to regret that he appears to view with suspicion the competency of the scientific department of the Fishery Board to try it. Perhaps it may serve to reassure him on this point to learn that these suspicions are not in any way shared by the Government, who have now furnished the means for purchasing a steam-vessel for trawling; for maintaining three laboratories (one of them with a large number of tanks); and for securing the assistance of three skilled naturalists who will work in conjunction with Profs. Ewart and McIntosh, to whom your contributor alludes.

S. F. B.

Protective Influence of Black Colour from Light and Heat

THE difficulty of explaining the black colour of races near the Equator has long been felt. Strong sunshine undoubtedly tends to darken the skin; but if black, as generally supposed, is the colour that absorbs most heat, natural selection should have developed white as the complexion best adapted to shield mankind from the intense radiation of an equatorial sun.

Without venturing to offer an opinion on the subject, I should like to mention three cases that have come under my personal observation, in which brown-skinned natives, in very different parts of the world, blacken their faces to protect them from intense light and heat.

In Morocco, and all along the north of Africa, the inhabitants blacken themselves round the eyes to avert ophthalmia from the glare of hot sand.

In Fiji the natives, who are in the habit of painting their faces with red and white stripes as an ornament, invariably blacken them when they go out fishing on the reef in the full glare of the sun.

Lastly, here in the Sikkim hills the natives blacken themselves round the eyes with charcoal to palliate the glare of a tropical sun on newly fallen snow.

This I had an opportunity of experimenting on. We were caught in a snowstorm at an elevation of 10,000 feet; when it subsided all the coolies blackened their eyes, so I had one eye blackened, the other left natural, and went out into the sun for half an hour. I cannot say that I felt much difference. Next day I tried marching for about six hours, up to 12,000 feet, with both eyes blackened. I cannot say how far this may have been palliative, but the glare was so bad, we were all very glad when the mist came up and obscured the sun. Radiation is far more intense at high altitudes than at low levels. Still it is impossible to suppose that three such different nations would have adopted the same device to mitigate sun glare if black colour did not give some palliation at least.

Here then we have one of those strange anomalies in which physiological experience contradicts the teachings of pure physics. Charcoal black, which is used in physical experiments as the best absorbent of every kind of heat radiation, is practically used by three races at least, to protect one of the most sensitive human organs from reflected light and heat. Of course I cannot offer any explanation, but bring the facts to the notice of those who have the skill and opportunity to make physiological experiments, in the hope that they may perhaps find a clue to the long-sought-for explanation of the colours of the human race.

RALPH ABERCROMBY

Darjeeling, March 15

Pumice on the Cornish Coast

ABOUT a month ago I picked up on Maenporth Beach, near Falmouth, a piece of drift pumice of the size of a large goose's egg. It was rounded, floated heavily, and was just twice the weight of a piece of Krakatō pumice of the same size which had been obtained in the Indian Ocean several months after the eruption. No Cirripedes, Serpulæ, &c., had attached themselves to it; but in one of its crevices I found a tiny dead coleopterous insect, which I unfortunately lost. From my familiarity with floating pumice in the Western Pacific I at once perceived that this fragment had been a considerable time in the water. After searching the other beaches in the neighbourhood I failed to find another piece. Mr. John Murray, to whom I sent the specimen, informs me that he has similarly picked up fragments of pumice on the west coast of Scotland.

Without speculating on the source of the fragment found on the Cornish beach, I should remark that, judging from an experiment made in the Western Pacific, pumice may float for several years on the sea before it becomes sufficiently sodden to sink to

the bottom. I kept floating in sea-water for two years and nine months three pieces of pumice which I originally obtained in the tow-net whilst cruising in the Solomon Islands. Although they had evidently been a long time in the water before I got them, since they floated heavily and had in two cases the tubes of Serpulæ attached, the only apparent alteration in their buoyancy produced by my experiment was that one which floated in fresh water when I first obtained it now sank. How much longer they would have continued to float in the sea-water I cannot say. From their condition before the experiment they must have been previously floating for even a longer period.

H. B. GUPPY

95, Albert Street, Regent's Park, April 10

The Connection between Solar and Magnetic Phenomena

IN the discussion which followed the reading of Prof. Balfour Stewart's paper on magnetic declination, at the Physical Society, considerable weight was attached to Carrington's observation of a solar outburst observed on September 1, 1859, and the simultaneous occurrence of a movement of the magnetic needles at the Kew Observatory.

Nearly twenty-seven years have now elapsed since the event referred to took place, and both the sun's surface and the magnets have been under observation thousands of hours since that time.

Hundreds of magnetic movements similar to that above mentioned have been recorded since, and I should deem it a great favour if any correspondent would either inform me of the time or time: of similar outbreaks to that seen by Carrington, if such have been observed, or refer me to any published accounts of the phenomena.

Carrington's paper is published in the *Monthly Notices* of the R.A.S. vol. xx. p. 13.

G. M. WHIPPLE

Kew Observatory, April 12

Aurora

A BRIGHT Polar light was observed here on March 30 from 8 to 11 o'clock p.m., how long it had lasted I cannot tell. At 8 o'clock only flashes of a pale blue were seen about the Pleiades; their brightness was changing very quickly; at 11 o'clock across the whole northern sky there lay the well-known dark segment with the bright arch above; from the latter only a few reddish beams of light were seen emerging.

Königsberg i. Preussen

H. FRITSCH

Was it an Earthquake?

YESTERDAY morning (Thursday, April 8), at 5.35, the door of my room vibrated regularly for about three or four seconds. I did not perceive any motion of the room itself. I was up at the time, and quite still. Perhaps the best way of finding out whether anyone else experienced anything of the same nature, so as to determine whether it was in any way connected with an earthquake, is to write to NATURE.

Ladbroke Gardens, W., April 9

A. TREVOR CRISPIN

"Radical" or "Radicle"

MR. MADAN in his amusing letter last week (p. 533) raises a point which has doubtless often caused the comments of teachers. I think "a partical of reasoning" at least *can* be adduced in favour of "radical." In this paradoxical world it is not surprising to find that "radical" is the "conservative" and "constitutional" spelling, and that "radicle" is a radical alteration in a centenarian word. For next year will be the hundredth anniversary of what was, if I am not mistaken, the first use of the word by Guyton de Morveau. It seems to have long retained its French spelling, and I think it would be a pity to alter one which thus recalls to the memory a host of great names, and perhaps more than any other single word in chemistry suggests the international brotherhood of scientific men. Of course Mr. Madan's protest has force from the grammatical point of view; it may also be urged that "radicle" is English for the French "radical." But from the chemical standpoint surely the "radical" is as much a "stem" as a "root"? For instance toluene is either $C_6H_5(CH_3)$, or $CH_3(C_6H_5)$, and it would be arbitrary to select from a very limited number of reactions the "root" in prussic acid, $H.CN$, $C.NH$, or

N.C.H. Many chemists prefer "grouping," a safer word often used by Prof. Odling in his lectures.

After all, the question is really a gnat amongst the camels of our present nomenclature in organic chemistry. The sooner the last straw comes the better. What would Morveau or Lavoisier say, for instance, to "dimethyldiethylhydroxytrimethylenecarboxylic acid (1, 3, 2, 3, 2, 1)," in Dr. Perkin, *Junr's*, paper, *Journal Chem. Soc.*, 1885, p. 807? Chemists who doubt the propriety of spelling a word in two ways must have excessive sympathy with the geographers who are trying to get their brethren to select one of over forty different "spellings" of Fuchau or Foo-Chow. J. F. HEYES

12, Merton Street, Oxford, April 12

Square Bamboo

NATURE was so good as to publish (August 27, 1885), a communication from Mr. W. T. Thiselton Dyer in relation to my discovery of the square bamboo. Supplementary to the information therein given I send the following which I have just met with in a Chinese work:—"It grows wild in the north-eastern portion of Yunnan on the sequestered mountains of Takuan-ting and Chênhsing Chou, to which in spring men, women, and children resort for cutting its shoots, which they tie in bundles and send to market. It is prized above all other bamboo shoots as an esculent." D. J. MACGOWAN

Wenchau, February 8

Ferocity of Animals

ALTHOUGH the animals in question are not rats, it may interest Mr. Romanes to hear that some years since a friend was on a railway journey in the north, having with him two large dogs. These were confined together in the brake-van. During the journey one of these dogs (a bull-dog) attacked and seriously injured the other (a retriever, if I remember rightly), although ordinarily they were very much attached to one another. My friend's idea was that the bull-dog became frightened at the motion of the train, which oscillated considerably, and imagined that the other dog was the malefactor. This may be merely theory, but the case perhaps is worth noting. UNUS

Birkbeck Institute, April 6

MR. VERBEEK ON KRAKATÃO

MR. Verbeek's work on the Krakatão eruption has now been completed. The first part, which deals principally with the history of the great eruption, came out more than a year ago, and has been made accessible to English readers in a French translation. It was desirable, says Mr. Verbeek, in his introduction to the second part, of which an abstract is given here, that that portion of the work should appear as soon as possible, to contradict the many untrue statements that had found their way into the newspapers, and even been partially adopted in scientific magazines.

The second part, a quarto volume of some 500 pages, with additional drawings and maps, which will likewise shortly appear in French, gives an account of the phenomena observed both during and after the eruption, besides a description of the old Krakatão. Mr. Verbeek's task has been a very laborious and comprehensive one, for while the consequences of most eruptions are confined to the immediate neighbourhood of the volcano, those which followed the great Krakatão eruption have been observed all over the earth, and have as much interest for the hydrographer, the meteorologist, and the astronomer, as for the geologist.

It may be said without exaggeration that the Krakatão eruption has been the most remarkable catastrophe of the kind of which the human race has kept a record, for, though other eruptions, such as that of the Tomboro in 1815, no doubt caused important atmospheric disturbances, there were no instruments at that time to make accurate observations, and thus they were lost for science.

How invaluable the self-recording barometers and tide-

gauges have been on this occasion has been conclusively shown, but the number of these instruments is comparatively small, and Mr. Verbeek hopes that his work may lead to an increase of the number of barographs which mark the atmospheric pressure as an unbroken curved line, and especially of self-registering tide-gauges at favourable points on the coasts, and on various islands in the ocean.

In spite of the assistance Mr. Verbeek gratefully acknowledges to have received from innumerable persons in obtaining accurate information, he has had much difficulty in sifting the often conflicting evidence. Even now a few data are wanting, which will probably make an appendix necessary.

As the work with which the Dutch Indian Government had intrusted him would take a considerable time, they wished him to issue a preliminary report¹ which had necessarily to be drawn up in a limited period before the close examination of the volcanic substances could have taken place. Mr. Verbeek had in consequence to modify some of the views he expressed there. For instance, he no longer considers the balls of marl to have been produced by a rapid revolving motion of marl, mud, or sand, because at a later period similar balls were found in clay-stones, and thus were shown to have already existed before the eruption. He was also obliged to give up the notion that the dust found in snow and rain in various parts of Europe was derived from Krakatão. A slight modification had to be made in the time when the four greatest explosions occurred, and a more considerable one in the time of the rising of the greatest wave. Hence also the figures given for the medium depths of the sea had to undergo an alteration. Finally, the composition of some of the volcanic products was accurately determined by a later and more elaborate chemical analysis, and it was proved that the percentage of silica given in the short report is generally too large. Those are the only modifications of any importance which Mr. Verbeek says he had to make in the preliminary report.

The book—which he has spared no pains to make as complete as possible, and which is indeed the most complete work of the kind ever written—will, he hopes, serve as a standard guide for any future eruption of the same magnitude that might still occur in this century. In such an undesirable but not improbable contingency a great deal of trouble will be saved by referring to its pages, where information laboriously collected from innumerable sources may be found, as well as elaborate calculations which will not require to be repeated.

No hypotheses are offered for explaining the unusual number of volcanic phenomena in 1883, because every certain foundation is wanting. If the cause of eruptions is to be found in the first place in the water penetrating from the surface into the interior of the earth, and if their multiplicity must therefore be traced to the formation or opening up of lines of dislocation, or to subterranean subsidences, which both facilitate the access of water and increase the pressure in the subterranean regions, there still remains the question what specially produced these altered conditions in 1883.

A connection has been supposed to exist between the volcanic phenomena on the earth and the intense activity of the sun in that year. The maximum of the sunspot period seems to fall on 1884.0, thus a few months only after the eruption. The interesting researches of Prof. R. Wolf at Zürich have shown a connection between the number of sunspots and the daily variation of the magnetic declination. At a maximum of the spots, therefore, strong terrestrial magnetic currents might arise which might produce chemical disturbances in the interior of the earth that would be favourable to earthquakes or eruptions; but it must not be forgotten that at the periods 1829.9, 1837.2, 1848.1, 1860.1, and 1870.6 maxima

¹ This report appeared in NATURE, vol. xxx. p. 10.