gigantic armadilloes which in past geological epochs were so abundant in Southern Brazil. The little *Chlamydo-phorus truncatus* is, we believe, mainly, if not entirely, subterranean in its habits. May there not still exist a larger representative of the same or nearly allied genus, or, if the suggestion be not too bold, even a last descendant of the Glyptodonts?

SUN-SPOTS AND DECLINATION RANGES

THE excellent article by Mr. Broun in a recent number of NATURE puts before us in a very clear manner the strong grounds that we have for believing in a true connection between sun-spots and terrestrial magnetism. If the argument were not already sufficiently powerful it might be yet further strengthened by bearing in mind that not merely do the most prominent inequalities march together in these two phenomena but the correspondence extends likewise to those waves of shorter period that ride as it were on the back of the longer ones. In a paper which is now before the Royal Society I have shown this intimacy of correspondence by comparing together the sun-spot and declination range records for the cycle extending from the minimum of 1855 to that of 1867. All the prominent sun-spot waves are reproduced by magnetic declination waves, the latter, however, invariably lagging behind the former.

Then with regard to the long period cycle under discussion I make it to begin for sun-spots with September 15, 1855, which was a minimum point, and to end with March 15, 1867, which was another minimum point. On the other hand the corresponding cycle for declination range begins with February 15, 1856, and ends with August 15, 1867. Thus the length of period is the same in both; the magnetic cycle lagging, however, five months behind that for sun-spots.

I may also mention that I am at present comparing together the Prague declination ranges with the sun-spot curve determined from Hofrath Schwabe's observations, and although the comparison is not finished, I believe that this lagging behind will form a prominent feature of the results. Further back than Schwabe we cannot go, as the sun-spot records are not sufficiently accurate for this kind of work.

I am not sure, however, that I quite agree with Mr. Broun when he says "no doubt the admission of the existence of a causal connection between the two phenomena is opposed to the hypothesis, which many other facts render wholly untenable, that the magnetic variations are due to the heating action of the sun."

As far as sun-spots and declination ranges are concerned, what are the facts regarding the connection between them? These are two in number. In the first place, all the considerable oscillations of the sun-spots are reproduced in the declination-ranges. Secondly, the reproductions in the declination-ranges lag, it appears, behind the corresponding sun-spot waves. This latter fact strikes me as being rather in favour of the view which regards declination-ranges to be (like temperature-ranges) in some way the result of an influence from the sun which is of the nature of an emanation or radiation. But I will not press the point except to remark that this and a host of other questions, some of them of great importance, must wait for their solution until we shall have obtained a sufficiently complete and continuous record of solar activity, and along with it an equally complete and continuous record of the radiant power of the sun.

From the observatories already established, we have a reasonable prospect of receiving good magnetical information, and there is abundance of meteorological activity, but it is nearly, if not absolutely, impossible, from the observations already made, to tell whether the sun be hotter or colder as a whole, when there are most spots on his surface. The sooner we get to know this the better for our problem.

BALFOUR STEWART

THE ISLANDS OF ST. PAUL AND AMSTERDAM

AS is now well known, a French expedition visited these islands towards the close of 1874 for the purpose of watching the transit of Venus across the sun on December 9 of that year. M. G. de l'Isle accompanied the expedition as botanist; Dr. Rochefort, with M. Vélain to assist him, were to look after the zoological and geological departments. M. Vélain, who was a pupil of Prof. Lacaze-Duthiers has just published, in the *Archives de Zoologie Expérimentale et Générale* (tome 6, 1877), a most interesting account of these islands and their fauna, with, in addition, a very detailed account of the collections of shells made. We are indebted to the extreme kindness of M. Vélain for the excellent illustrations which accom-

FIG. 1.—Ninepin Rock.

pany this notice, which are taken from the original memoir.

If the reader wishes to fix the exact position of these curious islands he has only to trace along the line of lat. 40° S., and about mid-way in the Southern Ocean between the Cape of Good Hope and Melbourne, near long. 80° E., he will find them.

Their discovery has been claimed by the Dutch and the Portuguese. Placed just in the grand ocean route for all vessels leaving the Cape for Australia or China, they were doubtless, despite their isolation, long known. The history of our knowledge of them from 1522 to the present day is well, though briefly, written by M. Vélain.

The *Novara* called at St. Paul in 1857, and stayed for fourteen days, and we are indebted to Hochstetter for an excellent account of the geology of the island, though