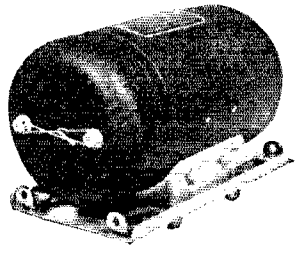

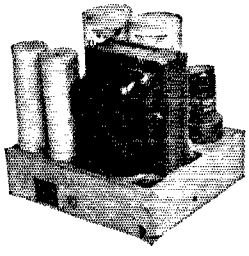

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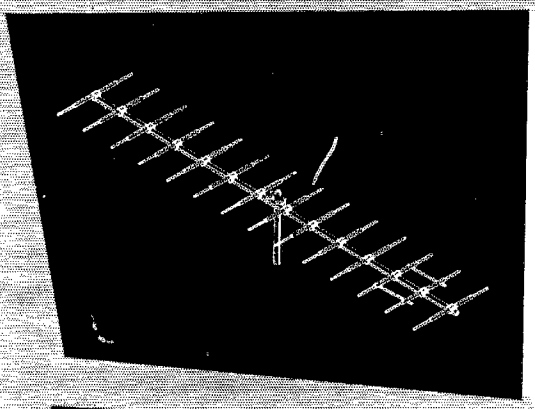

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Stacking kit for A-142

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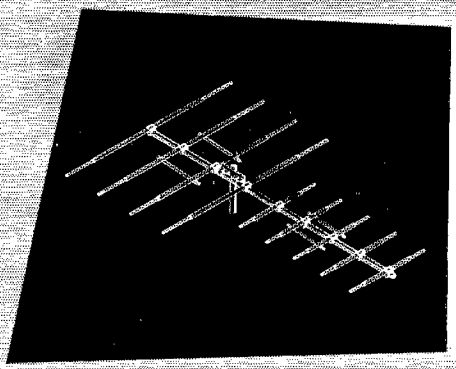

Model A-2N6
5 element, two meter, plus 4 element, six meter beam.

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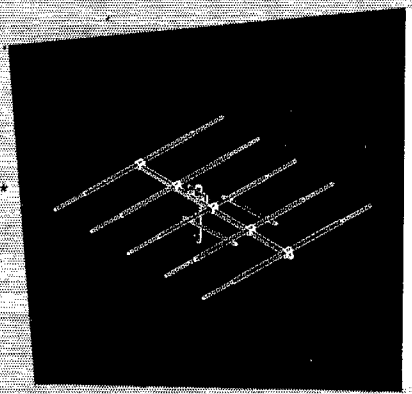

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$41.95 net

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(3) The Ham-Ad rate is 35¢ per word, except as noted in paragraph (6) below.
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QSLS-SWLS. Samples free. W4BKT Press, 123 Main, McKenzie, Tenn.

QSLS. Reasonable, nice designs, samples dime. W2DJH Press, Wartensburg, N. Y.

QSLS Samples dime, Sims, 3227 Missouri Ave., St. Louis 18, Mo.

QSL Samples, 10¢. Refundable. Also net award certificates and membership cards. W3KPJ Press, 1806 Water St., Wesleyville, Penna.

QSLS: Fast service, send stamp for samples. Koster, K2UAX Press, 2941 Ewell Place, Wantagh, L. I., N. Y.

QSLS. Taprint, Union, Miss.

SUPERIOR, QSLS, samples 10¢. Ham Specialties, Box 3023, Bellaire, Texas.

QSLS. 3-color glossy, 100—$4.50. Rutgers VariTyping Service, 7 Fairfield Rd., New Brunswick, N. J.

QSLS samples, free. Spicer, 4615 Rosedale, Austin 5, Texas.

PICTURE QSL Cards of your shack, home, etc., Made from your photograph. 1000, $12.00. Raum's, 4154 Fifth St., Philadelphia 40, Penna.

QSLS. Get the best from DX. Samples 25¢. Payne, 2 Kulik St., Clifton, N. J. Shop telephone GRegory 3-4779. Home: GRegory 1-7885.

QUALITY QSLS. Samples and prices, 10¢. Best deal all around. Savory Press, 172 Roosevelt Rd., Weymouth, Mass.

QSLS WAT. Box 1, Brecksville, Ohio.

QSLS. High quality, low prices. Fast service. Samples 10¢. Dave, 601 E. Maude, Sunnyvale, Calif.

GLOSSY QSLS, 100, 4 colors, $3.50. Others less, Samples 10¢. Dick, W8VXK, 1018 Arthur, Mt. Pleasant, Michigan.

QSLS-SWLS that are different! Colored, embossed card stock and "Kromekote." Samples 10¢. K8AIA, Turner, Box 953, Hamilton, Ohio.

RUBBER Stamps, QSL stamps. Free catalog. Bolles, 7701 Tisdale, Austin 5, Texas.

QSLS, $1.00. Riesland, Del Mar, Calif.

QSLS, Lapel pins, samples dime. Kephart W2SPV, 4309 Willis, Merchantville, N. J.

QSLS, SWLs, XYL-OMs (sample assortment approximately 9¾¢) covering designing, planning, printing, arranging, mailing; eye-catching, comic, sedate, fantabulous, DX-attracting, prototypal, snazzy, unparagoned carts (Wow!). Rogers, KoAAB, 737 Lincoln Ave., St. Paul 5, Minn.

DELUXE QSLS. Petty, W2HAZ, Box 27, Trenton, N. J. Samples, 10¢.

QSLS, SWLS. Samples 10¢. Onondaga Press, Onondaga, Mich.

QSLS. Samples, dime. Printer, Corwith, Iowa.

QSLS: $1.75 per 100 postpaid U.S only. Glossy, red and green. All orders mailed within 10 days. Free sample. Hobby Print Shop, Umatilla, Fla.

QSLS-SWLS, reasonable prices. Samples free. Robert Bull, W1BXT, Arlington, Vt.

C. FRITZ says, "Is your QSL as sharp as your signal?" Be proud of both! Samples 25¢ deductible. 1213 Briargate, Joliet, Ill.

QSLS: Cartoons, colors, samples 25¢. Chris, W9PPA, 365 Terra Cotta, Crystal Lake, Ill.

QSLS. Samples free. Phillips, W7HRG, 1708 Bridge St., The Dalles, Oregon.

QSLS. Stamp brings samples. Eddie Scott, W3CSX, Fairplay, Md.

RUBBER Stamps for hams, sample impressions. Hamm, W9UNY, 542 North 93, Milwaukee, Wisconsin.

QSLS, SWLs, Reasonable. Paye, W4ZKK, 824 Avandale, Cocoa, Fla.

QSLS-SWLS, 100 2-color glossy, $3.00: QSO file cards, $1.00 per 100. Samples, 10¢. Rusprint, Box 7507, Kansas City 16, Mo.

QSLS: Send 25¢ (refundable) for samples. W6CMN, Schuch, 6707 Beck Ave., North Hollywood, Calif.

QSLS-SWLS, 3-colors, 100 $2.00. Samples, dime. Bob Garra, Lehighton, Penna.

MICHIGAN Hams! See the Collins "S" line and KWM-2 at Purchase Radio Supply, 327 E. Hoover Ave., Ann Arbor, Michigan. Telephone NOrmandy 8-8262. Roy J. Purchase, W8RP.

WANTED: For immediate cash, a 75A4 Collins receiver with ser. no. 5,000 or more which is clean and in good condx. Also, immediate cash for Hy-Gain RBX-1 rotor with control system using wedge of light on great circle world map for central U.S.A. State lowest cash price, condition and approximate express shipping cost in your first letter. George E. Clark, KN4EKW, P.O. Box 308, Brandenburg, Ky.

TOROIDS: Uneased 88 mhy like new. Dollar each. Five, $4.00. pp. DaPaul, 101 Starview, S. F., Calif.

ONLY Used two months, HRO60T, complete with coils, calibrator, and spkr, $400; also 6 & 2 Hi-Bander completely new, $100 or both $475 cash. Write or call SAratoga 7-0074, Hal Steward, K3IFN, 1711 Belt St., Baltimore, Maryland.

HAM TV Equipment bought, sold, traded. Al Denson, W1BYX, Rockville, Conn.

CASH for your gear. We buy, trade or sell. We stock Hammarlund, Hallicrafters, National, Johnson, Gonset, Globe, Hy-Gain, Mosley and many other lines of ham gear. Ask for used equipment list. H. & H Electronic Supply, Inc., 506-510 Kishwaukee St., Rockford, Ill.

SEND For list of good buys at bargain prices. Box 575, New York 8, N. Y.

WANTED: Trades new and used: KWS-1, $1250; 32S-1, $590; 75S-1, $495; 32V2, $350; HQ100, $149.50; HQ-110, $209; HQ129, $129.00; HQ145, $269.00; HQ160 $379.00; HQ170, $359.00; Johnson Mobile, $75.00; Thunderbolt, $589.50; Valiant, $439.50; Johnson Citizen Messenger, $139.75; Courier, $289.50; Hallicrafters 101 Mark III, $395; HT-33, new, $495; SX-99, $119; SX-100, $295; HI32A, $695; $107, $95.95; NC-125, $139; NC-183D, $319.50; NC-173, $139.50; NC-57, $69; SW54, $35; CB 100 Citizen, $129.95, Globe-King 500A, $425; 90 Chief, $49.50; 90A, $54.95; 680, $94.95; 680A, $97.95; DSB100, $129.95; VFO 755, $42.95; NC300, $299.95; NC2400, $169.50; CE20A, $195; 10B $139.50; CE slicer, $37.50; WQ multiplier, $59.95; Heath DX-35, $54.95; AT-1, $23.50; DX-20, $34.50. Easy terms. Ken-Els Radio Supply, 428 Central Ave., Ft. Dodge, Iowa, or 128 31st St., N.E., Cedar Rapids, Iowa.

WANTED: One Kilowatt commercially-built transmitter, like Collins KW-1 or equivalent. Al T. O'Neil, Lake City, Minn.

FOR Sale: Novice rig, top shape, S38E and Globe Chief 90 with xtals, key, etc. $100 F.o.b. Glens Falls, N. Y. Landau, 21 Bay St., N. Y.

SAN Francisco & vicinity: Communications receivers repaired and realigned. Guaranteed work. Factory methods. Special problems invited any equipment. Assoc. Electronics, 58 So. P. St., Livermore, Calif. W6KF, Skipper.

WANTED: 6 to 12 304TL tubes. Callanan, W9AU, P.O. Box 155, Barrington, Ill.

WANT 1925 or earlier ham and broadcast gear. Personal collection. No dealer. W4AA, Wayne Nelson, Concord, N. C.

HQ-170 with clock; brand-new condition, $265. C. L. Romberg, 102 W. 18th, Austin 1, Texas.

SELL: Motorola FMTR-41V(AF) 1D single case front mount 30 to 50 Mc. with mike and cables. Ralph Villers, P.O. Box One, Steubenville, Ohio.

FOR Sale: Hickock signal generators #610A, $140; #288X, $95; Sylvania oscilloscope #132, $125; RCA voltohmyst, #WV-97A, $40; Ferret test speaker, #620, $15; Solar capacitor analyzer, #CB-1-60, $15. Electronic designs VTVOM #100, $20; contact Dan Gravereaux, K1DMG, 46 Carter St., New Canaan, Conn.

PRINTED Circuits photo-etched from your drawing. Ray Megirian, Box 385, Huntington Station, N. Y.

FUN in the sun at greatest of all Florida Hamfests, the Tropical Hamboree, Jan. 30 & 31. Write Box 104, Miami 1, Fla. for details and hotel reservations.

LOWEST Prices: Latest amateur equipment. Factory fresh sealed cartons. Self-addressed stamped envelope for lowest quotation on your needs. HDH Sales Co., 919 High Ridge Road, Stamford, Conn.

WANTED: Eimac VVC60-20 vacuum capacitor. Bob Turner, Box 252, Accokeek, Maryland.

WESTERN Radio Amateur: Third largest ham magazine in the U. S. 1 year, $2.00; 2 years, $3.50; 3 years, $5.00. Also publisher "Surplus Handbook", over 90 pages schematics and photos of popular surplus receivers, transceivers, $3.00 ppd. California, add state tax. Western Radio Amateur, 10517 Haverly St., El Monte, Calif.

CASH For used Short-wave ham receivers, transmitters and accessories. Treger, W9IVJ, 2023 N. Harlem Ave., Chicago 35, Ill. Tel. TUxedo 9-6429.

HT-32, like new, $500; 600L linear, like new, $300. Made DXCC and WPX SSB in eight months with pair K2HEA/K2MGE. Lynbrook, L. I. Tel. LY 9-2356.

SAVE On Electronic, Radio and Communications components and equipment for Hams and commercial use. See thousands of parts in stock—many more coming in daily, all at unusual savings. If you live in or near Philadelphia, visit our new warehouse at 31st and Grays Ferry, or send for free catalog. Teletype perforator paper oiled tape, yellow 11/16" wide, 8" O.D. roll, 1" E.D. Sold only in sealed boxes containing 40 rolls each. Shipping weight 46 lbs. $10 per box. RTTY clubs write for quantity discounts. Selectronics, 1206 S. Napa St., Phila. 46, Penna.

WANTED: Military or Industrial laboratory test equipment. Electronicraft, Box 399, Mt. Kisco, N. Y.

GPR 90 WITH Slicer, $500; original carton. UTC CVM5, 600 watt modulation transformer, used 3 months. W2STW Rt. 40, Newfield, N. J.

TRADE with Bob & Jack: We stock Collins, Drake, Hallicrafters, Hammarlund, National and others. Send for used equipment lists. Bob & Jack's Store for Hams 4507 Forest Ave., Des Moines, Iowa.

FREE Flyer monthly, Electronic surplus. Kurtz, 702D Bay, Staten Island, N. Y.

FOR Sale: Viking II with BC459 VFO, $190. On the air now on 10 and 20. Stamp for list of misc. parts. FOR Sale: 20 meter CrushCraft ground plane, $10: Link 250 watt output FM transmitter receiver suitable for six meters, complete or units, final, exciter, receiver power supply, some miscellaneous meters, condensers, tubes. Send stamp for complete list. Al Rae, 5 Oakbrook Rd., Ossining, N. Y.

CHICAGOLAND Amateurs! Factory authorized service for Hallicrafters, Hammarlund, Globe. Service all amateur equipmet to factory standards. Heights Electronics, Inc., 1145 Halsted Street, Chicago Heights, Ill. Tel. SKyline 5-4056.

Plate Transformer wanted. 2500-3000 each side of center. 300-500 mill. For sale: Two 4-65A tubes, $8 each. Kenneth L. Blamey, 24 Conestoga Drive, Bethel Park, Penna.

REAL Buys—"Pacemaker" modified, in A-1 condition, $295; KWM-1, in original carton, not opened, $655; 32S-1 used two months, $495; Hallicrafters SX-62, used three months, $249.50; 75S-1 used two months, $429. Most are in warranty. A. A. Abraham, W40DK, 480 Skain Ave., Lexington, Ky.

SELL: 12 code recordings, 8-18 WPM, 78 RPM, $6 B&K mutual conductance tube-tester, Model 500, excellent condx, $85. Ralph Pincus, WA2AWH, CY 3-7435, New York City only.

POWER Components, UTC: transformer, 500/500 v, 250 ma, 80/80 v, 100 ma, 5 v, 2 amp, 5v, 3 amp, 6.3 v., 4 amp; chokes, 20 h, 225 ma, 5/25 h, 225, ma; 30 w modulation transformer; input transformer, Kenyon; transformer, three secondaries 520/520 v, 570/570 v, 570/570 v, 175 ma, tapped primary; chokes, 12 h, 500 ma, 10 h, 200 ma, 30 h, 90 ma; filament, 2.5 v, 10 amp. Capacitors: C-D ufd, 2000 v, 5 ufd, 400 v, 2 ufd, 600 v, Aerovox 4 ufd, 1500 v. Net value $135. Sell lot, $50. Sry, cannot ship. W2DJJ, Phone BAyside 5-5384 (NYC).

SELL: NC-125 in vy gud condx, w/Q multip, xtal calibr. Preselector and spkr. All for only $135. Want: SX-96 or SX-100. Rick Strong, K6VOS, 2622 Fairfield St., San Diego 10, Calif.

FOR Sale: Complete SSB station, AM, also HT-30, 400 watts power amplifier HRO5, spkr, 4 coils, Central Electronics Mod. A Slicer, Vibroplex key: Simpson 260 VOM. First check over $450 gets. Will deliver within 50 miles. Tel. Ev 6-3076 after 6 PM. J. Spoto, 300 Troutman, Brooklyn 37, N. Y.

KW-1 Collins transmitter, in exc. condx. Best offer takes it. Can be financed to tight party. Write or phone W7EHQ, Lloyd Norberg, Steilacoom, Washington.

FOR Sale: DX-100, $175. In gud condx, Sry, will not ship. K1AFT, D'Angelo, 412 Bryant, Malden, Mass. Tel. DAvenport 2-6597.

FOR Sale: Collins 32V3 xmtr, $425; also have B&W low-pass 52Ω Heathkit SWR bridge and Gonset Monitone. Richard Roos, W2PNT, 141-48 78th Rd., Flushing 67, L.I., N.Y.

NC-125, $125; DX-40, $60; new BC-458A, $10. K9LON, 3000 Lexington, Hazelcrest, Ill.

"COMMUNICATIONS Unlimited" offers Bay Area hams specialized service on amateur receivers and transmitters. Equipped to service gear LF to UHF. Panalyzer for SSB service. Experienced Communications service men to restore performance to factory standards. Every job guaranteed. Joe Kramer, W6HSR, KE 3-4491, 2610 MacArthur Blvd., Oakland 2, Calif.

DX100 for sale. In perfect condx, factory-wired; Two 6146s. Bargain, $150. No shipping. Must be pick-up deal. Reason for selling: Health. W2OUS, 5 Alston Court, Red Bank, N. J. Phone S.H 1-0632.

DX-100, perfect, $160; CD TR4 rotator, needs overhaul, $15; local only. Ralph Rosenfeld, W2OAJ, 2 Raymond Avenue, Lynbrook, L. I., N. Y. Tel LY 3-7118.

MULTI-Elmac AF67 xmtr, PMR7 rcvr, James C-1051 supply, whip, Johnson coil, spring, coax base, like new, Johnson Matchbox, mike, spkr, misc. Plugs & cables, $325. Kahler, 17 N. Summit, Lock Haven, Penna.

SWAP—or make deal: New HQ170 SSB receiver for 75A3 CW rcvr. Must be in gud shape, prefer 800 and 3-1 KC filters. All inquiries will be ans'd. W2PZI, 48 S. Lake, Hamburg, N. Y.

GOOD Buy: Sell National receiver NC-2-40D. In excellent running condx, $115. VE3CIU, 89 Carruthers, Kingston, Ont., Canada.

SELL: SX-28, Heath QF-1, with manuals, $95; Globe Scout 65A, $70; 25W modulator, $18; F.o.b. K3AGG, 27 High Street, Carbondale, Penna.

TO Settle estate of Fred Hall. In excellent condx: factory-wired 20A with QT1, $175; Central Electronics Mod. 600L, $250. Gerald Hall, 629 West Shore Dr., Pekin, Ill.

ART-13. Not converted. Sell or trade. Make offer. R. L. Kile, 196 Horse Pond Road, Sudbury, Mass. Hilltop 3-6717.

TRANSMITTER DX100 with balun coils, gud condx, $170; cubical quad antenna complete with bamboo, CDR Mod. 22 rotor, $60; Harvey-Wells Bandmaster, TBS50D, xtal control VFO, $50. Instructograph code machine, 12 tapes on code Signatone for practicing code on, $40. S. Bedell, 260 Autumn Ave., Brooklyn 8, N. Y.

FOR Sale: National Select-O-Ject unit, $20: Universal Service SSB adapter for HRO, $25. Wells Chapin, 942 Arden Lane, Birmingham, Mich.

FOR Sale: Hallicrafters S-38, brand new condx, $40; Homebrew 2 meter portable battery transceiver, $25, with batteries, less telephone handset. Paul Panell, Cutler Rd, Greenwich, Conn.

SB10, $80; TA33, $60: Gonset Tribander, $75; Hy-lite 10-meter 3-el. beam, $15. Prop pitch rotor, $20; Sideband package $100. W9ECC, West Bend, Wis.

NYC, L. I. area. Sell: DX-35, VF1 and power supply. Dennis, K2LEG, New Hyde Park, L. I., N. Y. Tel. FL 4-4348.

BW 5100B with 51SB-B Sideband generator. Like new condx, $445. Will deliver within 300 miles. W9VMK/9, Bob Henley, 1414 Davis St., Evanston, Ill.

HQ-110, $190; Seneca, $160. Will ship. Larry Beauchamp, 337 No. Cornell, Ft. Wayne, Ind.

HEATH DX-40 with VF-1, $75. K8JYR, Box 87, Danville, W. Va.

FOURTH Stupendous Year! Broward Amateur Radio Club's Get-together and Auction. Doors open 9 AM. lunch at noon, auctioning at 1 PM. Armory. S. W. 24th St., and 4th Ave., Lauderdale, Fla. Saturday, Feb. 13.

FOR Sale: HRO50T with coils for 10, 20, 40, 80 and Broadcast Bands, $185; AF67 transmitter with A/C power supply, $145. PMR6A receiver with A/C power supply, $85. J. McKee, 52-30 39th Ave., Woodside 77, N. Y. OL 1-1610.

SELL: RME 4350 dual conversion rcvr, brand new condx, $130. Must sell. Bruce Hobson, 1902 Asylum Ave., West Hartford, Conn.

SELL: Heathkit AT1 and VF1, in exc. condx, for $30. Plate modulator for AT1, $5. W2PHA, 64 Morrow, Lockport, N. Y.

FOR Sale: Collins 75A-4 and speaker, B&W 5100-B, B&W 51SB-B, D104 mike and 30" boom, 80 meter KW balun, W3DZZ beam and CDR rotor. $800 in new tubes and parts. $1500 takes all or make offer on part. Will deliver in Eastern Penna., New Jersey, Maryland or Virginia. W3RIZ, 95 Hamilton Drive, Warminster, Penna.

MOBILE Twins for sale. Spotless condition 10 thru 80 meters. Gonset G66B with three-way Universal power supply and spkr, G77 with two-way power supply, all cables. Also Eico model 320 Signal Generator, factory calibrated and Eico Model 425 oscilloscope. K2AUU, Murray Singer, 143 Glenview Rd., South Orange, N. J.

FOR Sale: 1 Heathkit Cheyenne Mod. MT-1 mobile transmitter, completely assembled, new, perfect condition: $100 and 1 Hammarlund HQ-129X rcvr with xtal calibrator in gud condx, best offer. Contact Charles Smith, KØVRU, c/o Hervey DeWees, RFD #1, Hy 30, Cedar Rapids, Iowa.

SELL Or swap: HRO60, practically brand new, used very little, with matching speaker, product detector, xtal calibrator, A, B, C, D coils. A, C, D coils never used, $395 or will swap for 75A4 and will include brand new Winchester, Mod. 70 rifle, .243 cal. with Balvar 2½ x to 8x scope or Rollieflex camera with accessories. Wallace Printz, W2KAN, 1177 East 14th St., Brooklyn 30, N. Y. DEwey 8-8343.

BACK Copies QST, CQ and Radio Magazines, 1940s, 1950s, at 50¢; 1930s at 75¢, Postage prepaid. Send self-addressed stamped envelope for free list. Paul Miller, W9REW, RR #2, Roanoke, Ind.

WANTED: HRO5TA1 15-meter bandspread coil. State price and condx. L. V. Sprague, 109 E. Johnson, Madison, Wis.

SALE: Two meter Communicator III, in top shape, with halo, mast, mount, xtals and PTT mike. Also Viking I with VFO and unusual extras. Both are terrific buys. Come see. Call ACademy 2-7309 or write Al Feder, Apt. 3A, 336 Central Park West, New York 25, N. Y.

SALE: KWM1 and AC, $725 or KWM1, AC, DC, rack and cord, and mike, $950. First money-order or certified check. Will RR exp. collect. Dr. R. E. Gooch, 704 S. Scottsdale Rd., Scottsdale, Arizona

HQ110C, matching spkr; flawless. Prepaid in original boxes: $205. BC221 with fil. trans. and "B" battery, best offer. K5ITX, 410 Tenn. St., Bytheville, Ark.

SELL: DX-100, in gud operating condx, appearance like-new: $150. L. M. McGee, 58 Campus Drive No., Buffalo 26, N. Y.

W6WMA Selling out: All items guaranteed: Valiant, factory-wired, $300; Bandhopper, 20A with QT1, Globe linear combination, $350; receivers, AR88, $150. SX71, $100; BC312 (never unpacked), $40; 'scopes, Dumont, RCA, Hitchcock, $35 each; PE10s with cables, $12; high frequency meter TS175U, $100. Countless meters, VOMs, tubes, mill. Cheap. Cash only. Ship at your expense. Col C. E. Howland, QTRS 309, Presidio of Monterey, Calif.

WANT: CQ 1951 and 1959. $33. W9BQR.

CANADIANS! Cleaning house! Never had a license. Equipment in like-new condx. NC-109, $200; S53A with Q multiplier, $100; DX40, never been operated, $75. Tape recorder Hi-Fi, $100. J. T. Ouellet, St. Pacome PB 40, Quebec, Canada.

FOR Sale: CE20A with QT-1 and Deluxe VFO, $185; factory-wired Thunderbolt, $450. Both spotless and like new condx. Used less than a year. Prefer local deal. Will deliver 50 mile radius if necessary. John Choolfian, K2KRF, 276 Manchester Rd., River Edge, N. J. Tel. COlfax 1-5971.

USA DX QSL Coop, Box 5938, Kansas City 11, Mo. Save time and $ $ $. DX QSL'ing. Only 3¢ per card after membership, $2, 3 yrs. $5.00, 10 years. QSL Bureau. Return env. service, $1.50 year. Free info.

SALE: Heath Apache, professionally assembled. Best offer above $245. Will deliver in New England. Willie Mank, Box 507, Holyoke, Mass.

FOR Sale: First edition Consolidated Radio Call Book July 1919. (non-amateur listings) Good condition. Make offer. W1FDN.

HEATHKIT Seneca, new condition, factory checked, $160 or best offer. Ameco six meter converter, new, $18. Hy-Gain six and two meter halos, with 8 ft. mast, $16. Local pick-up deal only. WICLE, Washburn, 4148 Edgemere Court, Apt. D-3, Indianapolis, Ind. Phone LI 6-7822 evenings.

SELL: 50 μfd 3000 volt capacitor, $25. E. Seiler, East Bloomfield, N. Y.

FOR Sale: Hallicrafters SX-100 SSB receiver; B&W 5100B transmitter; B&W 51SB-B generator, perfect condx. Call New York City SW 5-1166 or WA 3-8117.

COLLINS 32V3 for sale, vy gud condx, clean, no scratches, $315. No shipping. W2ADB, 27 Grayson Place, Teaneck, N. J. TE 7-2004.

HALLICRAFTERS HT32, $500; HT32A, $550; S85, $80; SX99 with speaker and Heath Q mult., $120; S38E, $45; National New NC300 demonstrator, $300; NC88 with Heath Q mult., $80; NC-109 (new demonstrator), $125; NC88 (new demonstrator), $99.95; HRO5 with coils, spkr, and power supply, $100, Vantron 300 watt linear, $60, Globe DSB-100, $90; AT-4 Matcher, $39.50; 65A Scout, $40. Collins 75A4 with all three filters, perfect, $600. Earlier 75A4 with speaker and 800 cycle filter, $525; KWS1, perfect, $1200. "Electronics", Box 3687, Corpus Christi, Texas.

SELL: NC-300 in excellent condition, like new, with matching spkr. $285 firm. Also Knight VFO. $25. Les Margareten, K2YZX/1, 202 Commonwealth Ave., Boston 16, Mass. KEnmore 6-4638.

ALUMINUM for every ham need. Write to Dick's, 62 Cherry Ave., Tiffin, Ohio for list of tubing, angle, channel, castings, plain and perforated sheet, and complete beam kits.

SALE: Gonset mobile G66B rcvr. with 3-way power supply; G77 with 6/12V sup. and modulator; in exc. condx, $370 or your best offer. WINTH, Walter Wooten, Lot #15, Pleasant Valley Trailer Park, Groton, Conn.

KWM-1, AC supply, Spkr, "Mint Condition", $675. Lawrence Loughran, 430 East San Bruno Ave., San Bruno, Calif.

6-Meter miniature mobile transmitter, 3 tubes, 18 watts phone, 3½" x 4" x 6½". Price? K8NQH. 238 Knower, Toledo 9, Ohio.

1-HT32 xmtr used only 3 hours in beautiful condx, $475; Drake 1-A receiver 1 month old, $235; B&W Grid Dip osc., brand new, $25. Reason? Going yachting. W6KKT, Jesse Touhey, 2820 Gough St., San Francisco, Calif.

FOR Sale: Hallicrafters SX99 with spkr, $105; Heath DX35, $45; Knight VFO, $25. Take all for $165. Arthur Cholakis, K2VIT, 444 Beach, 143rd St. Neponsit, L. I., N. Y. Tel. NE 4-1456.

FOR Sale: 3 new transmitter pwr. supplies, input 115V 60 W outp. 630 DC, 230 A, continuous or 500A intermittent. Bureau of Ships rating, 115V relay, fused, fully enclosed in metal case, $25; 2 new power supplies, inpt. 115V 60W, output DC 135V, 90V, 3V, 15V, 6V complete $7.50. Spare parts, $1.00. 1 Heathkit 5" 'scope 0-8. $30. K2PXO. 780 St. Marks Ave., Brooklyn, N. Y.

WANTED: For cash: 300 μμfd vacuum variable, Jennings Type UCS, 1500 μμfd variable, Cardwell Type 8013; B&W Model 850 inductance. Must be excellent condx. State price in first letter. W6CLB.

FOR Sale: DX-100, excellent condition, less than one year in operation. Van Huntman, K2PVQ, 1213 East 83rd St., Brooklyn, N. Y.

MOBILE for sale: Factory built Johnson Viking mobile transmitter and Johnson mobile VFO. In gud condx. $100. William Donohue, K2LIV, 46 Ford Ave., Freehold, N.J. Tel. FR 8-6131.

FOR Sale: Commercially wired DX40, VF1 and NC-100 complete, $145. Irv. K3HNT, 8442 Cedarbrook, Phila., Penna.

FOR Sale! Heath Seneca VHF-1, new; wired and tested. $159.95. also Heath XC-6, new condition, $25. WØKLG. Box 425, Dassel, Minn.

SELL: SX-99 rcvr, Globe Chief 90 xmtr and accessories, George Skvor. KØLYQ, 1406 J Street S. W., Cedar Rapids, Iowa.

SELL: Heath AT-1, $25; QF-1, $9; SCR-522, BC-624A, $8. You pay shipping. KN8PSV, RR #3, Lowell, Michigan.

SELL: Globe screen modulator, used little, and in excellent condx: $9.50. K2LLA, Hillsdale, N. Y.

SALE: Hammarlund BC-779B receiver, $55; Transformers 4250V CT, 5A, $25; 2900V CT, 4A, $18; 2-10V, 5A filament; choke 10 hy., 5A, $5; 2 condensers 7 μfd, 2400V $8; 813s, 872s, 4-125As. Aker, W4SJY, 2057 Hillsborough, Tallahassee, Fla.

ASK anyone of the nearly 3000 who attended at Swampscott, Mass. last year about that Convention and then plan to attend the 1960 New England Division ARRL Convention at the same place, May 1st. BCNU.

SELL: HQ-129X and S-40B receivers; 10-B SSB exciter, BC-458 VFO, 300 watt G-G linear 80-15 meters with 1625 driver; 4-1625s in final; SCR-522 transmitter and receiver. Will sell separately. K9DMS and W9OZC 280 Thompson Court, Canton, Ill.

AMATEUR Radio gear of late W2AOD for sale: 400 Mc VX-101: SXRX; QSTs 1930 to date; CQs to date; Radio News, misc. items. Contact W2CKQ, Joe Meditz, 477 Grandview Ave., Ridgewood 37, N. Y.

75A4, 3 filters; deluxe speaker, speed dial; factory conditioned. Ser. #1358. $600. W8DFV, 640 East 2nd St., Franklin, Ohio.

SELL: DX-100, HQ-129X, gud condx. Best offer over $300. Will be willing to trade for Heathkit mobile outfit. Charles Sims, K4LRG, PO #6, Georgia Tech, Atlanta 13, Ga.

FOR Sale: Pacemaker, like new condx, vertical antenna 80-10, orig. cost over $200. See QST March 1955, page 109. Best offer for either or both. Sry, cannot ship. George Fenning, W2ZDQ, 11 Piermont Ter., Wayne, N. J.

SELL: Collins 75A4, $650; Collins 32S1, 1500; Eldico KW linear, $325; Millen Impedance Bridge 90672, $30; B&W grid dip meter, $30; Central Electronics MM2 RF analyzer, $110; KW Matchbox, $95; Bud 66" rack, brackets, etc, $40; E-V 600D mike, $10; WRL speech booster, $12; Elenco compression amp, $30; Magnecord 101 stereo record and playback, $300; Concertone custom professional stereo recorder with preamps and carrying cases, $750. W3VDE, 1219 Yardley Rd., Morrisville, Penna.

TRADE: Tape recorder, intercom, pocket transister radio, GD104 mike. Want: G.G. amp and power supply or parts, and ant. tuner. W. J. Futch, RD #3, Wyoming, Penna.

FOR Sale: 275 watt Johnson Matchbox, $30. W6WEB, Box 594, Sonora, Calif.

AT-1, $18. K8JRC.

VIKING II and B.FO. $200. W2DTD.

JOHNSON Thunderbolt factory-wired and factory overhauled with latest modifications: Gone S line: first offer around $400 takes it. K7EPD, 3850 E. Elm, Phoenix, Ariz. CR 9-2824.

T350XM, 700 watt transmitter with peak limiter, $300. John Ecklin, 760 Temple, San Diego 6, Calif.

HAVE pair of new surplus 4X-500F tubes. Want 4350-A or PMR-7. K6PQC, Box 902, Ridgecrest, Calif.

SELL: HQ-110, new condx, $165. Bob Scowcroft, K8HYX, Rte. #1, Box 132, St. Joseph, Mich.

WANTED BC-348. State price, condx. Daniel Lee, 3167 E. Green, Pasadena, Calif.

REWARD of twenty-five dollars ($25.00) for information leading to or the obtaining of small control box type No. C1057/ARC34. Send C.o.d. to Ted Dames, W2KUW, 64 Grand Pl. Arlington, N. J.

BEST Cash offer, 75A4, factory-sealed carton, unopened. WØMBH, Yankton, South Dakota.

CLEANING House! HQ-140X, $170; BC-221, $65; 829Bs, 832As, transformers, misc. surplus gear; Leica M3 with accessories, new, never used. Worth $600. Want: KWM-1 in swap. I. Seidman, Park Towne, Philadelphia 30, Penna.

WANTED: Panadapter Mod. PR1, high serial number, with manual. Must be clean. Also manual for BC470-E. Albert H. Glines, 46 Winter St., Quincy 69, Mass.

SACRIFICE! Collins 75A4, almost brand new, in original carton. Ser.#4913, with spkr: $565. Q. Lafargue, Jr., W5BQJ, 214 No. Adams, DeWitt, Arkansas

COMPLETE SSB 200 watt station consisting of 75A4 and matching spkr with Phasemaster exciter, 458 VFO, VFO-Matic, Vantron linear, B&W TR switch and MicroMatch MM-2: $850. W2ADD.

NATIONAL 183D, like new. Sacrifice $225. Gustave Lawrence, 67-12 Yellowstone Blvd., Forest Hills, N. Y. Phone TW 6-9256, evenings.

WANTED: Millen #92101 ant. preamp R-9er, W9CHF.

HY-GAIN 12-AV vertical, $12. Budd low-pass LF-601, $10. W2TWK, 34 Eagle Lane, Farmingdale, N. Y.

SWAP: ART-13 unconverted for BC-348, old HRO, etc. WØNCG, #6 Gimlin, St. Louis (38) Mo.

WILL Swap model aircraft engines and fishing equipment for gud low pwr commercial xmtr. Write for list. Joseph Mocker, Jr., 47 Prospect St., Taunton, Mass.

FOR Sale:KWS-1, latest revisions of 8-25-59 at Collins factory. $1350. C. H. Buchanan, 1210 White Oak Dr., Springfield, Ohio. W8RWZ.

SPECIAL! W2EWL SSB transformers. New. 95¢ (3 for $2.50. 10 for $7.50); T-17 mike, brand new, sealed package. Only $4.95; Brochure available. Ling Closed-Circuit TV camera, brochure Glas-Line, $2.89 per hundred feet; Geloso tape recorder, $179.95, available. Complete tube inventory, best quality and sensible prices. 2C51 $1.70; 3B28, $3.00; 4X150A, $7.00; 805, $5.00; 807, $1.15; 807W, $1.25; 813, $8.50; 829B, $8.00; 837, $1.00; 866A, $1.50; 872A, $2.00. Write for free tube price lists. Green sheet catalog on equipment and parts, 25¢. Wanted: Unused transmitting and receiving tubes. Send list for cash offer. Distributors for B&W, Eimac, Hammarlund, Johnson, Westinghouse and others. Barry Electronics Corp., 512 Broadway, New York City 12, N. Y. Tel. WAlker 5-7000.

BEGINNERS: Heath AR-3 rcvr with QF-1 Q-mult., instruction manuals, $30. William Rubin, WA2ENK, 328 Archer St., Freeport, L. I., N. Y.

FOR Sale: DX-20 transmitter and S-38 receiver or trade both for S-85 or NC-88 receiver. Joel Lyons, 297 Cambridge, Worcester 3, Mass.

SALE: Heathkit "Q" multiplier (QF-1), $8.75; WRL model 755 VFO, $30, in excellent alignment and condx. Write to Gordon Laubach, K3DOX, 416 Oakwood Drive, Fullerton, Penna.

HQ110C, damp chaser, matching spkr, in superb condx, $185 or best offer. K5MWU, Dick Berrisford, QTRS, 1831B, Blytheville AFB, Ark.

FOR Sale: Two EL full size 10m beams, $17. W2RII, H. Schutzman, 16-10 Lucena Dr., Fairlawn, N. J.

SELL: In like-new condx, HQ100 w/clock, $150; Lettine 240 emtr, w/lo pass filter, coils and xtals, $60; Wilcox-Gay tape recorder, 2 speeds, 3¾ 7½ IPS, tapes, reels & mike, $50. Call Rich, K2GTG, Fairbanks 4-0671, Bronx, N. Y.

SELL: Mosley TA-33 Triband beam $57; DX-35, $45; VF-1, $17. FB! Lance McIntyre, K5LTV, 3516 W. Ohio, Midland, Tex.

STEREO: Complete system includes Heathkit stereo preamp., two 55 watt amplifiers, FM tuner, Weathers stereo turntable with arm & cartr., Viking 85ESQ stereo tape deck and Univ. 3-way spkr systems in blond. Price $600. Collection of tapes and rex goes with it also. Above equpt. is brand new. F. Salzman, 293 Monmouth Ave., New Milford, N. J.

BC-604 FM xmtrs, new condx, tubes, spares, original packing, 117 lbs., $3.00; unused Chicago filter chokes: 12 hy., 150 Ma., 150 ohm, sealed, 75¢; S20R rcvr $31; xfrmrs, etc. All F.o.b. Decatur, Ill. List: 25¢ refunded with any order. Stanis, 720 So. Jasper, Decatur, Ill.

WANTED: Free ham equipment for Torrington High School Radio Club, K1LBP. Send to James Tino, Sec'y., Torrington High School, Church St., Torrington, Conn.

GONSET III 6 mtrs., 3-el. beam; Hammarlund Super Pro, BC-652A. Sell separate. Make offer. K2AHQ, Valley Cottage, N. Y.

SIDESWIPER for electronic keyer. $7.00. KØQEC, Larry E. Dodd, 115 West 11th St., Junction City, Kansas.

YOU Can pass that Commercial FCC phone exam. My "S-H-O-T-G-U-N" type review has been highly effective for 15 years. Very inexpensive. Free literature. Wallace Cook, Electronic Instruction Specialist, P.O. Box 10634G, Jackson, 9, Miss.

WANTED: Surplus Measurement Mod. 78 or 80 signal generators. Also Federal 804 or used Motorola 2-way equipment. State quantity, price and condition. Communications Service, Inc., 3209 Canto St., Dallas, Texas

JOHNSON Viking Challenger and Heath VFO in A-1 condx, not a scratch! Must sell. Have gone SSB. Make offer. KØQCT, 1930 Ave. 8, Kearney, Nebr.

SELL: Pierson KE-93 mobile receiver with 110 AC and 6-12 DC supplies, $235; Elmac AF-67 transmitter $100; Central Electronics 20-A factory-wired with matching 458 VFO, $200 C. Lindemann, W1MLM, NBC-TV, 30 Rockefeller Plaza, New York 20, N. Y.

SELL: 32S-1, 75S-1, like new. Ser. No. 590. WØOSX, 1396 West Idaho, St. Paul, Minnesota.

SELL: LA400B, factory-wired, P&H Linear. New condx, used less than five hours. Less than kit price. Ted Ellinger, 1240 N. 8th, Abilene, Texas.

RECONDITIONED Equipment; World Radio Laboratories—Terms—Trials!! New Guarantee! Aerotron Transceiver 6-12-110V $159.00; Ameco AC-1 (novice-cw) $14.95; Black Widow 2M 6-12-110V $159.00; CE "B" Slicer $59.00; CE MM-1 Scope $79.00; Collins 75A4's from $549.00; Collins 310B Exciter $149.00; Collins 32V3 $485.00; Creative Transcon 6, 12V $69.50; Globe CB-100 $99.50; Globe Champ 300A $389.00; Gonset G-11 $89.00; Gonset 6M Linear II 109.00; Hallicrafters S40-B $79.00; Heath DX-20 $34.50; Heath MT-1 w/mic $129.00; Hunter CM-20A Cyclemaster $129.00; Johnson Rangers $21900; Johnson Viking II $219.00; Johnson Valiant $349.00; Morrow MB-560 $139.00; Sonar SRT-120 $89.00; Subraco MT-15X $37.50. Leo WØGFO, Box 811, Council Bluffs, Iowa.

SWAP: One KW rig on two meters. Beam, rotator, tower, converter plus extras for airplane, flyable or needing fabric. All letters answered. Will not ship. Andy Allet, K1IZN, 433 South St., Reading, Mass.

WANTED: Collins receiver S1J, 75A4. Sell receiver 30-1000 megs, $60. W7POS.

COMPLETE Mobile: Gonset SuperSix, TNS, 25 watt VFO, 10 meter transmitter, dynamotor, $60. Will sell separately; Cathode modulator, $5; Hammarlund Four-20 transmitter, $10. W3STV, 328 Clugston, Turtle Creek, Penna.

SELL: DX-40, $55 and Triplett 630-APL VOM, $35. The above equipment is brand new, never used. Fred Salzman, 293 Monmouth Ave., New Milford, N. J.

SELL: RME 4350 with spkr, DB23 Preselector; DSB100 xtmr, factory checked, like new condx, all in orig. cartons. Lot price: $375. Al Rowder, 374 Fairhill Dr., Holland, Mich. Tel. EX 4-4172.

FOR Sale: 75A3, in perf. condx. Looks like new. 3.1 and 800 cycle filters, $350. Lang Barbour, K5KKW, Bay City, Texas.

RK65 tubes, ideal KW linear tubes. New, tested, in factory cartons, $10 each. C. Brooner, P.O. Box 261, Morton, Ill.

COLLINS 75A4, in perf. condx, $475.00; complete Collins S-line station, used 27 hours, perfect 32S1 transmitter, $469.00; 75S-1 receiver, $409.00; AC power supp $85.00; Collins 30S-1 linear amplifier, still crated. We will allow $550.00 on HT-33 or Thunderbolt or 600-L. Used 20-A and VFO, $179.00; used KWM-2, $985.00. Sold on money-back guarantee. Morry's Wholesale Radio, 12th & Jetterson. Phone WH-6-2820. DeWitt, Arkansas.

PR-1 Panadapter, $85; NC-183D, $285; DX-100, $165; Globe King, Globe 300 W/T, $395; Communications Products 450 Mc ant., $75; vertical Royal RR11 mobile unit, 461.55, $85; Royal MR-21 CR-430 461.55 110V V base sta., $250; Royal 432 exciter, $35. Selectronics 3185 Bellevue, Toledo, Ohio. GR-4-5477.

KWM-1 for sale. Used under ten hours; no time to operate. Includes AC Supply and Spkr. $750 takes all, freight prepaid, in orig. cartons. W9RIF, A.F. D'Orlo, 7917 Cortland Pkwy, Elmwood Park, Ill.

LING TV camera (used) Model V-1002, $165. For description see p. 391 Allied catalog. Petty, Box 166A, Monclova, Ohio.

FREE 1960 Surplus Flyer, just out! Command sets, code machines, handie-talkies, receivers, transmitters, test sets technmanuals, transformers, capacitors, receiving and transmitting tubes, meters VHF and UHF sets, plugs, parts. Write today to Bill Slep Company, Drawer 178, Ellenton, Fla.

SELLING: GPR-90 rcvr, #1666, $345; Millen 90801, 90-watt bandswitching exciter, $45; power supply for same $15; open table rack $4; Precise Mod 315 'scope, $25; C-D capacitor Decade 1-10 ufd, $4; pair large selsyns, $7.50. Joseph Marshall, Jr., 22 Clare Drive, East Northport, L. I., N. Y.

JOHNSON Valiant factory-wired, and HQ-110C. Both 3 months old and in perfect condx. Must sell. $450. Cash for both. Valiant alone, $300. Tom Moyer, P.O. Box 365, Belen, New Mexico.

BAND W S100 B with 51SB generator, get on SSB, with high level AM available, $475. C. Ham, W2KDC, 38 Radcliff Dr., Huntington, N. Y.

SX71 with spkr and 15M band, good condx, $100. Walter Forhlich, 182 W. Saveland Ave., Milwaukee 7, Wis.

GPR-90 receiver with matching spkr, late model including xtal calibrator. In like new condx, $350. John Copley, K2SKW, 9046 Croydon, Los Angeles 45, Calif. Tel. OR 1-0546.

RICH is back in W9-land and Lu sez "Clean it out or get out" so here goes: Streamlining to the nub selling all surplus units including mint condition 32V3, $350; Hy-Gain Tribander, $65; Heath 5" 'scope, VTVM, TV alignment generator, audio osc., signal tracer. Stamp for complete list. W9JS, 1916 East Evergreen St., Wheaton, Ill.

WANTED: Antique radios. Radiola I, others. Paul Giganti, 2429 San Carlos. San Carlos, Calif.

INTERESTED in contacting SWLS in Idaho area. Pls write Joe Morris, Box 3926, Cleveland 20, Ohio.

SX-101 Mark III HQ-170C with timer, both in like new condx, your choice, $265; SX-71, $115; B&W L-1000 amplifier, $285; Viking II with VFO, $175. C. G. Wright, Electronic Engineering Co., Wabash, Ind.

NATIONWIDE Consultants Inc. has many interesting assignments for qualified personnel in the following categories: Engineers, EE's and ME's: Fire control systems, Servos, Circuit Design, Pulse, Digital—Analog Computers, Test and Evaluations, Ballistics, Telephone Cross Bar, Military Communications, Technical Writers: heavy electronics background handbook, instruction manuals, and specifications. Parts Listers: experienced preparing IPBs, provisioning conference leader background. Technical illustrators: exploded views, perspective layouts, ink rendering, wiring diagrams and charts. Assignments available in North, South, East and West. Top rates. Fringes. Send resumes to James B. Moss, Dir. of Personnel, Nationwide Consultants, Inc., 20521 Kinsman Rd., Cleveland 22, Ohio SKyline 2-2888.

16mm Bolex H-16 Rex, latest model, f1.5 Pizar Rx normal lens, variable shutter. Includes case, filters etc. Camera and equip. cost $505 new. Never used and still has guarantee. Will sell or swap for Collins 32V3. All letters answered. Wm. J. Garrett, 1021 E. Scottwood Ave., Flint 7, Mich.

FOR Sale or trade: one full size Telrex mod. 20M-56-112, 20 meter beam, Also a 15 and a 10 meter 3-element gamma matched beams. K3COW, 7720 Greentree Rd., Bethesda 14, Md.

GLOBE Chief, with antenna relay, condition excellent. $40. John Libby, 16 Dorchester Ave., Hastings-on-Hudson, N. Y.

GUNS wanted. Trade my ham gear for them. W2LJU.

WANTED: Complete Class B modulator with exciter and power supply to match a pair of 810s. Desire about 300 watts audio. B. Riley Fowler, Box 143, Morganton, N. C.

ATTENTION! Our radio club is in need of a transmitter. Any ham wishing to donate an unused piece of gear please contact Andy, K9OFA Rte. #1, Box 142, Warrensville, Ill.

FOR Sale: Heath AR-3 receiver with cabinet and Q-mult., exc. condx, $35. KN8RCA, 3509 Harding Road, Jackson, Mich.

20-A, QT-1 and BC-457 VFO modified 10 through 75 meters. New condition, exc. performance. Ready to operate, $195 or best offer. BC-221 frequency standard, calibration book and power supply, $60. Will ship. K1KFI, 97 Charon Terrace, South Hadley, Mass.

NEW Eico 720 transmitter, excellent Novice rig $100 F.o.b. Batavia, Illinois. V. Schroeder, K9POU, 522 Park St., Batavia, Ill.

COLLEGE Living costs have gone up! Need money! For sale: Regency All-band converter ACT-1. Never been used. Still in original box with cables. $60.00. Also Master Mobile Mounts "All Band" 666 coil and 88-66 whip. Never been used. $12.50. Will ship prepaid. Dana B. Wood K6AHM/7, S.U.P.O., 10608. University of Arizona, Tucson, Ariz.

COMPLETE QST editions 1956-57-58, complete CQ 1958, April-Dec. 1957. Make offer. W2JBL.

SELL: 10-A exciter with VFO and all-band 813 400 W P.E.P. linear amplifier, with power supply and meters, in 6 ft. 6 in. enclosed rack: $250; 300 watt 813 AM all-band xmtr with exciter and modulator and all power supplies and meters, in 6 ft. 6 in. enclosed rack: $250. All letters will be answered. W9ODT, 528 E. 4th St., Lockport, Ill.

FOR Sale: Mint condition T-90 Mobile Transmitter, cables, rack and unused dynamotor, $120, not a scratch! New Eimac 4E27A, $15; BC375 rotor inductor and dial, $8.50; Stancor 60 watt Multimatch mod. transformer, $6.00; WE 404A 5847, new, $3.50. Pair new 4E27 tubes, $5.00 each. Neill A. Jennings, 112 Beverly Place, Greensboro, N. C.

SSB Exciter, Central Electronics 20A, factory-wired, late production table model, Grey, with C.E. deluxe 458 VFO (xtal converter), 6 tubes, 10 thru 160 meters. Perfect operating condx, $225. Eight new W.E. 701A tubes, $20 for the lot. Power supply rack and panel 1500 or 1350 D.C. at 300 miles, Thordarson, etc. $25.00. All F.o.b. W2MPA, Box 222, Highland, N. J.

FOR Sale or swap: Gonset Supereceiver, K6BBD.

TRI-EX deluxe tower HZ354, self-supporting with tripod base, no guys required. 54 ft. high, cranks down to 20 ft. X-Sway bracing throughout, withstands heaviest winds, beams and rotor loads complete with 35 to 1, gear box and crank, only 6 months old. $355; Gonset Triband beam mod. 3220B for 10-15-20 meters, used 3 months, $95. Workshop heavy-duty rotor and control compass with 100 ft. of cable, $75. Jack Rose, 34 N. Bowling Green, Los Angeles 49, Calif.

GONSET GSB 100 xmtr. and Drake 1-A rec., $675; only 6 months old. John S. Aldridge, 2766 Westgate, Concord, Calif.

SELL: Viking II, less VFO, first $150 takes it. Charles Vangsgard, Luck, Wis.

FOR Sale: Gonset G66-B, mobile receiver, with 3 way power supply, 6V DC 12V DC and 115V AC, in exc. condx, best offer over $180 takes it. Joseph Lewandowski, K2DQR, 61 Vermont St., Trenton 8, N. J.

WANTED: Speaker/control box for KWS-1/75A4; D-104 or Slimline mike, KWM1 or KWM2. For sale: Viking II, $150; meter Communicator III, $125; Shure 505T mobile mike, $20; 500V DC 200 Ma. output 12V DC input mobile transistor pwr. supply, $25; field strength meter, $15. Ken Miller, K6BNJ, 14979 LaCumbre Dr., Pacific Palisades, Calif.

GLOBE King 500C, like new, will not ship, Sry. First offer over $600. K2UBN.

FOR Sale: GPR90 recvr, factory aligned, in August, $350; Clegg 62PTO Trimaster VHF xmtr, factory checked, $350; B&W xmtr and 51SB, $450. K2MLB, 45 Rockspring Ave., West Orange, N.J. Tel. REdwood 1-5064.

MOSLEY V-4-6, 10 thru 40 vertical Trap Master, $17.90; Johnson 72 Ohm L.P. filter, $9.95; National MB-40SL tank circuit, $10.90. Above three all new, original cartons. New surplus tubes, 813s, $9.50; 803s, $4.00; 838s, $3.00; 805s, $4.00; 814s, $3.00. 100ths, $7.50. Send check or m.o. W4AVU, Box 1189, Charlottesville, Va.

SELL: New, 2 4D32s, $12.50 ea; 2 805s, $2.00 ea., 2 829Bs, $4.00 ea., used: 2 4125As, $4.00 ea.; 2 4D32s, $4.00 ea. Want: BC-312 or BC-342. Must be repairable. State condition. Will swap. Earl Stodden, K3ICM, 5495 Library Rd., Bethel Park, Penna.

FACTORY Wired Johnson Challenger with VFO, in exc. condx, $165, Will ship. Heytow, 6053 North Fairfield, Chicago, Ill.

WANTED: Apache, DX100B, SB10, Valiant or Ranger; TX40, 813, 6146, 866A. Sell or trade: BC221M; AVT112A xmtr, AR20 recvr. W2CE.

KWM-1 Number 398 with AC supply, $680. Need to operate MARS frequencies. Consider trade for 32S-1, L, S. Bartleym 24 Pleasant Drive, Mounted Route, Rome, N.Y. Tel. 1886.

MAGAZINES. Back issues, 1933-1954, CQ, QST, Radio, 25¢ each. W1JNM.

SELL: Globe Chief 90, in exec. condx, $35. Wayne Brown, W2TPV, Greene, N. Y.

NEW 10-B exciter, wired and tested October 1959, kit price. Schedule to hear on 75. Jim Fisher, RD 1, Williamsport, Penn.

75A4, ser. No. 2533, in perf. condx; $495; 0.8 Kc filter, $39; 6 Kc filter, $34. W6WZD, 98 Fairview Ave., Atherton, Calif.

GONSET Super-ceiver; 10-20-75 converter; Hy-Gain 10-40 vertical. K8IC, Box 113, Bay-Village, Ohio.

SALE: DX-100, beautiful condx, like new: $175. W9GAK, 3927 West 68th St., Chicago 29, Ill.

COLLINS 75A-3, new tubes, $300; DX-100 with mike, $150. Three element Kilowatt Tribander, $75; AR-22, $15; Dow-Key co-ax relay, $5. Dick, W7CXW, 2445 S.W. Arden Rd., Portland 1, Oregon.

NEW Service for amateurs. List your equipment for sale, let us know your needs. No charge to buyer, small brokerage fee to seller after transaction. W2EEJ, Herbert Greenberg, 821 Rutgers Road, Franklin Square, N. Y. IVvanhoe 6-0809.

100 QSTS from 1923 on. Most in the 1930s. State issues desired and if binding, whether with or without covers. W2BB.

B&W 5100-B transmitter and 51SB-B SSB generator. Last factory run. Used less than 50 hours, like new. $500. 75 watts Novice xtal xmtr, factory wired, General Electronics Model TN-75. Never used, won at Ham Fest $35.00. Both cash, no trades! W5SPZ, 255 Orion St., Metaire, La.

FOR Sale: Viking Adverturer xmtr, $45; Hallic. HT-18, VFO and NBFM xctr, $55; Heathkit DX-20, $29.50; Heathkit DX-35, $45.00; Meissner Signal Shifter, $26.50; Central Electronics 10B, $125.00; Morrow Conelrad Monitor, $29.00; National NC-46 (new), $90; Elmac PMR-6A with PSR-6 pwr supp., $99.95; RME 4350 w/spkr, $195; Natl. NC-300, $275.00; Natl. HRO-50T1, $300; Hallic. SX-101, $269; Viking Challenger $119.95; RCA MI 509237 recvr, $75; Viking Mobile xmtr $65; Filter King 6 meter converter (26-30 Mc outp.), $19.95; Viking Valiant (like new), $350; Gonset G-77 mobile xmtr (exc. condx) $185. Write Art Brown, W9IHZ, Brown Electronics, Inc., 1032 B'way, Ft. Wayne, Ind.

CRYSTALS Airmailed: SSB, MARS, Commercial, Net. etc., FT-1243 .01% any kilocycle 3500 to 8600—$1.49 (10 or more 99¢), novice 99¢, 1700 to 3000 $1.95. All frequencies 60¢ additional for HC-6/U hermetics. Airmailing 9¢ per crystal. Construction article crystal packages—June 1958 QST, SSB "Package", Mixer-FT-243, $9.95. Matched filter $6.90. November QST "Phasing Sideband" $9.95. November CQ, "Crystal Synthesizer" 31 crystals $39.95. May CQ "Transistorized Receiver, KWM-1 conversion, etc.—If you don't see it ask. Crystals since 1933. C-W Crystals, Box 2065Q, El Monte, Calif.

RADIO & TV tubes at manufacturers' prices! 100% guaranteed! Brand new! No re-brands or pulls! United Radio, Box 1000, Newark, N.J.

FOR Sale: 220 copies QST and CQ, '46 to '59. $22.00 plus shipping. Also selling radio books and surplus manuals. Stamp for list. W2YSF.

SALE: Telrex 20 meter, 3-el. beam, full size, replaced by a Tribander. Only in use for 4 months. Original cost, $175. Sale price, $70. Will ship. W3VRA, Box #1225, Harrisburg, Penna.

APACHE Xmtr, Heath SB-10 xctr, Drake recvr. First certified check for $600 gets this all-band sideband or AM station. Used little, like new condx. Frank M. Williams, 1004 McKinley Ave., Ouisville 17, Ky. K4RDC.

APACHE $230, RME 4300, $120; Super Pro, 750W amplifier, $35; power supplies: KW, $40; 2.5 Kw, $85; 4800V CT 1A transformer, $45. All excellent. Trades? Chuck Jaeger, 5753 S.W. Burma, Lake Grove, Oregon.

SELL: HQ140X with Drake Q-multiplier, $165. 10B factory wired with VFO, $140; Bud xtal calibrator, $10; Mosley 20M, V-P Beam, $25; AR-22 rotator, $22. Make your own offer. Bert Kleinman, K20SW, 67-84 Groton St., Forest Hills, N.Y. LI 4-9320.

LEECE-NEVILLE 6 volt 100 amp. system—alternator regulator and rectifier, $45; also 12 volt 100 amp. system, $85. Guaranteed no ex-police car units. Herbert A. Zimmerman, Jr., K2PAT, 115 Willow St., Brooklyn 1, N.Y. Tel. ULster 2-3472 or JAckson 2-2857.

WORLD'S finest reconditioned equipment at lower prices. On trial. Trades. World's best terms financed by us. S-38, $29.00; S-53A, $59.00; S-85, $89.00; SX-99, $119.00; SX-96, $159.00; SX-100, $199.00; SX-101, $299.00; SX-88, $349.00; HT-32, $479.00; HQ-100, $129.00; HK-170, $299.00; NC-57, $59.00; NC-98, $99.00; NC-125, $99.00; NC-138D, $225.00; NC-300, $269.00; NC-303, $379.00; Globe 755 VFO, $29.00; Globe Chief, $39.00; Globe Scout, $59.00; DX-100, $179.00; Viking II, $179.00; 75A-2, $325.00; 75A-4, $549.00; KWM-1, $595.00; KWS-1, $1195.00; AF-67, $129.00. Hundreds of other items. Write for list. Special discount for all cash. Henry Radio, Butler, Missouri.

WANTED: Phone xmtr, 100 to 500 w, any condx, if bargain, also QSTs-CQs, 1940 to 1959. Sell: SX-25, spkr, $60; HRO "M", 8 coils, spkr, supply $90. A. Eckhart, R.D. #1, Grafton Rd., Valley City, Ohio. W8RDT.

SELL: HQ129X, NC125 w/spkrs, HQ100C, BC342N, BC348N, 28V DC and 120 AC, BC455, new and used unmodified. Make offers. M. Marshall, 455 Washington Ave., Dumont, N.J.

COMMUNICATION Receiver, NC-300 w/xtal calibr. and spkr, new condx, $245.00 F.o.b. Contact Irving Reed Weir, 559 Grant Blvd., Syracuse, N.Y. Tel. HO 3-0084.

$1140 Hammarlund SP-600 JX .540-54 Mc. Trade for 75A3 or A4. John Byrne, K2JYM, Freeport, L.I., N.Y.

SUPER Pros, BC779, checked out and guaranteed. Less power supply, $74.50; power supply, $24.50, separately available. First come, first served. Gizmos & Such, Still River, Mass.

ATTENTION—CD groups and hams! Are you tired of fighting QRM and TVI and static on the low frequency bands? Switch to Two Meter FM with used high quality commercial gear now available at low prices. Write Skyline Electronics, 6022 N. Rogers Ave., Chicago Ill. for info.

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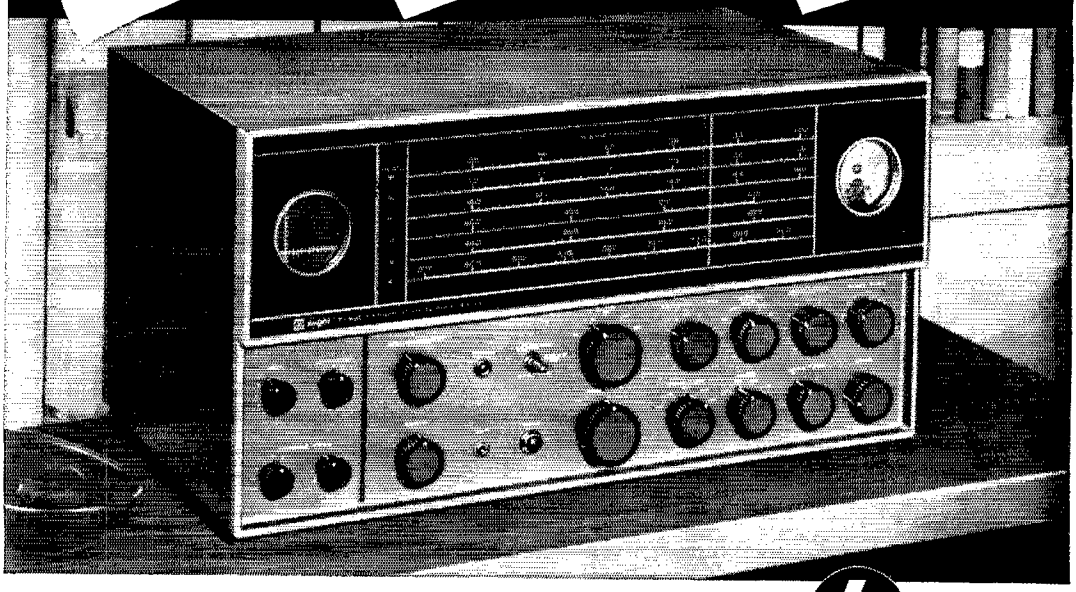

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T-400 Deluxe Amateur 400-Watt Transmitter Kit

the only 400-watt build-your-own transmitter offering CW, AM and SSB in a single great package

ONLY **$10** DOWN

KING-SIZE TRADES

The new T-400 has what it takes to punch out a QRM-busting SSB, AM, or CW signal. 600 watts P.E.P. input on SSB... 400 watts on AM and CW. Bandswitches 80, 40, 20, 10, and 15 or 6 meter bands. Start with the basic CW kit... add the AM and SSB accessory units and other "add-ins" whenever you wish. The T-400's built-in VFO is of the heterodyne type... your assurance of a signal that "stays put". The tremendous 14-inch dial is precision-calibrated for all bands from 80 through 6 meters. SSB features include front-panel controls for VOX and anti-trip as well as adjustable speech compression. Smooth, chirpless screen-clamp keying, plus VFO keying for complete CW break-in. There's plenty of drive on all bands. The 7034/4X150A final coasts along at well within its CCS ratings ...the silicon rectifier power supply runs "cool as a breeze" under the most grueling operating conditions. Separately shielded VFO and final for TVI protection. 12x24x20". A superb transmitter in a class by itself!

400-WATT CW TRANSMITTER KIT ONLY....**$395.00**... ***only $10.00 Down***

"Add-In" Accessories: SSB Generator Kit, $69.95... AM Modulator Kit, $24.95 Speech Amplifier Kit, $9.95.. Monitor Scope Kit, $37.95.. 6-Meter Conversion Kit, $7.50

Available in March... reserve your T-400 now!

For a detailed description of this superb Knight-Kit Transmitter, see your 1960 Allied Catalog. If you haven't a copy, send for it now.

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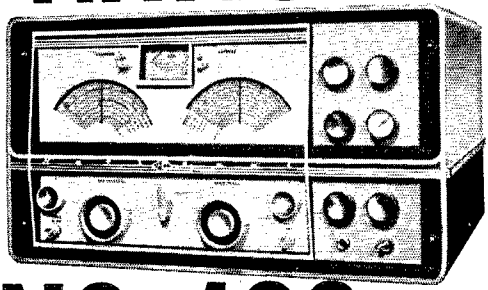

NC-400

The Most Versatile Communications Receiver Ever Designed

The NC-400 is a modern, multiple purpose, general coverage receiver. Tuning range is 540 kc to 31 mc in 7 bands, with dual conversion on all frequencies above 7 mc. Its unique design provides maximum flexibility of operation to satisfy a wide variety of communications requirements.

The NC-400 may be used as a self-contained unit, either manually tuned or crystal controlled on pre-selected frequencies. In addition, external master oscillator provisions make possible use of modern synthesizer techniques for applications where extreme frequency stability is required. It may be operated in space or frequency diversity applications. Provisions are made for interconnection of any required outputs or for feed to external loads or combiners. All frequency determining circuits may be internally or externally controlled. The NC-400 also provides optimum versatility of bandwidth, either through the use of internal IF circuits or the use of optional mechanical filters.

FREQUENCY RANGE:	GENERAL COVERAGE
Band 1	.54— 1.1 MC
Band 2	1.1 — 2.1 MC
Band 3	2.1 — 4.1 MC
Band 4	4.1 — 7.0 MC
Band 5	6.9 —12.2 MC
Band 6	11.8 —20.4 MC
Band 7	19.6 —31.0 MC

NOTE: Bandspread dial provided with 0-100 logging scale and calibrated for 80, 40, 20, 15 and 10 meter amateur bands.

FREQUENCY STABILITY: Long term stability after warm-up —.002%

SENSITIVITY: 1 microvolt for 10 db signal/noise ratio

SELECTIVITY: 4, 8 and 16 kc positions provided with 6 tuned circuits. 3.5 kc wide upper and lower sideband positions provided with 14 tuned circuits. 3.5 kc sharp position activates plug-in crystal filter providing 5 additional degrees of selectivity below 3 kc plus phasing notch. Plug-in accessory available which will provide front panel selection of three mechanical filters without modification of receiver. Proper choice of filters will enable selection of bandwidths from 500 cycles to 16 kc, or will enable filter type of sideband selection from front panel.

SSB PROVISIONS: Separate SSB heterodyne detector uses pentagrid converter and separate beat oscillator. Beat oscillator may be crystal controlled. Special "fast-attack-slow release" AGC circuit. Sideband selection accomplished by exclusive, new National passband switching techniques. In the event of commercial-type SSB reception, single sideband mechanical filters may be installed and switched from front panel.

FIXED CHANNEL OPERATION: HF oscillator has 5 crystal sockets for use in fixed channel operation. Channels may be selected by front panel switch. In addition, HF oscillator may be controlled from external master oscillator selected by front panel switch. "S" meter "Tune" position permits rapid tuning of receiver to crystal controlled channel.

DIVERSITY PROVISIONS: Basic receiver may be operated from master oscillator as noted above. An accessory Diversity Modification Kit (NC-400 DMK) allows choice of internal or external control of all oscillators. Rear panel selector provisions make possible use of any receiver either as master control, or slave fed from other oscillator sources. IF, detector and AGC outputs available for feed to external loads or combiners.

POWER REQUIREMENTS: 110-220 volts, 50-60 cycles AC

MANUFACTURER'S SUGGESTED LIST PRICE: $895.*

OPTIONAL ACCESSORIES:

1. XCU-400 crystal calibrator. Output frequencies of 100 kc and 1 mc.
2. NTS-2 matching speaker
3. NC-400 DMK diversity modification kit
4. NC-400 FH mechanical filter housing

*Manufacturer's suggested list price. Sold only by National Co. Franchised Distributors

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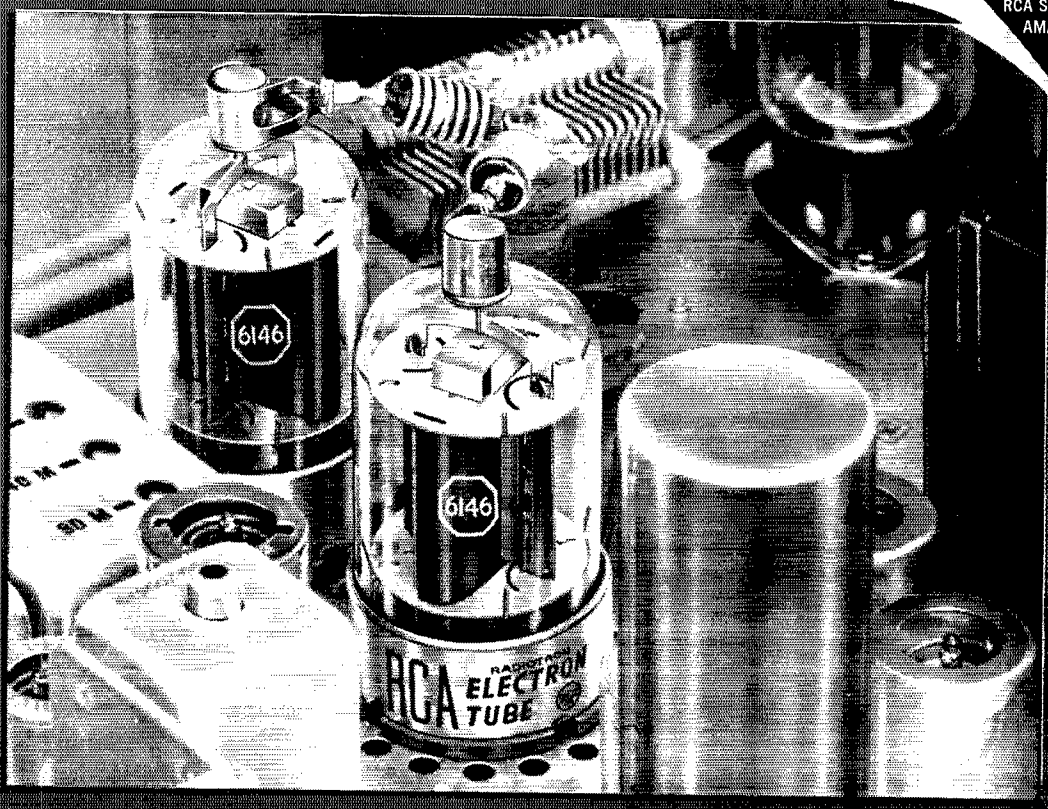

Inside view of the HT-37, showing the two RCA-6146's in parallel in the linear final.

Every Tube is RCA...

from VFO to the 6146 Final

RCA-6146
90 watts CW input up to 60 Mc; 67.5 watts on phone.

Pictured here is one of the newest, most modern SSB-AM-CW transmitters in amateur radio. It's the medium-power 10-to-80 meter HT-37. RCA is proud that Hallicrafter designers specified an RCA tube for every stage in this outstanding 18-tube rig—including the linear final!

Operating today in hundreds of thousands of communications equipment throughout the world, RCA tubes have earned a reputation for high reliability *right in the circuit!* Emission capability is second to none—even after long periods of demanding operation. High uniformity of tube characteristics during life does away with circuit "touch-up", while high uniformity of characteristics from tube to tube enables you to replace tubes without major tune-up. And conservative ratings pay off in more operating hours for your tube dollar.

Whether you design or whether you retube, you'll do better every time—with "RCA's" in the sockets! Your RCA Industrial Tube Distributor handles all RCA types used in the amateur station.

RCA **RADIO CORPORATION OF AMERICA**

Electron Tube Division **Harrison, N. J.**

REPORT FROM GENEVA

We Keep Our Frequencies!

As most amateurs know, during the past four months delegates from more than 80 nations have been meeting in Geneva, Switzerland, for an Administrative Radio Conference of the International Telecommunications Union. The purpose of the conference is to examine and revise the world's radiocommunication regulations, last established at Atlantic City (1947), in the light of new developments and requirements in the intervening twelve years. The complexity of the task can perhaps best be illustrated by pointing out that in the United States, for example, groups of government and industry communications experts commenced preparatory work more than three years ago, and that 30 government delegates plus up to 50 industry consultants and advisers have been attending the conference in Geneva to represent our country and to negotiate an outcome satisfactory to the needs of our various radio services. For the few amateurs who may not realize it, let me point out once again that your League, as the representative of the amateur radio service, has participated in every relevant aspect of the domestic preparatory work and in the entire conference proceedings, with four other League officials present at various times in Geneva in addition to my own full-time attendance.

As I write, the conference is drawing to a close. All matters of substance have now been decided. Dozens of study groups and special "working parties" assigned specific tasks have, during the past month, completed their complex jobs and reported to subcommittees, which in turn have reported to parent committees. Continuing this process, the main committees have finally reached agreement on their particular portions of the huge volume of regulations and final decisions have now been made by the Plenary sessions.

Thus for the first time it is now possible to state, with certainty, the outcome of this conference as far as the amateur radio service is concerned. As the culmination of three years' formal preparatory work and four months' intensive participation by the League in the conference itself, **it is with considerable gratification that we can report to amateurs that the Geneva, 1959, radio regulations will continue provisions for every frequency assignment now available in Canada and the United States.**

A subsequent issue of *QST* will carry the complete and detailed story. It will outline the numerous proposals of some other countries for major cuts in amateur frequency bands, and describe how these proposals were eventually defeated — at least as concerns their direct effect in our own portion of the world. It will, regrettably, have to report a few instances of reduction of amateur privileges in certain other parts of the globe, although in my opinion the amateur body in general made out quite well internationally, considering the obstacles it had to face. It will also report on the brilliant and obviously effective manner in which our United States delegation, as a closely knit team of capable experts, carried its assigned task to a successful conclusion.

A. L. BUDLONG
General Manager, ARRL

December 10, 1959