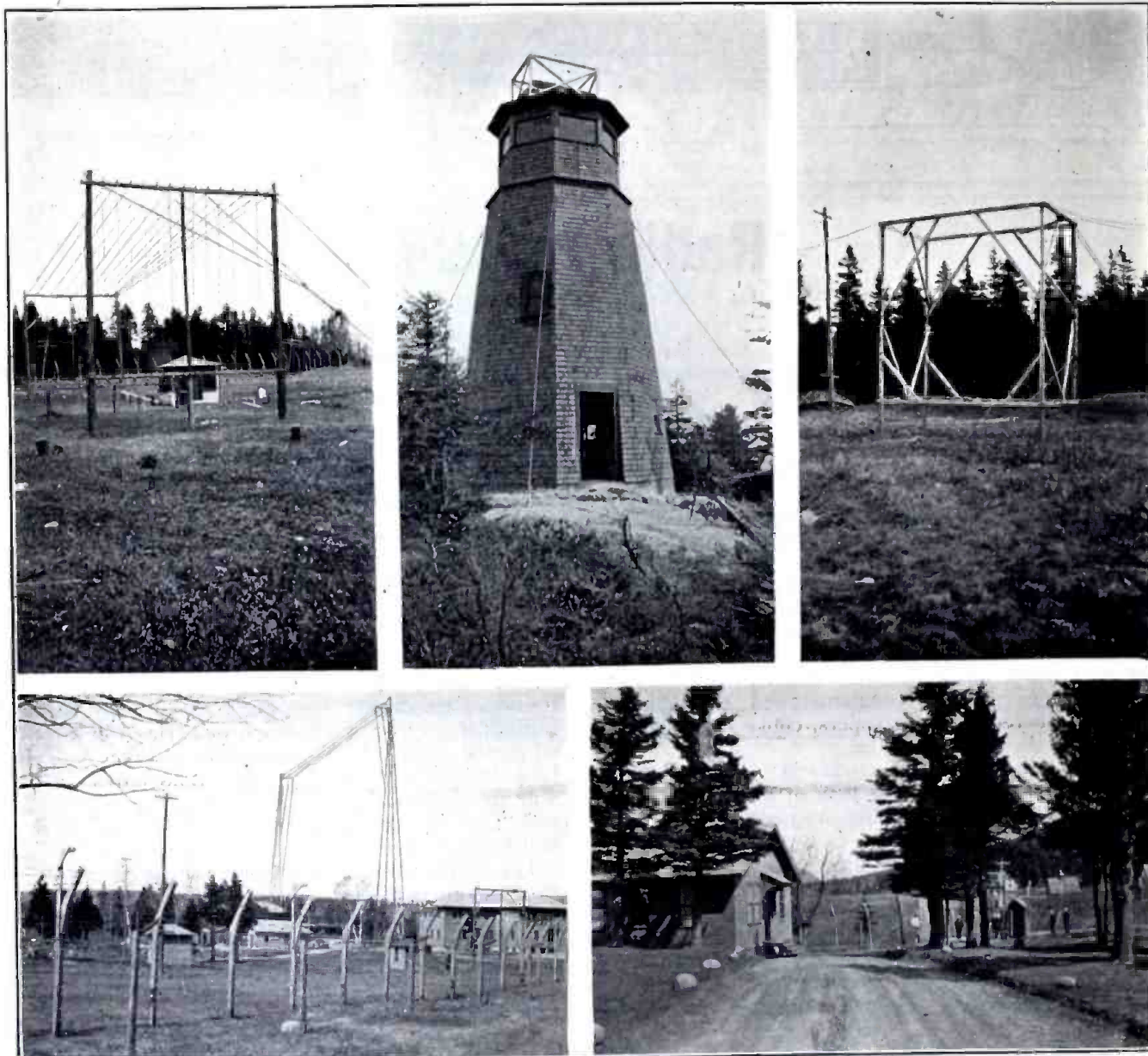


The Otter Cliffs Naval Receiving Station

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In These Illustrations the Upper Left Hand Cut Represents One Type of Field Receiving Booth as Well as a Permanently Adjusted Loop Antenna. No, Reader, the Center Picture Is Not That of a Lighthouse But Is the Radio Compass Station at Otter Cliff. In the Upper Right Picture Is Shown an Experimental Loop Used for High Speed Tests on European Signals. In the Lower Left Hand Corner Is Shown the Approach to the Radio Reservation Showing Steel Masts, Buildings, Field Receiving Booths, and High, Double Barbed Wire Fence With Charged Wires. To the Lower Right Is Shown the Main Gate of the Reservation.

SITUATED far up on the Maine coast, on Mount Desert Island, six and one-half miles from Bar Harbor, is located the U. S. Navy's largest and most important radio receiving station. So much has been heard and published of this station that the name has become very familiar, but owing to its remote location few have ventured a visit, and perhaps not a little curiosity exists as to just what the government has established there.

The writer had long heard of Otter Cliffs and like others perhaps had formed an uncertain mental opinion or picture as to just what the station really looked like. So much has been heard of the phenomenal receiving conditions there, minimum atmospheres and other desirable factors that one is inclined to regard the location as a sort of a "radio fairy-land".

With the name "Cliffs" in mind, and having visited Bar Harbor from the sea several years ago, it was difficult for the writer to imagine the extremely high and

irregular coast line, the highest on the Atlantic coast, as being desirable for radio receiving purposes. Instead he had pictured a few small receiving shacks with several outdoor loops and telegraph poles, with overhanging fog and dampness trickling from the roofs, the fog being recollections of his previous visit to Bar Harbor.

Arriving at Bar Harbor after an hour's pleasant sail, the writer boarded the side car of a motor-cycle, operated by a marine orderly, and shortly indulged in a most exciting ride along the cliff road high above the sea. Once more the natural beauties of the coast were unfolded, this time however gazing toward the sea.

Finally after much rough riding, bumping and winding thru the combination woodland and rocky roads, the writer was startled to suddenly enter a cleared section and to observe a number of large buildings, tall masts and a bewildering network of antennae, loops and telegraph poles.

The entire reservation is surrounded by

a high double barbed wire fence. The top wires of this enclosure are strung on insulators and during the war a potential of several thousands volts was constantly maintained.

A marine guard at the main gate greeted our arrival and after necessary military formalities we drew up before the Administration Building and were ushered before the officer in charge, Lieutenant S. V. Edwards, U. S. N. As the darkness was rapidly approaching, Lieutenant Edwards suggested awaiting until the following morning before an inspection of the reservation. Motion pictures were being shown in the recreation hall that evening for the amusement of the station crew off watch followed by an informal dance. The writer was agreeably surprised to note how complete were the facilities for recreation. With several pool tables, a tennis court, baseball teams and other sports, conducted by the athletic officer, the radio operator has little time for dull moments at Otter

Cliffs one is assured of that, at least.

After an excellent dinner, served by the station chef, and a real bath, the writer was conducted to a sleeping room most complete in its comforts, such as the best hotel could boast. The windows opened out over a steep embankment, down the coast toward several lighthouses, monotonously flashing through the night. A full moon added to the enchanting view and the writer was wooed to sleep by the swish of the surf on the rocks far below and the moan of the nearby pines.

Awakening early by the strains of a bugle sounding reveille, a magnificent view was enjoyed with the rising sun sparkling over the sea. The writer could hardly restrain himself with impatience and curiosity to examine the mysteries of the place. A bugle sounded call for breakfast and again the station chef did the honors.

It was noted that a strict military spirit prevailed over the place, and as the writer stepped out upon the spacious porch of the Administration building, the bugler was sounding "colors" while all hands stood at attention during the hoisting of the flag to the masthead, followed immediately by "boat-call" when a truck quickly drew up before the porch awaiting orders from the officer of the day to proceed on its regular trip to Bar Harbor in much the same manner as occurs upon a warship at anchor in a river or bay near port.

From the porch of the Administration building, which is a former club house reconstructed by the government to serve for office purposes, officers' mess hall and sleeping quarters, the writer could observe several large buildings which were explained to him as being a recreation hall, crew's dormitory and mess hall, main operating room, marine guard barracks and several shacks far out in the field used as individual receiving booths, each employing an antenna of the loop type. Connection is made to each receiving booth by telegraph wire from the main operating room, adjoining the Administration building.

Closer inspection revealed the receiving loops and various methods of reception. Several types are in use, but all loops are absolutely stationary. Of course they are permanently arranged in the proper direction for best reception from the emanating point of the incoming signals. One type of loop which appeared rather unique was constructed from four ordinary telegraph poles spaced in pairs, about sixty feet apart and arranged with cross pieces at top and just above the ground. Upon these cross pieces were arranged, ordinary telegraph glass insulators for securing the receiving wire. The proper spacing and number of wires in use were decided upon by previous experiments.

Another type was constructed from single telegraph poles about sixty feet apart with ordinary cross arms at the top as well as a few inches above the ground, upon which were several glass insulators with the wires looped thereon.

A cage loop was located in the field for the purpose of experiments and upon this loop by the way are being conducted extensive receiving tests on high speed reception. A similar loop is located near the main operating room on which is received signals from the Canal Zone and the West Indies.

Some success has been obtained in reception of long distance signals upon a single wire laid carelessly upon the ground surface and extending one mile in each direction up and down the coast with the receiving apparatus located in the middle of the wire.

Each receiving loop and booth has been assigned a particular station to copy and a strict operating routine is observed. The Naval Communication Service depends upon Otter Cliffs for nearly all Atlantic reception and signals are copied from Germany, France, Norway, Italy, the West

Indies and the Canal Zone. It is with regret that owing to the confidential policy of the Naval service the writer is unable to explain in detail the circuits employed at this station. It may be said, however, that signals are received from Europe and other long distance points with sufficient strength to allow an operator to copy upon a typewriter with perfect ease. No attempt is made to isolate the operator and the door and windows are left wide open. Should necessity require silence, the receiving rooms are so constructed as to be absolutely sound-proof.

Otter Cliffs is connected with Washington and other Naval communication points by leased telegraph lines. Commercial radio traffic is handled from Germany, Norway and France, and experience over several months of ever increasing volume of traffic has shown that the service is greatly appreciated by the various business interests who have obtained excellent results.

Much has been mentioned in recent lectures and publications of the exceptional signals at Otter Cliffs with an absence of atmospheric difficulties, and this fact was substantiated by the writer's visit. One explanation for this phenomena is perhaps due to the moist nature of the soil, as it is possible to locate water a few inches below the ground at most any spot on the reservation. A clear stretch toward the sea and the lack of high trees probably also aids reception. Of course, power plants, high structures and local strays caused by high tension generators are absolutely remote from this section of the country which is most desirable.

The two steel towers, nearly two hundred feet in height, are used for the reception of spark signals. The ship traffic, both official and commercial, is very heavy



Close-up View of One of the Field Receiving Booths; This One Being Designed to Receive Signals From Lyons, France. Mr. Cole, One of the Officers, is Shown in the Foreground.

and a large volume of radio business is exchanged with the transatlantic liners. The spark transmitter for Otter Cliffs is located at Sea Wall, a distance of nine miles to the southwest. However, the operator controls the transmitter from Otter Cliffs by a remote control system.

Two radio compass stations are also operated from Otter Cliffs by remote control, and bearings are furnished vessels when requested. It will be noted in Fig. II. The unusual construction of the radio compass house, resembling a lighthouse, may be noted from the accompanying illustrations. The compass coil is inside the house about ten feet above the receiving instruments which are on the ground floor. A battery charging set as well as the batteries are located in a small out-house.

Considering the beautiful location of Otter Cliffs station and the unlimited means taken by the government for the welfare

of the operators stationed there, it is doubtful whether a more pleasant duty could be secured in the whole radio world, Naval or commercial. Every effort has been made for the comfort of the personnel, excellent sleeping dormitories, meals fit for kings, and plenty of recreation while off duty. A completely equipped hospital with a Naval surgeon is attached to the station as well as a Naval dentist. The station paymaster conducts a commissary store, where food supplies may be purchased at cost. Married personnel are permitted to reside near the station.

The station consists of over one hundred officers and men, including marine guard, operators, electricians, cooks and other necessary specialists.

With the recently increased Naval pay and a generous allowance for shore duty the life of a Naval radio operator, especially at Otter Cliffs, looks rather inviting.

DO MOTHS USE RADIO WAVES?

Do moths use radio telegraphy?

This query is not nearly so grotesque as it may at first appear, says Hubert Stringer in *The London Daily Mail*. During the pairing season in the month of June moths of certain species are observed to communicate with each other over distances as great as one or two miles by some means unknown. A female vaporer moth, for instance, enclosed in a wooden pillbox, will attract males of its species from all directions.

Now, it is not by scent that the position of the female moth is discovered, since the males will approach down wind; neither can it be by a sound of some frequency inaudible to human ears, for a female may be enclosed in a sound-proof box and the males will still unerringly find her. Entomologists so far have shelved this mystery under the head of communication by some means unknown, and there in the textbooks the matter rests.

It is now high time that experiments were made upon the supposition that radio telegraphy may afford a solution. If this should prove to be the fact it will undoubtedly be found that electro-magnetic waves of exceedingly short wave length are employed. Now, light is an electro-magnetic wave of very short wave length; both glow worms and fireflies emit light under similar conditions, so there is nothing so very improbable in the emission of slightly longer, and hence invisible, waves by other insects.

Observed facts seem to lend color to the idea.

Moths have antennae. These, besides acting as feelers, may serve another use—that of transmitting and receiving aërials. The antennae of the female, who is the transmitter, differ in design from those of the male, who receives. Moreover, the male moth when approaching the female, is seen to alight often in an uncertain manner swinging his antennae, much as an operator swings a radio direction finding frame to discover from what direction signals emanate.

Editor's Note: Let us hasten to apologize for this bit of radio humoresque. We blame it all on our English cousins. We can neither prove nor disprove the theory, as we really are not in the moth business. Our particular worry is confined to more potential insects—cr., you know what we mean. They are sometimes called "radio bugs."

RATE CHANGES.

Beginning April 1, 1920, the rate for North and South American service and transoceanic service on all vessels operated and controlled by the Radio Corporation of America will be 4 cents per word.

On ship and coast stations operated and controlled by the International Radio Telegraph Co. there is no charge for relay traffic.