

**FOSTER'S FOG SIGNALS.**

The problem of safety from collision at sea has rightly been divided into three parts: First, to prevent the collision; second, to save the ship in case of collision; third, in case the ship must be abandoned, to save the passengers and crew. Foster's system of fog-signaling aims to reach the root of the matter by preventing the collision, and so to make provision for the second and third parts of the prob-

east, for instance, being one long and one short, while west is one short and one long, so that if you learn half the code you know the other half.

The full code is as follows: One long blast, the signal you hear is north of you; one short blast, it is south of you. Two long blasts, signal is northeast; two short blasts, it is southwest. One long and one short, it is east; one short and one long, it is west. One long and two short, it is southeast; two short

Morse code, but the messages sent are inaudible to any vessel but the one toward which the megaphone is directed, so that men-of-war might send messages which could not be heard by an enemy.

When placed upon a lighthouse, this apparatus is particularly useful to small boats that may be caught in a fog without a compass, because, if the sailor knows the course he should steer from the lighthouse, he can get into the range of the proper signal and keep in it until he arrives at his destination. With the present system of signaling it is a common thing for a small boat without a compass to be aware that there is a fog signal blowing on the port hand, for instance, but quite impossible for the sailor to tell whether he is on the north, south, east or west side of that signal; therefore, he has not the slightest idea of which direction he ought to take in order to reach port.

This apparatus was erected at Falkner's Island, on Long Island Sound, and thoroughly tested by a special committee appointed by the Lighthouse Board at Washington. The report of the committee was so favorable that the United States government immediately purchased the apparatus as it stood, and asked Congress for an appropriation for the erection of similar fog signals at other points.

The Canadian government have also purchased the apparatus, and are erecting a signaling station at Fame Point, in the Gulf of St. Lawrence.

**Tycho Brahe's Tomb Opened.**

On the occasion of the three hundredth anniversary of Tycho Brahe's death the Prague Town Council decided to gather together the remains of the celebrated astronomer, which were in the Teyn Church, and bury them anew. Under the guidance of Mr. Herlein this operation was begun. After having lifted the stone block on the monument, which is situated near the first column in the nave, and which bears a full-length effigy of the great astronomer, a semi-collared arch was found, and on removing the stones two mouldering coffins were seen. On the following day a committee met to determine whether these bodies were those of Tycho Brahe and his wife. Two work-



FALKNER ISLAND, LONG ISLAND SOUND, SHOWING FOG-SIGNAL STATION.

lem unnecessary. This is accomplished by means of a signaling apparatus which not only warns approaching vessels that they are in close proximity, but enables each to tell the other its exact compass bearing from the other, and also the course it is steering. The same apparatus can be used for communicating by the Morse code during fogs.

The great difficulty with sound signals, as distinguished from light signals, is that they cannot be located with accuracy. If the fog signals were as easily located as the lights, navigation would be as simple in thick weather as it is at night.

The Hamilton-Foster system of fog-signaling is designed to overcome this difficulty by making the sounds of such a character that they shall announce with certainty to any person within hearing distance the exact direction from which the warning sounds come.

This is accomplished by the use of a sound director or megaphone, which concentrates and projects various signals first in one direction and then in another, combined with an apparatus for varying the signal according to the direction to which it is sent. Any passing vessel must hear one of these sounds more clearly than the others, and the signal which it hears most distinctly tells it the exact direction from which the sound comes.

Experiments made by the Lighthouse Board of the United States have shown that when a vessel is opposite one of the megaphones the sound sent out by that megaphone is overpoweringly greater than the sound from any of the others, and that at a distance of more than a mile it is impossible to hear any of the sounds except those sent by the megaphone which is pointed directly toward the listener.

The apparatus is in the form of a single automatically revolving megaphone, which turns to each of the eight points of the compass in turn, west, northwest, north, etc., and gives a signal for each point by means of a simple code of long and short blasts.

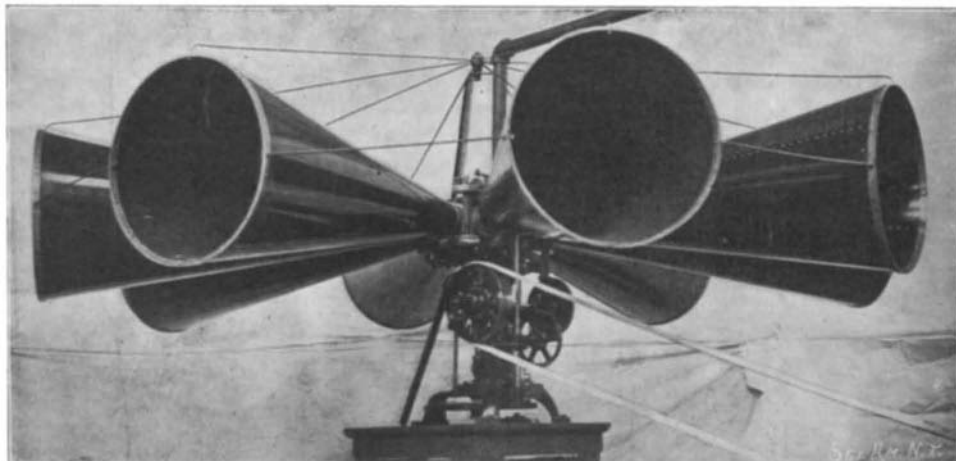
All the signals which signify the general direction of west begin with the short blast, while all those signifying the general direction of east begin with a long blast. Opposite points have opposite signals,

and one long, it is northwest. When the apparatus is placed upon moving vessels for the purpose of avoiding collisions it is so constructed that the megaphone can be easily turned, so as to give the proper signals no matter how much or how often the vessel changes its course. To accomplish this, a pointer on a dial representing a compass is shifted so as to agree with the course steered. If the vessel's course is W. S. W., for instance, the pointer is simply put on that mark on the dial.

As the vessel proceeds upon her course she blows her signals automatically, giving any other vessel which may be in the neighborhood exact information as to her position. As the revolving megaphone in its circuit points toward the bow of the vessel upon which it is placed, it blows a supplementary signal of different character, such as the whistle of the smokestack which shows that the megaphone is then pointing directly toward the course which the vessel is steering. If this course signal immediately precedes or follows a compass signal, it gives the vessel's course. If the megaphone signals "east," and the whistle immediately follows, showing that the megaphone is pointed over the bow, the vessel must be east of you, and its course must be a little north of west.

Men-of-war use this apparatus to enable the vessels of a squadron to maintain an exact position with relation to one another on the darkest night, without having to show a light of any kind. During blockades a vessel could indicate its position to the commodore at night, and the signals would be quite inaudible on shore, as the megaphone would not be pointed that way. In foggy weather a fleet could proceed in regular order, each vessel in line advising the next one of its exact position.

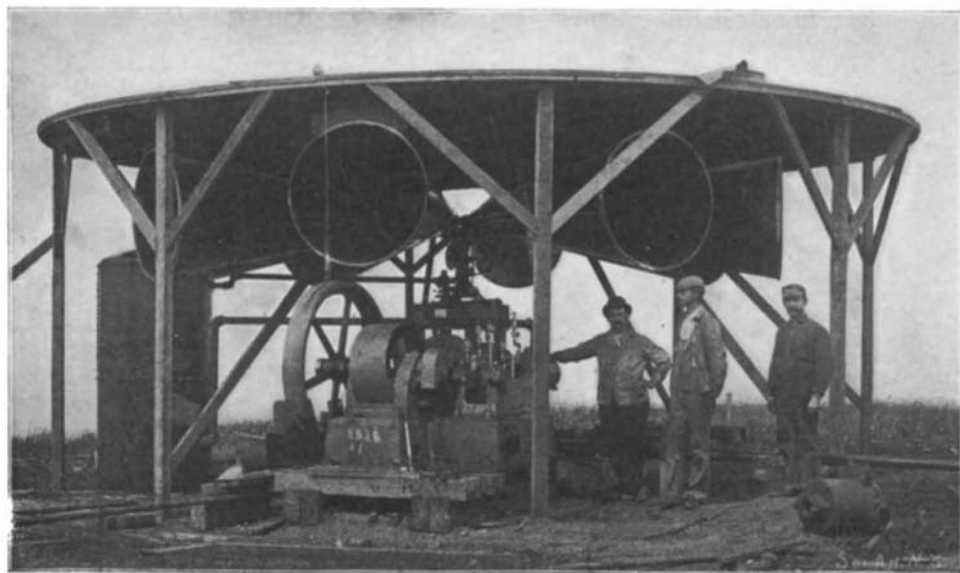
A very simple attachment to the signaling apparatus enables vessels to communicate with one another by the



HAMILTON-FOSTER FOG SIGNAL WITH FIVE-FOOT MEGAPHONES.

men with candles descended into the vault and removed the débris which covered the coffins, the wood of which was quite rotten and fell to pieces at every rough touch. About 10 A. M., the lid of the first coffin was free to be removed. It was a surprising sight that met the eye; the body in the coffin was a wonderful likeness of the effigy on the monument. The head was slightly turned to one side, the bones of the face and the peaked Spanish beard being well preserved. The head was covered with a skull cap, and the neck was surrounded by a Spanish ruff, which, like the remainder of the clothing, had suffered little during the three hundred years since Tycho Brahe was laid in his last resting-place. The feet were shod in long cavalry boots reaching up over the knee. That the body was Tycho Brahe's was also seen from the absence of the nose. Tycho lost this organ in a duel, and wore a silver one in its place. Among the rubbish was found a silver wreath and spray of flowers. The construction of the grave was rather remarkable, the stones being laid loosely over one another. This is all the more astonishing, seeing Tycho Brahe was buried with great pomp and honors; but it is supposed that the vault broke down during the restoration of the church in 1721.

The Fire Department of New York city has great difficulty in keeping the fire alarm telegraph system in order owing to the rapid transit operations. The inspectors recently reported that more than three hundred fire boxes were out of order. Temporary repairs were made, and the wires are now in working order. It is needless to say that the city was in great danger during the time these wires were out of order.



FOG SIGNAL PLANT, FALKNER ISLAND.