

The North Sea Ice Sheet.

IN his letter in NATURE, May 3 (p. 5), my friend Prof. Hughes calls attention to a most important fact. In archæology it has long been known how necessary it is to make sure that not only the exact *provenance* of an object is ascertained, but also that when found it was *in situ*, and was not the result of a later disturbance of the ground. Thus Mr. Franks has a pricket candlestick, made at Limoges, which was found several feet deep in gravel at Calcutta, and this strange fact was only explained when it was discovered that the gravel in question was ballast, which had been dredged from the Thames, deposited in the hold of a vessel, and redeposited at Calcutta. The same caution is more especially needed in geology. Prof. Hughes describes the foreign ballast which he saw stranded on our east coast, and warns us of the very wrong inferences that may be deduced from it. I would add to his statement that it was the custom of the old Danish pirates to use blocks of stone as anchors, and thus no doubt some foreign boulders have found their way to the east coast of Britain.

Here we seem to have an explanation of the occurrence of so-called Norwegian boulders on the Yorkshire coast between Hull and Scarborough and at Cleethorpes, and which, oddly enough, are not found in Scotland, though so much nearer Scandinavia.

It must be remembered that the mother rocks from which these Scandinavian boulders are supposed to have been detached do not occur on the western flanks of the Norwegian mountains at all. In this behalf I will quote Mr. Carvell Williams, himself a believer in some ultra-glacial views. He describes these boulders as consisting of the "typical augite syenite, which occurs only at Langeund Fiord, near Breng, and also porphyry and granite from the same region." *All of these rocks*, he says, came out of the Skagar Rack, and were brought by a glacier going south from Christiania and then south-west. Other rocks came from Fredericksvorn on the same coast."

This is assuredly a very difficult journey to understand. If the North Sea, as we are told, was filled with ice, how could an ice stream force its way from the comparatively low country round the Christiania Fiord right round the Nose of Norway, and then across the deep ocean basin to Britain? Prof. Bonney has argued that any ice sheet would be embayed in the great trough which skirts the coasts of Norway, out of which it could not rise again. Apart from this, it must be remembered that if the elevation of this ice sheet was so slight at the point when it started its journey as to enable it to get a load of these Norwegian boulders on its back from the comparatively low ground where the mother rock occurs *in situ*, it could not have the necessary slope to move beyond a very short distance. Pettersen has shown very admirably that the glaciers from the high mountains of Northern Norway, far from traversing the North Sea, were not powerful enough even to reach the string of islands which line the western shores of Norway, *a fortiori* would this capacity be lacking in the case of the ice from Christiania Fiord. The existence of the serrated and peaked Loloden islands in the route which a North Sea ice sheet must have traversed was long ago pointed out as a great impediment in the way of such a postulate. Again, if this vast ice sheet came from any part of Norway, how did it get the stones on to its back? for in that case all Norway must have been smothered with ice. Lastly, where is the terminal moraine, or anything like a moraine, left by this monster? A glacier is not like a river which deposits fewer and fewer stones from its head waters as it flows. On the contrary, a glacier deposits its greatest load at its furthest extremity. In the case in question we have a few sporadic stones only, whose origin may well have been such as that pointed out by Prof. Hughes. It seems to some of us, and I have argued the question in my "Glacial Nightmare," that the whole notion of a North Sea ice sheet is a product of some other form of reasoning than inductive science, and that we have no good reason to doubt that when the mountains of Scotland and Scandinavia were nursing large glaciers, the North Sea was free from ice, except perhaps some floating bergs, and was the home of a rich molluscan fauna. HENRY H. HOWORTH.

Festoon Cumulus or "Pocky" Cloud.

THE following observation of Dr. Clouston's "pocky" cloud, which I had an opportunity of making a few days ago during a sounding cruise on board H.M.S. *Jackal*, seems to throw some light on the conditions under which this somewhat rare phenomenon occurs in these islands.

At 9.30 a.m. on May 3, while sounding in lat. 59° 45' and

long. 1° 20' W., wind west-south-west, force 3 to 5, very gus'y, a heavy squall approached from windward and struck the ship; wind in the squall about north, maximum force 8 to 9. Similar squalls came up at intervals during the day, the weather remaining almost unchanged except for a slight veering of the wind in the afternoon and the appearance of a "mackerel sky" of unusually fine texture.

While sounding in lat. 59° 32' N., long. 1° 0' E., a squall similar to the others approached from windward (west), and reached the ship at 6.20 p.m. The wind again shifted some points to the northward, with a smart shower of rain and sleet. Ten minutes later the "pocky" cloud was observed, forming the rear of the squall cloud. The number of festoons or mammae was eight, with a possible ninth, of which two were incomplete, looking as if the bottom had come out of the "poke." The appearance fully maintained its reputation as a prognostic. The wind shifted to north-west about 9 p.m., and at midnight it was blowing a whole gale from that direction.

Before the "pocky" cloud was observed my attention was specially drawn to the weather by the peculiar nature of the sea disturbance. A moderate swell from windward appeared to be complicated by a cross sea from about north east, resulting in a kind of miniature of the pyramidal seas met with in the centre of tropical cyclones. When the gale broke out the sea produced in this way tried the *Jackal* to an extent out of all proportion to the violence of the wind. It would appear from the "Daily Weather Reports" that at the time the "pocky" cloud was seen the *Jackal* was slightly in advance and to the right of the centre of a depression which had shortly before begun to increase in depth. If the cloud was observed in a region where an ascending current was increasing in velocity, its indications are of obvious interest. In any case, Abercromby's statement ("Weather," p. 79), that the storm the festoons prognosticate belong to another cyclone following, requires modification.

Oxford, May 10.

H. N. DICKSON.

Ouramœba.

THIS peculiar amœboid animal was first observed by the late Dr. Jos. Leidy in 1874. Though he recognised in it the essential characters of the genus *Amœba*, the permanent filamentous appendages with which the posterior end of the body is provided led him to consider it a distinct genus. His description, embodied in "Freshwater Rhizopods of North America," was published by the United States Government in 1879, a brief notice of the form having appeared previously in the *Proceedings* of the Academy of Natural Sciences of Philadelphia. Dr. Leidy cites two or more notices of the same animal by Mr. Archer, of Dublin, who, however, held it to be a form of Wallich's *Amœba villosa*.

In 1879 it was stated by Leidy to be rare, he having found it only in two localities on a single stream in Pennsylvania; but Dr. Stokes, of Trenton, N.J., informs me that it is somewhat common in that vicinity.

My own observations, made in February and March of the present year, upon the only specimens which I have met in this locality, convince me that a suspicion which Dr. Leidy expresses, but which he rejects, is, after all, well-grounded, namely, that the filaments, which constitute the only peculiarity of the creature, are of the nature of a parasitic fungus growing upon the genus *Amœba*.

The citation by any reader of NATURE of published observations upon this singular form since Leidy's monograph would be prized by me.

Wake Forest College, N.C.

WM. L. POTEAT.

An Intelligence of the Frog.

DR. ROMANES, in his "Animal Intelligence," p. 254, says that, "frogs seem to have definite ideas of locality." This matter appears to have been noticed of old by the Japanese and Chinese, inasmuch as we credit Ryūan Terashima's explanation of the names given to the frog by the two nations. In his "Illustrated Encyclopedia of Three Systems of Japan and China," completed in 1713 (new edition, Tokio, 1884, book liv. p. 553), he remarks:—"When frogs are 'removed far' (Chinese, *hia*), they always 'long' (Chinese, *mi*) after the original locality; hence the Chinese name 'Hia-má.' For the similar reason the Japanese call them 'Kaeru' (meaning 'return')." Shisei Tagawa (1707-76), one of the most erudite lexicographers of Japan, holds to the same opinion in his "Dast from a Sawyer's Workshop" (Tokio, 1891, p. 8).

May 12.

KUMAGUSU MINAKATA.