Harris, of what is regarded by every Palaeontologist who has seen the specimen as an unquestionable organism. It forms part of a limestone bed intercalated with dark grey shale, and occurs in the midst of highly metamorphic rocks (among them a graphite granite), which were regarded by Sir Roderick Murchison as of Laurentian age, and which have ever since passed as such—no doubt being entertained as to their antiquity by Dr. Heddle, of St. Andrew's, who has geologised over the whole of Harris. Judging from the sections which Mr. Thomson has forwarded

to me, the fabric seems to have consisted of superposed layers of calcareous shell-substance, whose continuity is frequently interrupted ; the spaces between these layers, which are much thinner than the lamellæ themselves, being irregularly and imperfectly divided (very much as in Eozoon) into separate chambers, which are filled up with calcite. The state of preservation of the fossil thus corresponds exactly with that of the Silurian *Stromatopora*, to which, indeed, it bears a strong general resemblance, except in the larger proportion borne by the solid fabric to the chambers it encloses. The shelly layers are as distinct in character from it encloses. the calcite contents of the chambers, as are those of the Nummulites of the pyramid-limestone, with which they agree in their remarkable hardness, corresponding with that of porcellanous shell. Altogether I have no hesitation in concurring with Prof. H. A. Nicholson, Prof. Geikie, and Mr. Etheridge in affirming it to be so unmistakeably organic, that, if it be claimed by mineralogists as a "rock-structure," a large number of universally-accepted fossils will have to go along with it. As it is essentially calcareous in its composition, there is no room for the hypothesis of its production by the process of "mineral segregation," which is maintained by certain Mineralogists (others of at least equal eminence, however, entirely dissenting from them) to have been adequate to the production of the alternating layers of serpentine and calcareous shell-substance in the Canadian Eozoon. And though mineralogical analysis might not improbably detect small particles of various minerals in its substance, their presence no more establishes its claim to be regarded as a mere rock-structure, than does the presence of siliceous films (probably replacing the soft parts of the animal) in a piece of coral-limestone.

Not having made any other than a general examination of the structure of the Harris specimen, I do not feel able to give a positive opinion upon its affinities; and it may be that these may long remain doubtful. But this doubt no more constitutes an adequate reason for refusing to accept its organic origin, than it does in the case of *Stromatopora*; which no Mineralogist that I ever heard of claims as a mineral, though the Zoologist cannot say with certainty whether it is a foraminifer, a sponge, a coral, or a polyzoary. It is to be borne in mind that in very few Palecozic fossils is there a *precise* conformity to any existing type; and such conformity is, of course, still less to be expected in a Laurentian than in a Silurian fossil.

It is not a little singular that I should have received about the same time from Prof. Möbius of Kiel, specimens of a new Foraminiferal organism, discovered by him in 1874 on a coral reef off Mauritius; which presents more resemblance in its spreading and encrusting mode of growth to the indefinite expansions of *Eozoon* and *Stromatopora*, than does any Foraminiferal type previously known. Truly, as I have before had occasion to say, "there is no limit to the possibilities of Foraminifera."

I have only to add, in regard to the Harris fossil, that the further prosecution of the inquiry into its structure and relations has been placed by Mr. Thomson in the able hands of Prof. H. Alleyne Nicholson, and that it is at the joint request of these two gentlemen that I make the present communication.

WILLIAM B. CARPENTER

The Warm Rain Band in the Daylight Spectrum

ON taking my accustomed spectroscopic peep at the sky today, through a little garret window in the Royal Observatory here, I was instantly struck with the presence of the same dark band in the spectrum to which I called your attention last summer twice over (vol. xii, pp. 231, 251).

Summer twice over (vol. xii. pp. 231, 251). The band was very faint, but it was there, and this was its first appearance, to me at least, during the present year. I have not indeed been so persevering in that sort of observation as I perhaps should have been if furnished with better instruments, yet for weeks and weeks past I have scanned the sky, not only when it was heavily clouded, but also when rain was actually falling with west, south-west, and north-east winds, and sometimes during dense, wet fogs, when very little daylight at all was deft, and under some preternaturally low barometric

pressures. Yet, under all these circumstances, I put the spectroscope back into its box after each trial with the assurance that no rain-band had then been shown by if. This morning, however, and under a barometer not low, viz., 29'8 British inches, the band exhibited itself instantly; and on my going out to look at the direction of the wind, behold it was from the south-east. Wherefore I had no scruple in informing a professor whom I met in the afternoon at the College, and who, after his day's work there was going home to indulge in the amenities of horticulture, that his flowers were certain of presently having the luxury of *warm rain*.

Such rain, too, did begin, within an hour of that interview, with large heavy drops, and the evening has ended with almost a soaking rain.

It is rather too soon to attempt fully to describe the spectrum appearance, much less to explain it, before I have had the privilege of using anything in the way of a notable spectroscope upon it. But having been already written to for some practical information, even from St. Petersburg (where NATURE is evidently read with attention), I may remark that the nebulous band character of the phenomenon is simply a result of want of light; for when the quality to give the band was present in the air, and the sun has been prevailed on to shine for a moment through that air, and into the spectroscope, the band was instantly resolved into a group, or groups, of fine and sharp black lines, exquisitely visible.

But as the sun is seldom to be seen in any weather threatening rain, whether warm or cold, in fact, cannot be consulted precisely at those times when he is most wanted, it is better to restrict such pluvio-spectroscopy to ordinary sky, *i.e.*, clouds or air; and if possible in a polar direction, so as to be equally distant from the sun, whether visible or not, all the day through; and not too low, in altitude, lest smoke, local moisture, and other impurities have too great and variable an influence. The Observatory garret-window here, I regret to say, is not so unexceptionably situated in azimuth as it might be, for it looks out straight to the south, and the angle at which I usually look through it, on being measured to-day, turned out to be 23°.

Nevertheless, at that altitude, keeping to it steadily on all occasions, and in that direction, avoiding always the garish spectra of actual sunshine, and depending not on any particular and absolute spectrum representation in the published maps of other observers, but chiefly or entirely attending to the *differences* observed by myself from day to day in my own manner with my own little tube, there was no difficulty in instantly pronouncing this morning that there was something in the air through which daylight was then passing different from what it has been for several months past.

Whether that something is only watery vapour at a high temperature (seeing that watery vapour at a low temperature does not produce it), or whether the air is carrying something else with it, giving to the south-east winds here a slight approach to the quality of the siroccos of the Mediterranean, which are often transfused with fine dust along with their warm rain, and do produce some very noteworthy markings in the spectrum, is a matter for further and wider research by those who are instrumentally and financially better able to follow it up; and who should therefore be implored in the present state and needs of science to perform their part without further delay.

Piazzi Smyth,

Edinburgh, April 24 Astronomer-Royal for Scotland

Limestone Makers

MR. J. MUNRO'S interesting letter and sketch which appeared in NATURE, vol. xiii. p. 510, show how much may be done in the Tropics by ordinary observers towards elucidating many geological problems. His sketch is that of one of the genus Corallina, a member of the Florideæ, and it is a very common lime maker at the Bermudas. Although Mr. Munro will not find a list of the different limestone makers in books, still in the vast unwritten knowledge of geology it is well known that shells, foraminifera, serpulæ in numbers, and huge masses of Nullipores, besides the corallines, contribute to the coral stock.

The corallines present many and varied forms on our own coasts, but their beauty and construction are remarkable in the warm waters of the Gulf Stream and Caribbean Sea. Through the kindness of Mr. Henry Lee I have lately had the opportunity of examining the newly-started growth of the common *Corállines officinalis*, but curious as its cellular development is, it is