

"The Cyclone" and "The Tornado."

The difference between a cyclone and a tornado is defined by Mr. William Ferris, of the United States Coast Survey, to be this: A cyclone is usually a broad, flat, gyrating disc of atmosphere, very much greater in width than in altitude; a tornado is a column of gyrating air, the altitude of which is several times greater than its diameter. Cyclones are born of conditions extending over large areas; tornadoes depend rather upon the vertical relations of the atmosphere, and occur when, owing to local changes of temperature, the understrata of air burst up through the overlying strata. The enormous velocities of the ascending current of tornadoes are supposed to be caused by the difference between the gyrating velocities above and those on the surface. It is these ascending currents which carry up the vast bodies of water afterward precipitated in the form of a deluge of rain. The water is sometimes kept from falling by the ascending currents, and is often projected outside the area of the tornado, when it falls in a gentle shower over a large area. When the weight of the water overbears the force of the ascending currents, there occurs the tremendous fall of rain known as a cloud-burst. When the area of a tornado is very small, a land-spout or a water-spout may be formed, according as it is over land or water. The width of these spouts ranges between two feet and two hundred, and their height from thirty to fifteen hundred feet. A white equall is an invisible spout, formed when the dew-point is low. The accompanying cloud is invisible because of its height, but below there is a raging and boiling sea, with the gyrating current of air above it. Land spouts and water spouts are hollow.

A Cyclone.—In examining cyclones phenomena occasionally present themselves which strongly suggest the idea that they include within their circuit, as an independent meteor, the whirlwind or the tornado, the phenomena in question being most frequently met with in those cyclones which present, in close contiguity, masses of air differing very widely from each other in temperature or humidity. Of such cyclones the great storm of October 14 last appears to be one. On that occasion the changes of temperature and humidity were sharp and sudden, particularly from the Grampians to the Chevoits, the great fall occurring when the wind changed to northward. Off the Berkshire coast the darkness accompanying the changes of wind, temperature, and humidity was denser and more threatening than elsewhere, and almost simultaneously with the approach of these changes, a hurricane, or rather tornado, broke out with a devouring energy which bore everything before it. The tornado character of the storm off Eyemouth is shown by the accounts of some of the survivors, who describe the wind as blowing straight down from the sky with an impetuosity so vehement and overmastering that the sea for some extent was beaten down flat into a stretch of seething foam, in which many boats sank as if driven down beneath the foam by the wind, while outside this tract the waves

seemed to be driven up to a height absolutely appalling, which in their turn engulfed many of the boats yet remaining. Similar seas, with level wastes of seething foam, bounded immediately by waves of a height and threatening aspect never before witnessed, were encountered by several well-appointed steamers out in the middle of the North Sea during this storm, thus confirming the observations of the Eyemouth fishermen. These facts seem to point to one or perhaps more tornadoes of no inconsiderable dimensions, with slanting columns, the terrific force of the gyrations of whose lower extremities played no inconspicuous part in the devastation wrought during the continuance of this memorable storm.—*Nature*

In the Far North.

The ice region of the North is full of marvelous grandeur and mystery. It is not only mysterious in itself, but likewise in much of its history. Known to us only as associated with everything barren, frigid and forbidding, it yet possesses charms and even beauties that are especially its own. For nearly the whole year its frozen waters and frozen land present phenomena startling almost beyond imagination. Turn your eyes whither you will, in a space of 1,500 miles diameter around the geographical Pole, immense masses and fields of ice only are seen in every conceivable form, whether in the partly hidden land, or the all but completely covered sea. On the one hand may be towering mountains of rock, soaring high in majestic grandeur and encircled or divided from each other by mighty glaciers and fields of ice; on the other, there may be presented a seemingly limitless level of solid, varying from eight to fourteen feet in thickness, and in parts thrown up into enormous ridges, sometimes forty feet high, and of irregular lengths, with huge ice islands called bergs, scattered about upon its surface.

If it be the open season of summer, these bergs may be seen floating about in stately splendor, or occasionally when caught in currents or eddies, tearing along with ominous violence. If there has been a storm and the ocean has burst through and broken up the ice, the scene presented is a very wild one, and the utmost dexterity is required on the part of the mariner to avert danger from the masses dashing against the vessel's side. If it be calm or moderate weather, the picture Nature puts before the eye are marvellous. If the sky is clear, thousands of fairy-like castles or crystal cities thrown into ruins, appear to view. Reflected images of all imaginable shapes dance before you. In the air may be seen, inverted, some distant objects which in reality is far below the line of ordinary vision. Sometimes the sun does not look round, but oval; or perhaps there may appear to be four suns, or at night four moons, lighting up the ice-bergs. In winter also, the whole of one part of the heavens is often illuminated by the splendid coruscations of the AURORA BOREALIS. In summer, according to the latitude, there is no sun-sets for weeks; and during winter there is total darkness for a like period. The cold

is intense, except occasionally. Even in autumn thick ice will sometimes form in one night; and in winter or spring the register is generally from 30° to 60° below zero. Still if proper precautions be taken, even this extreme temperature is bearable.

Now, it is through such a region as this that explorers have to make their way. How they do it is a story often told, yet always interesting. In the first place these ships are more ordinarily strengthened to encounter ice; yet very often no common skill or human power is of any avail, and constant watchfulness of ice movements is needed. In summer the ice breaks away from the coast of Greenland, and not unfrequently leaves a narrow, tortuous passage round what is called Melville Bay. It is, however, exceedingly dangerous, and ships are often detained here a long while.

If the explorer has succeeded in passing Melville Bay, then Lancaster Sound or Smith Sound is entered. Seldom is this done till near the close of summer; consequently it is necessary to find some safe harbour in which to winter. Some ships have had no such shelter, and have drifted about—as did the two American vessels in 1850-51—all through the dark and bitter season. But supposing a winter harbour is found, then the ships are housed or covered in, and the crews properly attended to. What is next done in the way of wisely maintaining health by proper amusements, education and exercise, would take too long to tell. Enough to say that, except on the occasion of the last official Polar expedition, very little mortality has occurred. Indeed, health in the Arctic regions is more to be depended on than in tropical climes. During winter all hands are employed in making preparations for spring travelling. Then, when March arrives, sledges are packed, officers and men appointed, and away these explorers go, over ice and snow, along barren shores into unknown wastes, hundreds and hundreds of miles without the slightest hesitation. Strange, too, how accurately they mark their way, and even prearrange when separate parties shall again meet in certain localities at first only fixed by geographical science and assumed configuration of land.—CHAMBERS.

Judge Blatchford and his Almanacs.

The judge is known to all second-hand book stall keepers and junk dealers in New York, not as the richest and most industrious judge on any bench, but as the man who collects old almanacs. This whimsical pursuit is almost a mania with Judge Blatchford. From the stateliest nautical almanac down to the humblest patent medicine annual, nothing with the signs of the zodiac and the phases of the moon is foreign to his tastes. When he was practicing at the bar he was largely concerned with admiralty cases, and a series of almanacs is part of the library equipment of every admiralty lawyer. This was the origin of his speciality. He has now on hand the largest and most varied lot of old almanacs in the country, if not in the world. I should not call it a very