

RADIO

Radio Hams Are Back

Thousands of amateur radio operators are back after the war with many of their prewar shortwave bands and a new field of radio communication.

By RON ROSS

► **HAMS ARE BACK**—but these hams aren't at the butcher shop. They're America's thousands of amateur radio operators who affectionately call themselves "hams."

Silenced by Pearl Harbor, amateur radio is back from the war with many of its prewar shortwave radio bands and a whole new field of radio communication open, according to latest assignments by the Federal Communications Commission.

Before the war there were nearly 60,000 hams licensed in the United States. "That's only the beginning," declares George Bailey, West Hartford, Conn., president of the American Radio Relay League. Mr. Bailey estimates that 100,000 Americans will hold amateur radio licenses by the end of this year, and that there will be 250,000 hams operating amateur stations within five years.

Who are these amateur radio operators? The American Radio Relay League says the average ham is about 30 years old. This mythical hobbyist has a 100-watt short wave station costing about \$400 over a period of years. He constructed his own transmitter and probably purchased his receiver from a radio manufacturer.

"Ham" Qualifications

To qualify as a ham, the aspirant must be licensed by the Federal Communications Commission. Two licenses are required to operate an amateur station, one for the operator and one for the station. A would-be ham must be able to send and receive International Morse (Continental) code at a rate of 13 words per minute and demonstrate a thorough knowledge of radio.

More than half the applicants fail to get a license the first time they apply, but most of them return to pass the tests later. Some precocious youngsters have passed the test as young as 8. A few years ago amateur radio was a hobby for youngsters, but the average age for the hams is now 30 years.

By frequent use of cast-offs and reference to the local junkyard, many ama-

teurs construct their stations for as little as \$25. A complete station can be built of new parts for \$50. One wealthy ham could have started a commercial radio station for the \$100,000 he reputedly spent as an amateur.

Once licensed, the amateur has his own call letters assigned for his station. Ham stations are limited to 1,000 watts power, but most of them are 100-watts.

Hams have sent messages around the world with 5 to 10 watt stations, using one-fifth the power required by a home light bulb!

Through his station the amateur may make friends anywhere from a few miles to many thousands of miles distant. Radio topics are the common ground on which the amateurs meet, but the most casual listener to the shortwave bands knows that ham talk is not limited to science.

Radio amateurs vary, in the parlance of the hams, from the "ragchewer," who chats with familiar friends by the hour on any topic, to the "DX Hound," who conducts a continual search for new and faraway stations.

Amateurs have an abbreviated language of their own, some derived from varied sources and some unique to hams. "YL" refers to a "young lady." When she marries, she becomes an "XYL," and later an "OL." "OM" (for old man) is used for all male radio amateurs irrespective of age.

Though most ham stations are equipped to send either code or voice, an estimated 65% of the communicating is by code.

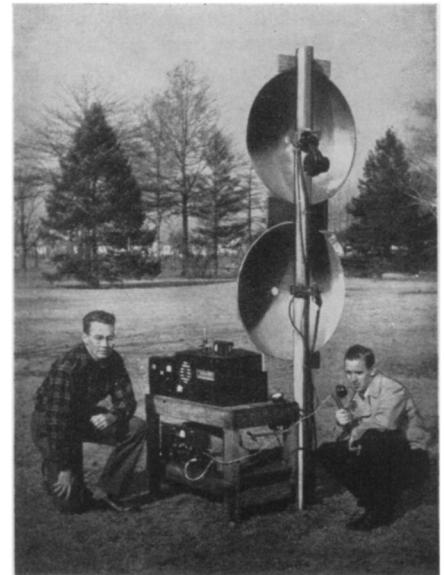
The radio amateurs have a distinguished history dating back to Marconi, who regarded himself as an amateur. By 1917, America had 6,000 hams from whom to draw the nucleus of the Armed Forces radio communications staff in World War I. Responding then as they were to do 25 years later, the nation's hams rendered valuable service in radio work at home and abroad.

Amateur radio expanded rapidly in the following decades, and the followers of Marconi found themselves prepared to perform an important service to the coun-

try in peace as well as war. With hams operating shortwave stations in homes, garages and sheds in nearly every community in the country, it was found that they could frequently maintain contact with other areas when disaster wreaked havoc with commercial phone, wire and radio services.

Thus in practically every major disaster where the forces of nature have destroyed ordinary communication lines when they have been needed most, it has been the hams who have brought aid to stricken areas. Sometimes it has been a neighborhood boy "playing" with his ham station in an attic that has saved lives and brought help when floods and storms have otherwise isolated communities.

In the disastrous New England flood of 1936, loss of life was negligible compared with past emergencies. The authorities gave the credit for this saving of lives to the amateur radio operators who stood watch at their small transmitters during the storm. Their reports of the storm and river levels and their



PIONEER "HAMS"—First amateurs to experiment with the new microwave bands, *A. E. Harrison, W6BMS, Rockville Center, N. Y., and Reuben Merchant, W2LFG, Nassau, N. Y., used portable equipment to make contacts with stations 31 miles away.*



"HAM" AT HOME—Member of the American Radio Relay League, William J. Halligan, W9WZE, Chicago, in this de luxe studio chats with friends around the world.

calls for food and medical aid saved many isolated areas from worse tragedy.

To cope with emergencies in any part of the United States and its possessions, the amateurs now maintain an Emergency Corps of selected hams who will be able to keep up a system of intercommunication wherever the need may arise. Organized by the American Radio Relay League, the Corps is made up of amateurs with portable equipment independent of local power lines who can take over when other means of communication are destroyed.

The national organization of the hams, the American Radio Relay League, was founded in 1914 through the inspiration of a distinguished radio amateur of his day. The late Hiram Percy Maxim, famed inventor, scientist and author, saw the need for an organized relay system among the hams to facilitate messages being sent long distances. At that time, limited ranges of shortwave transmission required a relay system. Today, when hams can send messages around the world, elaborate relay organizations are the nation's "communication insurance" in emergencies.

Pearl Harbor abruptly stopped amateur radio operations. Asked to go off the air the evening of December 7, 1941, the hams quickly relayed their last pre-war message and ceased operating for

the duration of the war. During the war the government used shortwave stations on the amateur bands.

The war, fought in the laboratory and at the control panels as well as behind the guns, brought many thousands of radio amateurs into the Armed Forces and war industry. These were some of the nation's best trained personnel to cope with the problems of wartime radio and electronics—trained by building and operating their own stations.

The Army and Navy eagerly sought the services of hams, finding that these men, accustomed to operating a radio station with a coil of wire, a pair of pliers and their own ingenuity, were well suited to keep sensitive equipment such as radar operating.

Now back from the war, amateur radio finds some of its prewar bands still being used by the Army and Navy, but even the "DX Hound" finds regulations limiting international communicating by amateurs have been lifted.

Returning, too, and eager to enter the fascinating and skilled pastime of the hams, are many thousands of men and women whom the Army and Navy have acquainted with radio and electronics during the war.

Postwar amateur radio has already entered a field opened by war-time discoveries. Amateurs are now invading the

super-high frequencies of radar's microwaves. Limited in distance, microwave beams are narrower than ordinary waves and permit use of smaller antennas and directional equipment not practical at lower frequencies. This holds promises of more private, direct beam communications using midget antennas.

In first experiments with the new frequencies, amateurs talked to each other across 31 miles on a frequency of 5,300 megacycles using an antenna less than one-half inch long.

Stimulated interest in radio, plus the war-time discoveries, promise boom years for amateur radio. Meanwhile, President Bailey of the American Radio Relay League looks to the future when hams will be operating their own television stations.

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If you want to know how to become a radio ham or build an easily-constructed receiver, send two 3-cent stamps to SCIENCE NEWS LETTER, 1719 N St., NW, Washington 6, D. C., and ask for Bulletin R-10.

TECHNOLOGY

Many Opportunities For Technical Men

➤ THOUSANDS of opportunities for technical men will exist during the next years in American industry, E. C. Wright of the National Tube Company told a meeting of the American Institute of Mining and Metallurgical Engineers in Chicago. The demand for metallurgical engineers will continue to grow, he said, and emphasized that students in preparation for this profession need thorough training in such fundamental sciences as physics, physical chemistry, thermodynamics and mathematics.

He based his statements on experience in steel metallurgy in training graduates from various types of college courses in the plants of the company he represents. He advocated a clear-cut college-industrial training program covering at least 10 years for recruiting undergraduates and graduate students each year, standard apprenticeship courses, with adequate pay rates and working hours and a training program best fitting each industry.

Cooperative arrangements should be made with selected colleges, he said, to insure that apprentices be obtained from a number of different schools, and every effort should be made to mobilize undergraduates for summer and vacation work as early as possible in their college courses. By these means, he predicted, the steel industry will build up a reservoir of metallurgical engineering talent.

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