

The Recent Severe Weather

GRANTING (1) that solar periodicity produces a corresponding periodicity in any of the elements which make the climate of the earth as a whole what it is, and (2) that the expression for that periodical change contains only the two first terms of the general expression, *i.e.* that there are no secondary . . . periods, both large admissions in the present state of our knowledge, it does not appear how a simple fluctuation of solar temperature, recurring, we will say, every eleven years, could produce several periodic fluctuations of terrestrial temperature, identical in duration but not simultaneous, some one or more being therefore partially or completely opposed in phase to some one or more of the remainder, and to the causal fluctuation.

Further, we know that solar conditions are not as simple as those above assumed, and that the sun-spot period is subject to large and seemingly capricious variation amounting to something like  $\pm 3$  years at least. If then, as some able physicists believe, solar atmospheric changes are reflected in marked variations in terrestrial climate, we shall find these latter to be common to the whole earth, and to be represented by a function of the same form. The mere citation of local (for in this view even the climate of Europe is merely local) phenomena which have occurred at intervals approximately equal *individually* to the *average* length of a sun-spot period, proves nothing in favour of the view supported by your correspondent "H. W. C.," in NATURE, vol. xxiii, pp. 329, 363; and an analysis of the dates given in his first communication, which would make the occurrence of great frosts simultaneous, sometimes with sun-spot maxima, at other times with sun-spot minima, seems calculated to weaken his case in a material degree, on the supposition of an *uniform* eleven-year cycle.

Arranging the dates given by him in parallel column with the eleventh years of the present century, we get

Dates of severe frost.	1800 +
1. 1801—2	0
2. 1810—11	11
3. 1813—14	—
4. 1819—20	22
5. 1837—38	33
6. 1840—41	44
7. 1856—57	55
8. 1860—61	66
9. 1870—71	77
10. 1880—81	88

2 and 7 are placed as above, as those positions seem to favour the cyclic theory more than their original ones did. A *complete* list of great frosts collated with *actual* sun-spot variations is however most desirable, and would be specially valuable if representative of terrestrial climate in the cosmical sense. I trust that H. W. C. will favour us with such a table.

London, February 19

M. R. I. A.

Migration of the Wagtail

I FEAR I may be attempting to trespass too frequently on the columns of NATURE recently, but the paper in vol. xxiii, p. 387 on the subject of wagtails taking a passage on the backs of cranes in a long flight, resembles so much a somewhat similar story told and believed in by the Indians in several parts of North America, that I venture to send you an account of it.

All the Indians (Maskegon Crees) round the south-western part of Hudson's Bay, assert that a small bird of the Fringillidæ tribe takes a passage northward in the spring on the back of the Canada goose (*A. Canadensis*), which reaches the shores of Hudson's Bay about the last week of April.

They say that they have often seen little birds fly away from geese when the latter have been shot or shot at.

An intelligent, truthful, and educated Indian named George Rivers, who was very frequently my shooting companion for some years, assured me that he had witnessed this, and I believe I once saw it occur.

It is only the Canada goose that these little migrants use as an aerial conveyance, and certainly they both arrive at the same date, which is a week or two earlier than the other kinds of geese (*A. hyperboreus* and *albifrons*) make their appearance.

I knew the little bird well and have preserved specimens of it, but it is so long ago that I have forgotten the name.

The Indians on the shores of Athabasca and Great Slave Lakes—both great resorts of wild geese—tell a similar story. If a fabrication, I do not see why it should be invented about the

Canada goose only, and not about other species which are equally numerous.

It may perhaps be necessary to explain that all the Coast Indians of Hudson's Bay devote a month or more every spring to wild fowl (chiefly geese) shooting, the game killed forming their entire food for the time.

As soon as the geese begin to arrive, the Indian constructs a concealment of willows and grass, usually near a pool of open water, at the edge of which he sets up decoys. When geese are seen approaching (usually flying at a great height) the Indian imitates their call, and the geese on seeing the decoys circle round, gradually coming lower down until within shot, when they are fired at. It is from these high-flying geese that the small birds are seen to come.

If the geese are flying low it is a pretty sure indication that they have already rested on the ground somewhere near, after their long flight, when of course their tiny passengers would have alighted.

JOHN RAE

Royal Institution, February 26

Phosphorescence of the Sea

YOU will perhaps permit me to record the occurrence of a phenomenon very rarely witnessed on this coast—I mean the general and quasi-spontaneous luminosity of the sea.

It is of course common enough to observe sparkles of light more or less abundant when sea-water is briskly disturbed by contact with an oar or the bow of an advancing vessel; but it has only once before been my fortune, and that was twenty years ago, to witness the crest of each wavelet illuminated by the pale silvery light proceeding from countless phosphorescent organisms present in the water.

The night, being cloudy, favoured observation, but there was considerable haze. The wind was south-east or thereabouts, the temperature of the air being 52° F., that of the sea close by the shore 47° 5 F.

The phenomenon was visible on the night of Thursday, February 17 only. The following night was equally favourable for observation, and the temperatures were the same within a degree, but the cause or causes no longer operated. On casting into the sea a shower of pebbles, which the night before produced brilliant flashes of light, or larger stones, which then developed concentric luminous wavelets, only a doubtful effect was observed. The organisms had, it seemed, already expended their force—probably had actually died—and I thought I perceived an unusual frothiness in the water.

Is it not uncommon for this to occur so early in the year? It is in summer, when the temperature of the sea is high, that we expect to see the water "fiery." Was the phenomenon observed on other parts of the coast?

THOS. B. GROVES

Weymouth, February 21

Minerva Ornaments

I HAVE twice had an opportunity of being in London during the time Dr. Schliemann's Trojan antiquities were exhibited at South Kensington, and the examination of them gave me very much pleasure. My last visit took place at the time Mr. Claypole's first letter and Prof. Sayce's reply appeared in NATURE, and I gave the "Minerva ornaments" particular attention. My interest in the subject has been revived by seeing another letter from Mr. Claypole in a recent number, and having refreshed my memory from notes taken during my visits, perhaps you would kindly afford me space for a few remarks.

Some of the "Minerva ornaments" appeared to me somewhat similar to Irish objects in my possession, but mine are more symmetrical, less flatish, and on the whole more suitable, I should say, for net-sinkers than the others, yet I never thought of ticketing them as such. I think that both sets of objects have had too much labour expended on them to favour the idea that they were used for such a common object as net-sinking. The Irish objects, which I should say are of stone, are identical in form with a class of glass ornaments known as double glass beads, found in most collections of Irish antiquities, which are certainly not net-sinkers. "Net-sinker" is a very common name in Ireland for almost any stone with a hole in it, and, without intending the slightest disrespect to Mr. Claypole, I believe the term is one of a set, of which "sling-stone" is another, applied in doubtful cases to cover our ignorance. As regards the use of the objects discovered by Dr. Schliemann, there may