written because the Rev. Professor had written a very long one, in which he applied this kind of bad reasoning in relation to a bit of a leafy part of a tree found at Bournemouth in an Eocene deposit. The leaves of his bit resemble those of *Araucaria Cunninghami* squashed; nevertheless a thermometric virtue is given to the fossil because this Araucaria is native in districts in Eastern Australia.

Self-satisfied with his recognition of the similarity of the leaves, the Rev. Professor coolly assumes that he has made out his species, and therefore demands the name of mine, giving me a scolding before I could possibly let him have it.

It is curious that the Rev. Professor should not have seen the point of my letter, and the only explanation is that he was so taken up with the incomparable value of his delicate "self-registering plant thermometer." I did not believe in his discovery, and my bamboo—never mind whence it came—was quite as good in the method of argument as his so-called Araucaria. No botanist would feel satisfied with the coneless evidence of the Rev. Professor, and his genus is in doubt as well as his species. With regard to this, Lindley stated years since that *Araucaria Cunninghami* is a "supposed species" in relation to the Norfolk Island *C. excelsa*. So the "self-registering thermometer" has neither bulb nor stem, and the spirit or the mercury represents the Rev. Professor's genius. He bids me plant the bamboo in the sunny south-west. Not so; it is the damp soil and the shade which have permitted the stems to grow up to 10 feet 6 inches. He tells me that the bamboo grows in China: that fact I had heard of before, and it has been strikingly impressed on many generations of Celestials. Last week, but too late for my purpose of immediate publication in NATURE, I learned that the bamboo is of the sub-genus *Arundinacea*, and the species is *falcata*. Its natural habitat is in the temperate Himalayas, where frosts, fogs, and north-east winds, such as plague the Thames Valley, are unknown.

Finally I believe that the so-called *A. Cunninghami* has grown of late years in the south of England.

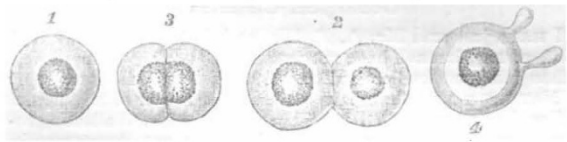
December 9 P. MARTIN DUNCAN

Hailstorm in Dorsetshire

AT about 1.30 on the 25th of last November, with a strong wind from the south-west, this place was visited by a hailstorm which lasted about five minutes, accompanied by rain and violent gusts of wind, and by a single vivid flash of lightning which was followed with scarcely more than an appreciable interval by the thunder.

The character of the hailstones which fell on the occasion, and which I examined before they could have undergone any important change induced by the higher temperature of the surrounding air, may be worth noting; for though they were not of very unusual size, and in most respects scarcely departed from what may be regarded as the typical condition of hailstones, they exhibited some features not generally met with in so well-marked a form.

In their simplest condition their shape was that of a sphere, and in every such case they consisted of a spherical nucleus of



opaque white ice enveloped by a concentric shell of ice perfectly transparent and homogeneous, showing none of the radial striæ often met with in hailstones (Fig. 1). The largest measured about half an inch in diameter, the nucleus having a diameter of about a quarter of an inch. The appearance of the opaque white nucleus surrounded by its thick crystal-clear envelope was very striking and beautiful.

In many cases two such hailstones were united firmly to one another, doubtless by a process of regelation after contact. In some of these the transparent envelope was continuous around each of the nuclei in the plane of contact (Fig. 2). In others it was here deficient, and the two nuclei were then in immediate contact with one another (Fig. 3). The difference thus presented is not without significance as affording evidence that there are two distinct conditions under which the union of hailstones by regelation may occur; for it is probable that in the former case the contact and regelation had taken place directly between the nuclei while as yet free from the investing shell of clear ice which had afterwards formed around the twin nuclei; while in the latter case the envelope had already existed before the contact and regelation of the hailstones.

Another frequent occurrence was the presence of one or two little piriform offsets, which projected from the surface of the hailstone, and were, like the envelope itself, formed of clear homogeneous ice (Fig. 4). In a paper published in the *Proc.* Asiatic Society for June, 1880, to which my attention has been called by Mr. Scott of the Meteorological Office, very similar club-shaped projections of transparent ice are described by Mr. Blanford in large hailstones figured by Col. Godwin-Austen as having fallen at Calcutta in March, 1877.

It is possible that in these cases the projections had originally the form of crystals, and that their faces and angles had been rounded off in passing through a warmer region of the atmosphere, such radiating crystals of ice not being unknown. In a memoir by Abich ("Ueber Kugel Hagel im Unterem Kaukasus," Vienna, 1879), for a knowledge of which I am also indebted to Mr. Scott, an account is given of certain very large hailstones which fell at Tiflis in Georgia, and had large ice crystals radiating from the surface. GEO. J. ALLMAN

Ardmore, Parkstone, Dorset, December 11

Sargassum

I FIND in NATURE, vol. xxiii. p. 70, a short report on my paper, "Revision von Sargassum," with several objections, which I believe to be erroneous. It is said that the fragments occurring sometimes on the open sea, the so-called *Sargassum bacciferum*, should have a bright yellow colour. Not long ago I received fresh samples thereof from the Sargasso Sea, which are not yellow at all; these fragments are never bright yellow, but of the same brown, varying to yellowish colour as decaying *Fucus vesiculosus*. I observed the latter, for instance, in this condition in several fjörds of Norway, where I found broken Fucus in greater quantities than ever I did Sargassum in the open sea between England and the West Indies.

Macrocystis pyrifera shows always stem and leaves entangled in a ball, if broken and swimming in the open sea (*vide* p. 235 of my treatise), and the Sargasso fragments of the open sea are also often entangled in compact balls, as Sir Wyville Thomson states ("The Atlantic," i. 194), and as it may be seen on my phototypic table, Fig. 1.

If the floating Sargassum should have no reproductive organs, this would be no difficulty, but rather a confirmation of my views on the fragmentary nature of swimming Sargassum, for a particular pelagic species could not be without reproductive organs. Besides there have been found "with certainty" sometimes samples in the open sea with reproductive organs, and I gave an explanation of their seldom occurrence by want or breaking off of the air-vesicles. The writer on my paper is mistaken in comparing Macrocystis and Fucus with Sargassum, for the air-vesicles and reproductive organs of Sargassum are separate from the leaves and isolated on thin stalks, which break off easily, while those of Fucus and Macrocystis are never separate, but in the middle of the leaf or on the base, or on the broad end of the leaf or thallus. Therefore swimming Sargassum is found often without reproductive organs, and its air-vesicles are often broken off, whilst on Macrocystis and Fucus such a separation is not possible. Having refuted those objections, and having also brought in my paper many more arguments against the existence and vegetation of *Sargassum bacciferum* than there are mentioned in the short report, I hope that my results on Sargassum will now generally be accepted.

Leipzig-Eutritzsch, December 4 OTTO KUNTZE

Note on an Acoustical Constant

THE number of vibrations executed in a second by a stretched string is generally represented in the text-books by a formula expressing the method of its variation with the determining circumstances, such as—

$$n \propto \frac{1}{d\,l}\sqrt{\frac{T}{s}},$$

where d is the diameter, l the length, s the specific gravity of the string, and T the tension or stretching force, but the absolute number of vibrations is not generally given by the formula.