congratulated upon having produced a very clear and readable introduction to the study of geology. The illustrations, many of which are new, are especially excellent, some being from original photographs taken by the author during his travels.

It is only fair to add, however, that while the earlier chapters may be read with advantage by all students of the science in every part of the globe, the part of the book which deals with "historical" or stratigraphical geology is quite unsuited for European students. The sequence of formation described is that of the American continent, and the fossils figured are, almost without exception, American forms. This, while fitting the work for students on the other side of the Atlantic, makes the work of little value, so far as its later chapters go, to English readers.

Elementary Plant Physiology. By D. T. Macdougal Ph.D. Pp. xi + 138. (New York and London: Longmans, Green and Co., 1902.) Price 3*s.* net.

WITHIN the pages of his elementary text-book Prof. Macdougal has collected together a very large number of experiments—so large, indeed, that forty-eight laboratory periods do not by any means exhaust the list. A certain number of these would be included in an ordinary anatomical course, *e.g.* the examination of sections of various parts of the plant, of mycorhiza, &c., while others are merely bionomical observations. The inclusion of these, however, is not so much deprecated, but rather the scant treatment which is meted out to some of the more important activities of the plant. Respiration is practically limited to a few experiments with seeds placed in a retort inverted over mercury; such apparatus precludes any but the roughest quantitative measurement. Again, no practical form of potometer is suggested, and absolutely no mention is made of the movement of protoplasm. Apart from the actual study of the movement, the streaming of protoplasm affords a simple indicator when investigating the action of anæsthetics or of neutral or poisonous gases upon the plant. These inhibiting effects are worked in by the author with growth, and this makes the experiments more complicated and less adapted to measurement.

These omissions are the more disappointing because Prof. Macdougal has the happy knack of giving explicit and full directions in a few sentences, and, further, he takes every opportunity of throwing out suggestions which should lead the student to think for himself and thereby obtain a fuller appreciation of the problems with which he is dealing.

Diagramme der electrischen und magnetischen Zustände und Bewegungen. By F. W. Wüllenweber. Pp. 64 + plates. (Leipzig: J. A. Barth, 1901.)

THIS book, consisting of ten plates and sixty diagrams and descriptive text, is put forward by the author as a contribution to the answers to the questions, What is electricity? and What is magnetism? The diagrams consist of figures representing the lines of force due to various distributions of electricity or magnetism; but in no case is there any quantitative representation attempted. All that we are given is a distribution of arrow heads representing the direction of the ether strains on a molecule. The diagrams being purely qualitative, there is really nothing in the book that a student could not put down himself easily, and frequently with greater accuracy than the author. The conception of lines and tubes of force as treated by Maxwell and Thomson can be most useful and instructive, but as they are given in the present book they can only result in confusion. We are afraid the questions What is electricity? and What is magnetism? are no more nearly answered after the appearance of this book than before.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

A Remarkable Solar Halo.

ON Sunday, August 7, 1898, being in Norway, I was climbing, with a friend, the upper slopes of the Horntind, above Skogstad, in the well-known Valders route between Christiania and Laerdal, lat. 61° 15′ 30″, long. exactly 6° E. We had reached a height of about 4000 feet above sea level when we saw the very remarkable halo of which I send you the photograph of the copy of a very careful drawing, made on the spot. I first caught site of the halo at 11.30 a.m., on lying down for a short rest on a large flat horizontal stone, but I have no reason to doubt that it had been visible for some time before. The early morning had been brilliantly fine, the air still, and the sun very hot; about 10.30 a.m. a very light breeze from almost due south began to blow, with intervals of dead calm. When the halo was seen, the sky was completely covered with a thin white haze. There was, however, no rain that day, though the weather on the next and succeeding days was not good. The sky outside the circles seemed everywhere brighter than inside them; the sun shone through the haze scarcely brightly enough to throw a distinct shadow, and his rays aroused no sensation of warmth. The inner edge of all the rings was fairly sharp, and of an orange-red colour, brightening into yellow, which

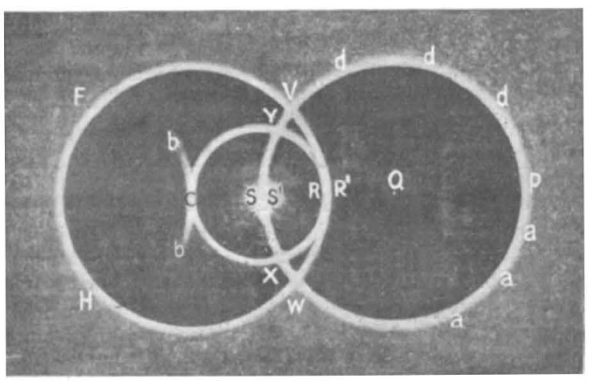

FIG. 1.

grew paler towards the outer rim, where it faded into a bluish-white radiance, which in turn became imperceptibly blended with the white misty sky. The width of the rings was from one-and-a-half to two degrees.

I watched the halo until it had completely faded. First the ring SVPW faded, the other two complete circles remaining visible after it had completely disappeared. Next the ring FHWV slowly vanished, leaving the small ring CYRX quite perfect and bright, and also the luminosity at *bb*. This last looked like a small part of a fourth circle; certainly it was curved and convex towards the sun, but of what radius this small arc was I am uncertain, but suspect that it was either the same, or greater than, the radius of the two big circles. I had no accurate instrument with me at the time for measuring angles, but the disc of the sun was distinctly visible through my neutral-tinted snow glasses, and in estimating the distance S R as subtending at the eye an angle of 19° I do not think there is an error of more than a few minutes of angle. The radius of each of the big circles must have been, therefore, nearly 44°, and that of the small circle about 22°.

In the illustration, the width of the rings is somewhat exaggerated. But by far the most remarkable thing about this halo is the asymmetric position of the sun with respect to the rings. With respect to the two large circles this is obvious, for the sun appeared to lie on the circumference of one of them, and at a point half way (subject to what is said below) between the centre and the circumference of the other; but, besides this, I could not persuade myself, though I exerted all my powers of