

object-glasses would probably give matchless solar photograms. The 120 feet has 6 inches aperture, and would give a solar picture 13.4 inches diameter.

R.

### The Potato Disease

I AM afraid I cannot regard the letter of your anonymous correspondent "Inquirer" as written in altogether good faith. He first misrepresents what I stated in my letter of Nov. 20, which he professes to quote, and then proceeds to ask me a question which, if he had even glanced at my letter, he would have seen was already answered.

If I beg your indulgence for some further remarks suggested by "Inquirer's" letter, I hope that they will be the last it will be necessary to make.

The number of NATURE for Nov. 19 gave what purported to be an account of the "Report of the Potato Disease Committee of the Royal Agricultural Society." It contained the following passage:—"Prof. de Bary has worked out the scientific questions that occur as to the origin of the disease. It is owing to a fungus (*Peronospora infestans*), which attacks the leaves first, and after absorbing the nutriment of them, utilises the petiole, and thus reaches the tubes" (*sic*). It appeared to me, as it did to others, that the only meaning which could be attributed to this was that we owed to Prof. de Bary all the knowledge we at present possess with regard to the disease.

I therefore thought it fair to point out in the following number "that all this and a good deal more was ascertained by the Rev. M. J. Berkeley in this country, and by Montagne in France, and published by the former in a paper contributed to the first volume of the Journal of the Horticultural Society in 1846." It is almost incredible that anyone with my letter before him should say that I had asserted "the discovery by the Rev. M. J. Berkeley of the fact that the potato disease was due to the attacks of a parasitic fungus," and should proceed to ask me for "a more exact reference to the records."

The potato disease appeared on the Continent a few years before it worked such ravages in the British Isles. The mould had been detected upon the foliage in France and Belgium, but opinion was divided as to the part it really played. And we have Mr. Berkeley's authority for asserting that even Montagne, to whom "Inquirer" attributes the discovery that the potato disease was due to the attacks of a parasitic fungus, did not support the "fungal theory."

In this country Mr. Berkeley maintained it almost single-handed against men of such weight as Lindley and Playfair. His paper, which appeared in the Horticultural Society's Journal in November 1845 (the whole volume is dated 1846), really, however, settled the matter.

It is perfectly easy to trace what Mr. Berkeley did by referring to the horticultural papers of the time. Thus, he wrote to the *Gardener's Chronicle*, August 30, 1845 (p. 593): "The malady by which potatoes are so generally affected this year, both in this country and on the Continent, does not appear to prevail in this neighbourhood. . . . I have this morning received from Dr. Montagne, of Paris, some leaves affected with the mildew. . . . The parasite of the potato does not appear to have been observed before by systematists." On Sept. 6 (p. 608): "You will be interested to learn that the mould upon the potatoes which you sent me is identical with that upon the leaves, and the same with what I have received from Paris. It appears, then, that the decay of the tubers is produced by the same cause which affects the leaves, viz., by the growth of a mould whose development has been promoted by excessive wet." On Sept. 20 (p. 640): "In every case I find the *Botrytis infestans* [now called *Peronospora infestans*] preceding the work of destruction."

All this is given with very full details by Mr. Berkeley in his later paper. What I wish, however, particularly to point out is that the admirable observation (contained in the words I have italicised) of the identity of the fungus which attacks the foliage with that which destroys the potatoes was made absolutely independently by Mr. Berkeley. Morren appears to have made it about the same time. It is a sufficient proof of the estimation in which his investigations were held at the time, that Montagne relinquished the intention of writing upon the subject, and transmitted his materials to Mr. Berkeley, by whom the use of them is duly acknowledged. W. T. THINELTON DYER

### Mr. Cuttell and Section Cutting

IN your number of NATURE just issued you have given an extract from the annual address of the President of the Royal

Society, in which reference is made to my labour of section cutting. It is perfectly true that I have prepared more than a thousand sections of coal plants, but it would be unfair to a very efficient auxiliary not to mention the help he has afforded me in this work. I require many sections of a much larger size than my machinery is capable of cutting, and these have been prepared for me by the skilled hands of Mr. Cuttell, of New Compton Street, London.

In each of two instances, also, I am indebted to the same experienced lapidary for obtaining three sections out of small but precious fragments, not more than from three-sixteenths to a quarter of an inch in thickness. I am anxious to recognise these services, and not to monopolise Mr. Cuttell's share of the credit for the labours to which Dr. Hooker's report refers so kindly.

W. C. WILLIAMSON

Fallowfield, Manchester, Dec. 24

### Snakes and Frogs

IN reading the letter of your correspondent, Mr. Mott, on the cry of the frog, it struck me as curious that there should be resemblances which people in countries wide apart should pitch on the same phrase to indicate. Now, there could not be a better way of conveying a sound which frequently greets one's ears in the country in Bengal during the rains, than that which your correspondent makes use of, "the cry of a new-born infant." Few residents in the country here, we take it, who have lived anywhere near jungle, will have failed to bear, and that tolerably frequent, the unspeakably plaintive wail which indicates that the remorseless ophidian has seized his prey, and that deglutition has commenced. If one be tolerably quick he may, as I have frequently done, guide himself to the very spot by the sound of the frog, and the snake will then, in his alarm and anxiety to escape, frequently let the frog go, though he as often slides off with it protruding from his mouth. We have the batrachians in great force here, and of all sizes and noises, from the great swamp frog which, as soon as the lands are drenched in the heavy rainstorms of May, commences its nocturnal bellowing, down to the bronze tree frog with gilt eyebrows that keeps up its metallic tink.

The frog is connected with some of the religious ceremonies of the country; and one may see here, as well as in Assam, the curious custom of "bathing the frogs" in a cage. This is done in time of drought to propitiate the rain god. Grain is sometimes put out on a mat to sun, and to prevent the crows from making away with it, a frog is tied by the leg to a stake; his constant hopping about acts as a deterrent to the crow. Hence the native proverb denoting vicarious and unmerited suffering, "The crow steals the grain, and the string is round the leg of the frog."

C. B.

Budderpore, Eastern Bengal

### THE ANDERSON SCHOOL OF NATURAL HISTORY

MOST of our readers, no doubt, have heard of the School of Natural History established by the late Prof. Agassiz, in conjunction with some of his American friends, shortly before his lamented decease. The first report of the trustees of this institution, which has lately been received in this country, gives a fuller account of its foundation and subsequent progress than has yet reached us.

The plan of the school was first put forward by its originator in a circular issued in December 1872, from the Museum of Comparative Zoology at Cambridge, U.S.A. It was proposed that courses of instructive lectures in various branches of natural history should be delivered by the sea-side, at Nantucket—an American bathing-place—during the summer months, by Agassiz himself, and by other naturalists belonging either to the same institution, or to other scientific establishments in the United States, who had combined together to assist him. The object of these courses was chiefly for the benefit of teachers proposing to introduce the study of natural history into their schools, and for such students as were preparing to become teachers. Besides the lectures it

was proposed to provide a number of aquariums, as also the necessary apparatus for dredging in deep water, so that the pupils might be practically as well as theoretically instructed.

Whilst Prof. Agassiz was appealing to the public to support his beneficent scheme, the attention of Mr. John Anderson, a wealthy merchant of New York, was attracted to it. Mr. Anderson, "although not possessing himself any intimate acquaintance with natural history," "sympathised warmly" in the professor's project for making that department of science a branch of education, and in aid thereof offered to hand over to trustees for the benefit of the scheme a whole island situated in Buzzard's Bay, in Massachusetts.

We need hardly say that the munificent offer was gladly accepted, and Penikese Island, containing 100 acres of great fertility, several springs of fine fresh water, and a mansion house, constituting altogether a "most attractive location for a summer residence," became, instead of Nantucket, the seat of the proposed institution, which was appropriately named after the donor, the "Anderson School of Natural History."

A few days after the acceptance of this noble gift by Prof. Agassiz, Mr. Anderson gave a further proof of his liberality by presenting the sum of \$50,000 for the equipment and current expenses of the institution, which was thus enabled to make a start under very favourable circumstances.

When matters had progressed thus far, it was hardly in accordance with the national characteristics that much delay should take place in commencing work. So, although the island of Penikese was only presented to Prof. Agassiz on the 22nd April, 1873, a site was selected for the school, the plans were arranged, and the contract actually signed for the necessary works on the 16th May, and the 8th July was appointed for the building to be ready. In vain the architect and builder declared that it was impossible, and urged the postponement of the opening until the following year. Prof. Agassiz, perhaps with a presentiment of the future, was inflexible, and a commencement was actually made on the appointed day. During the summer a second building, containing another numerous set of working rooms and dormitories and a lecture room connecting it with the former edifice, was neatly completed, together with the interior arrangements of the whole school.

During the first session, 1873, the pupils were from forty to fifty in number, consisting chiefly of teachers (both male and female) in colleges and schools and other public institutions. Prof. Agassiz lectured nearly every day. Mr. Galloup, a citizen of Boston, sent his yacht to Penikese, and handed it over to Count Pourtales, who took charge of the dredging parties during the whole session. Ten or twelve of the pupils went out every day, thus obtaining instruction in the use of the implements, and at the same time obtaining many specimens for the lectures which could not have been collected from the shore.

Other efficient workers were Dr. A. S. Packard, jun., Prof. Jordan, Dr. Brewer, Prof. Wilder, and Prof. Guyot. Full instruction was thus given in various branches of natural history, in geology, in physical geography, and especially in zoology.

So successfully was this scheme carried out, that for the succeeding session a much larger number of applications than accommodation could be provided for was received, when the untimely death of the founder occurred and somewhat imperiled the continuance of his noble plans. Fortunately, a worthy son succeeded to a worthy father, and under the direction of Mr. Alexander Agassiz, the Anderson School of Natural History has, we believe, continued in its career of prosperity, although details of its second year's working have not yet reached us.

When we consider what has thus been done in the

United States, it is no slight reproach to us that nothing of the sort has been attempted in England. The great aquariums which have recently been built in several places offer unusual facilities for such an institution. But, alas! Brighton, Sydenham, and Southport are, we fear, wholly given up to ten per cent. The only counterpart of Prof. Agassiz in Europe is Anton Dohrn, whose "Zoological Station" at Naples is a worthy rival of the Anderson School of Natural History—perhaps even more complete in its organisation. We trust, however, that before long a similar scheme may be started in this country.

#### THE LAST TYPHOON AT HONG KONG

THE typhoon at Hong Kong of September 1874 is the greatest calamity that has visited the crown colony since its establishment in 1841. In each of the years 1859 and 1865 one of these desolating storms occasioned a great deal of damage to shipping in the harbour and vicinity; in 1867 two occurred, the second of which raged with great violence during the day, and was consequently observed with considerable interest; on Sept. 2, 1871, a still more striking instance is recorded;\* but the whole of these phenomena sink into utter insignificance when compared with the furious typhoon which swept over the island during the night of the 22nd and the morning of the 23rd of September last. Without speaking of the dire effects produced by the latter, tenfold more terrible than any hitherto experienced, one far more crucial test may be adduced as evidence of the truth of our assertion.

It is an admitted fact that the force of the wind during a cyclone or typhoon is always in direct proportion to the height of the mercury in the barometer. Now, the lowest reading of the barometer previously recorded at Hong Kong was during the typhoon of 1871, viz., 29.15; whilst at Macao, on the same occasion, the mercury fell to 28.39. But during the recent event, the reading at Hong Kong at 2.15 on the morning of the 23rd was 28.75 according to one barometer, and 28.73 according to another; whilst at Macao the mercury actually fell to 28.1—a fall we believe to have been altogether unprecedented in the history of atmospheric reading in China. Hence we conceive this to have been one of the most severe instances, if not the severest, of a typhoon on record. The fact that the readings at Macao were lower in 1871 than at Hong Kong in 1874 does not affect the question, for, as we shall see presently, the first-mentioned place always suffers more severely than the latter, owing to the greater concentration of the power of the wind at its turning point.

Many points of interest are connected with the late typhoon. It was observed that the clock upon the clock tower at Peddar's Wharf in Hong Kong stopped shortly after two, and it has been stated upon good authority that five or six other pendulum clocks stopped at the same hour. Now, this was exactly the time when the most violent throes of wind that was experienced throughout the entire night took place; hence we are justified in assuming that, at the precise moment when the typhoon was at its height, a shock of earthquake probably occurred, pointing to the conclusion that the atmospheric disturbance induced physical disturbances in the crust of the earth. The possibility of the existence of such a condition has been argued at length by Prof. Lyell in his "Principles," where he states that the inhabitants of Stromboli are said to make use of the island "as a weather-glass," its volcanic disturbances "increasing during tempestuous weather," so that "the island seems to shake from its foundations." He considers that extreme changes in the atmospheric pressure exerted upon a vast superficial area might well be deemed to influence the confined gases and liquids interposed between the

\* See NATURE, vol. v. p. 166.