

SPRING'S ICEBERG DANGERS

WITH the approach of Spring, the danger from icebergs and fields to the transatlantic steamships becomes acute. At any time of the year ice may be encountered north of the fortieth parallel of latitude, approximately that of New York, and between 42 and 55 degrees west longitude, but it is when the increasing warmth of the sun loosens the arctic floes and causes the bergs to melt and float from the places where they have been stranded that there is the greatest danger to the mariner.

For many years the United States Hydrographic Office has been making a study of the ice perils of the North Atlantic, and the results have been issued in a pamphlet which has been sent to mariners and skippers. The pamphlet contains maps showing the drift of bergs and of field ice for ten years, and contains directions as to how floating ice may be detected and avoided.

The bergs have their origin almost exclusively in Western Greenland, although a few may come around Cape Farewell from the Spitzbergen Sea, and some from Hudson Bay.

A huge sheet of ice a mile thick in places covers the whole of Greenland. This gradually slides down the valleys toward the sea, into which it is thrust in great sheets fifty miles wide. As these ends become too heavy they break off and become bergs. The process is known as calving. The pieces set adrift thus may be 1,000 feet out of the water and a mile square, but as they drift about they become broken and continue to diminish in size until they finally disappear completely. The process sometimes takes several years.

Once set adrift, icebergs find their way into the Labrador current and begin their journey. But of all bergs so set adrift only a very small proportion ever finds its way into the path of the transatlantic steamers.

Nor do all bergs take the same course. Some go south, others lodge against the shore or against islands. Two years may separate the time that two bergs reach a low latitude, though they were "calved" at the same moment.

Field ice also offers an obstruction to the icebergs, though by their great size and bulk they often act as plows, and aid materially in breaking up the ice fields which obstruct the arctic basin.

Ice fields are more affected by the wind than are icebergs. Bergs generally drift with the current, so that one sometimes is seen moving into the wind.

Advantage is taken of this by the sealing and fishing boats when caught in an ice field. They often moor to an iceberg and are towed miles through ice, through which otherwise they could make no headway. This is accomplished by sinking an anchor into the berg and using a strong towline. As the berg advances open water with small pieces of floating ice is left astern.

But this is indeed a dangerous thing to do. All ice is brittle, but especially icebergs. A blow of an axe has been known to split them, while the report of a gun at times will accomplish the same end. In July and August, when the bergs are breaking up along the coast of Labrador, the noise at times is deafening, and the noise of one often causes another to break up.

From their very nature icebergs assume an endless variety of shapes. Some resemble geometrical figures, while others carry fantastic domes, spires, minarets. Sometimes they appear to be veritable ice bridges with two separate supports. In many there are great caves and indentations. As they drift south and begin melting cascades of water pour down their sides or run from the tips of the hundreds of icicles which depend from every ledge.

Frequently there are outlying spurs in the water, as dangerous to ships as sub-

merged reefs. For this reason vessels should always give them a wide berth, half a mile being considered the nearest that one may be approached with safety.

Several years ago the British steamship Nessmore ran into an iceberg and stove in her bows. When she was docked a scratch was found next the keel the full length of the ship, the plates being almost cut through. The ship evidently struck a submerged spur. The Government report says:

"It is generally best for ships to go to windward of them, because disintegrated fragments have a tendency to drift to leeward, while open water will be found to windward."

So nicely are icebergs balanced in the water that the slightest melting sometimes will cause the centre of gravity to shift, and the entire berg will capsize or founder. Thus many ships have been wrecked.

Field ice is formed throughout the waters within the arctic circle south as far as Newfoundland, and each year vast floes leave the shores and drift south into the paths of commerce. The arctic ice often has lived through several seasons in the Far North, and occasionally is ten to fifteen and sometimes twenty feet thick. Because of its continual motion, due to currents, wind, &c., gradually it becomes broken up. Swells from storms in the open sea cause it to raft, or pile, one pan on another—in the arctic every piece of field ice is a pan—until it is covered with hummocks.

Ice also becomes rafted by the grinding of a free field against another frozen to the shore, or by the grinding of two fields against each other when one is given to a turning motion by contrary wind and tide. This rotary motion, it is said, is particularly dangerous to ships that get caught between fields. Regarding the drift of the ice, the report cites the case of Capt. Tyson:

"On Oct. 14, 1871," it says, "he and a party of nineteen others were separated from the United States surveying ship *Polaris* in latitude 78 north, and being unable to regain the ship remained on the floe and accomplished one of the most wonderful journeys on record. After a drift of over 1,500 miles, they were picked up six months later—April 30, 1872—by the

Tigris, a sealing steamer from Newfoundland, near the Strait of Belle Isle, in latitude 53 degrees 35 minutes north and carried safely to port."

The appearance of the ice when it reaches Belle Isle is a fair indication of the weather through which it has passed. The more broken up the ice the rougher the weather.

A thin string of ice finds its way into the Gulf of St. Lawrence by Belle Isle Straits, but most of it continues south until it reaches the Gulf Stream. On the way a wind from the ocean will pile the ice against the Newfoundland coast and at times the harbors are closed until June or July, but a change of wind soon sends it out to sea again.

The ice which accumulates in the Gulf of St. Lawrence finds its way out again by way of the Cabot Strait. This never is frozen over, but between St. Paul Island and Cape Ray, N. F., about 60 miles, often there is a jam that blocks all passage for weeks. It is known as the "bridge," and by it as many as 300 ships have been detained in the gulf at one time. Referring to the appearance of the fields, the Government's report states:

"If heavy ice, it will be white, covered with snow, and be visible at a long distance; even in foggy weather it can often be seen. It is full of hummocks and its surface is very uneven, blocks have been piled upon each other, others stood on end, and the whole mass will form an impenetrable field.

"If the ice be lighter the pans will be smoother and more even, the angles ground down and turned up at the edges like so many large pond lilies. The appearance must decide whether a vessel

is warranted in trying to force her way through.

"In a smooth sea, should a vessel go slowly, there will be but little danger in attempting it. If too heavy she can easily haul out. Often an ice field will form a good lee for riding out a gale of wind as it will break the force of the wind, but care should be taken not to lie too close, for the pans often will stave in the bows of the strongest vessel.

"Before ice is seen from the deck, the ice blink will often indicate its presence. This is caused by the reflection of light from the sun or moon. On a clear day, over the ice on the horizon, the sky will be much lighter in color, so that a sharp lookout should be kept.

"On a clear day icebergs can be seen

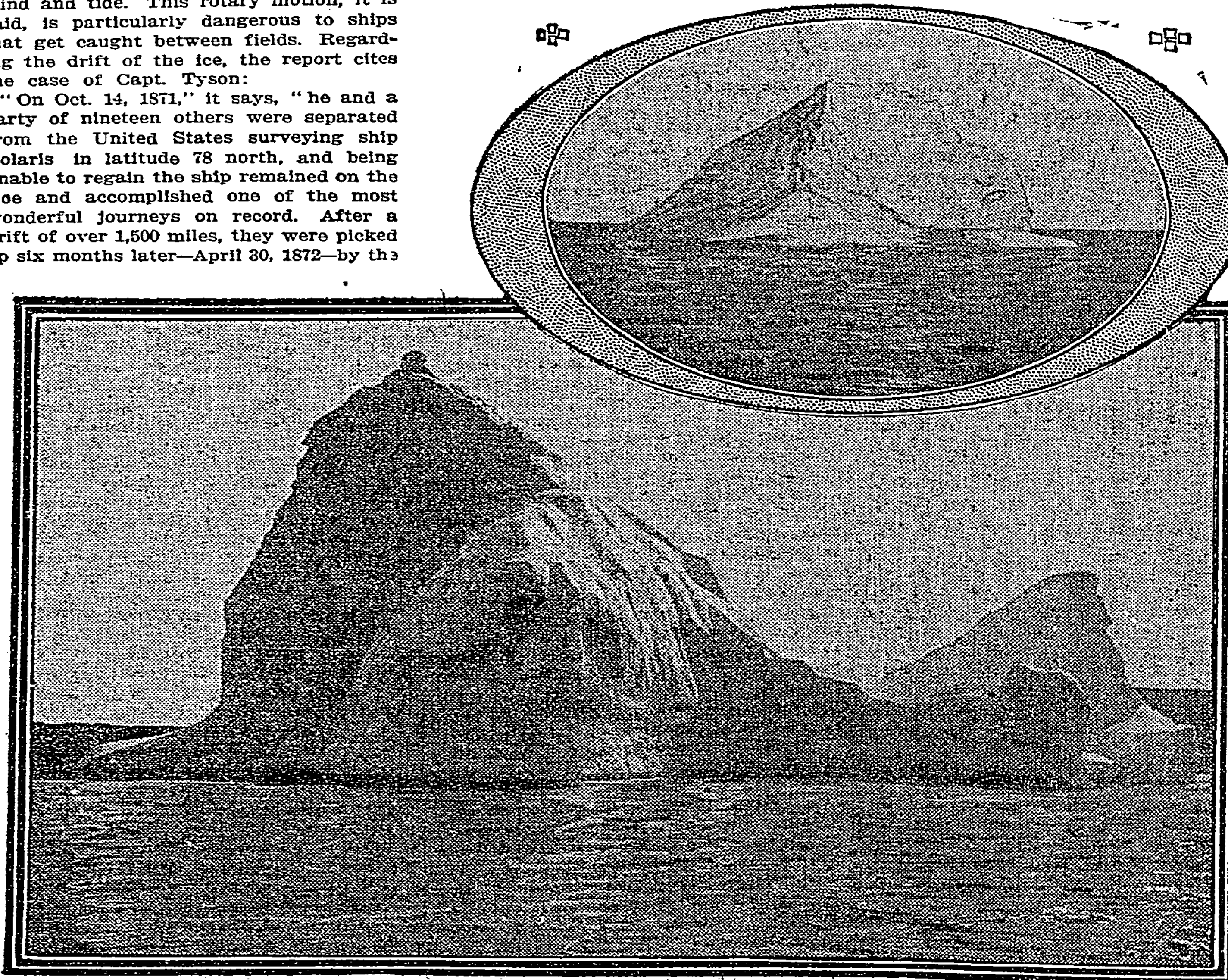
at a long distance, owing to their brightness, and at night by their effulgence. During foggy weather they are seen by their apparent blackness, if such a term can be applied. They can also be detected by the echo from the steam whistle or fog horn. This should be remembered, since by noting the time between the blast and the reflected sound the distance in feet may be found by multiplying the number of seconds elapsed by 550."

The presence of icebergs also may be discovered by the noise of their breaking up, which sounds like the breakers on the shore, or a "distant discharge of guns." The absence of swell or waves when a fresh wind is blowing also is an indication that there is ice or a shore to windward, and "the appearance of seal or birds far from land is an indication of the proximity of ice."

Mariners suspecting the proximity of ice also are cautioned by the Government to make frequent tests of the temperature of the water, as a sudden drop may mean ice to windward of the ship. The temperature of the air also is affected by icebergs, and a sudden drop may mean an approaching peril.

To provide against such dangers, ships now are being built to defy the ice. Few of these reach this port, though the *Florizel*, of the Red Cross Line, which plies between here and St. John's, N. F., is so constructed. The keel rises until it shows above the surface at the cutwater. The ship is sheathed with steel plates and she thus can ride on the ice, and break it down by her sheer weight.

During the sealing season, the *Florizel* is sent into the ice fields, and she has proven the most successful of the fleet in the size of the catch, and the few seals she lost through her inability to go through the field after them.



Icebergs Adrift Which Will be a Menace to Vessels