Use a Transistorized Rig

3 "Hams" Make Radio News With Their Transoceanic Call

Radio history was made last month when three Raytheon "ham" operators made the first transatlantic contact utilizing a transistorized transmitter. They reached Denmark, a distance of over 3800 miles.

The tiny transmitter, using Raytheon transistors, is the first of its kind known to successfully make use of transistors instead of tubes in working the 20-meter short-wave band. Slightly larger than a pack of playing cards, the transmitter was devised by Gus Fallgren (W1OGU) and Al Hankinson (W1OSF), both technicians in Missile Systems' Bedford lab, and Richard Wright (W1VBC), a senior at Worcester Polytechnic Institute, who worked at the lab last summer.

Most standard ham radio transmitters vary in size from that of a table model TV set to structures measuring six feet or more in height. The transistorized transmitter measures five inches by two inches by three inches. "It's almost like comparing an ant to an elephant," Fallgren says. He explained that transistorized transmitters have been used up to a distance of 800 miles on the 40-meter band. "We are the first hams we know of to even attempt using transistors on the 20-meter band, which is a much higher frequency," he explained.

A comparison between the power input of the transistorized transmitter and a standard transmitter of Fallgren's is equally amazing. His tube transmitter has an input of 600

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Al Hankinson, Dick Wright and Gus Fallgren compare their mite-sized transmitter with standard transmitter in background. Drastic reduction in size was achieved by using two Raytheon transistors.

Radio "Hams"

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watts, while the small set has an input of eight-hundredths of a watt.

The three men constructed the transmitter in a matter of hours on Sept. 13 "for the fun of it," never dreaming that it would really work. The following evening they tried it out for the first time at Fallgren's home, using his large transmitter to establish contact and then switching over to the tiny transmitter. "Our first contact was with a ham in Kansas City, Mo., about 1100 miles away, who congratulated us on having reached out that far," Fallgren said. After this, the three men gained confidence and established all of their contacts, except the foreign ones with the small rig.

Make Many Contacts

One of the most exciting moments in the lives of the three ardent radio hams happened on Sept. 18. "We contacted a ham in Denmark, which meant that our little rig had spanned a distance of about 3800 miles — a feat radio experts and hams have considered practically impossible because transistors produce such little power," Fallgren said.

Other places the three men have contacted with the new rig so far include Virginia, Illinois, Costa Rica, Ohio, North Carolina, South Carolina, Michigan, Puerto Rico, Birmingham, England, and places in the Boston area. "We were trying to reach a ham in the Virgin Islands when a GI in Puerto Rico came in and excitedly congratulated us," Fallgren said. "A ham in North Carolina congratulated us on having made a contact so far from Boston with our new transmitter," he added, "but when we told him that he was one of our closer contacts he couldn't believe it."

The new unit uses two Raytheon CK 761 transistors, one pen-light cell battery and two six-volt batteries — the equivalent of nine flashlight batteries. Mounted on a piece of peg-board, it is still in the "bread-board" stage.

"Hams" Take Up Challenge

The three men attribute much of their amazing success to Fallgren's home-made antenna, which is located on top of a 40-foot windmill tower. "It's called a rotary beam antenna with three elements (cross pieces), each of which is 33 feet long," Fallgren says. They used this powerful antenna to make all of the contacts with their tiny rig.

Who will be the first to contact all continents with a transistorized transmitter is a standing challenge among radio hams. The three Raytheon hams think they have a jump on the others. Experimenting further with the new transmitter, Fallgren reports that an amateur in Australia heard his signals the morning of Sept. 20 but interference prevented confirmation. "If we continue to reach distances this far," the Raytheon hams added, "we have high hopes of being the first to reach every continent with our transistorized transmitter."