

If I drew an erroneous inference as to the *Carnegie* reduction factors I regret the fact; but if so, it seems a case not of the reviewer's inadvertence but of the inexactitude of the language quoted in the review. Consultation of pp. 207-209 still leaves uncertainty as to what really happened. On p. 209 it is stated, as Dr. Bauer remarks, that the final mean results were based on "all reduction-factor observations . . . during the years 1915 to 1921," but we should infer from p. 207 that after an observation on April 1915—the original deductions from which we learn from p. 209 were from 24 to 35 per cent. in error—no further observations were taken until the commencement of Cruise VI. (1919 presumably). The other observations chronicled occurred in 1921. I referred to the point in connexion with the question whether the neglect of Potsdam results, which did not support a sunspot influence, was justified on account of an alleged uncertainty in the reduction factor, an uncertainty which seemed to me unlikely to be greater than that affecting the *Carnegie* factors. The rejection of Potsdam data is, however, now advocated on the ground of "the severe climatic conditions to which that station is subject." To this we can only say, what of Eskdalemuir?

How best to deal with the non-cyclic element is, as Dr. Bauer says, a disputed question, but the fact remains that an undesirably large uncertainty owing to unascertainable n.c. changes enters into those observations taken on the *Carnegie* which seemed specially intended for the elucidation of the diurnal variation. At its recent meeting in Zürich the Magnetic Commission of the International Meteorological Committee passed a resolution recommending that, whether n.c. corrections are applied or not, the n.c. change corresponding to any diurnal inequality should be shown explicitly. The news that further observations by the *Carnegie* are contemplated in 1928 is welcome, and it is to be hoped that n.c. uncertainties will be avoided so far as possible.

There is no inherent improbability in a sunspot influence on atmospheric electricity, but there has not been that general agreement between different stations and epochs experienced in the case of terrestrial magnetism, and a reserve of judgment can do us no harm. I think it is also the wise course at present to keep an open mind as to whether the diurnal variation of the potential gradient at sea and in polar regions follows universal time. But as regards ordinary land stations, we can scarcely admit the existence of a prepotent term involving universal time, unless we are prepared to scrap many results accepted at present. At most land stations the diurnal variations near midsummer and midwinter differ considerably in type; at Eskdalemuir and Pavlovsk, where the principal minimum in summer occurs near local noon, the difference is profound.

C. CHREE.

Behind the Divining Rod.

I HAVE read, not without surprise, the review in *NATURE* of Feb. 26 under this heading.

I scarcely think it can be truly said that "the use of the divining rod has been looked at askance by men of science." Distinguished geologists have not averted their eyes, and have not neglected to subject its powers, or rather the power of the diviner, to experimental tests, but always with an unfavourable result.

Water is in many places sufficiently widely distributed to afford a fair chance to any one who says "put a hole down here and you will find it," and sometimes there are surface indications which will guide a good observer who may have no knowledge of

geology. Occasionally the dowser makes an unexpected hit, but remarkable coincidences are not unknown in other walks of life.

The question has been investigated by the officers of the United States Geological Survey, who found that the successes of the dowser were less numerous than the laws of chance would have led us to expect. Perhaps geologists are to blame for not making the facts more generally known, but their time is usually so fully occupied in serious research that they have none to spare for the exposure of what they have come to regard as a popular delusion. Nor should I be writing now were it not for the serious mischief which is likely to result and has, indeed, already resulted from a recrudescence of this belief in the occult. Too many cases have come under my own observation of misspent labour and money due to misplaced confidence in the powers of the diviner.

The success of dowsers who have acquired reputation are recorded, but of their failures we hear nothing, yet they are often the more remarkable. Employers, who sometimes can ill afford it, suffer in pocket and do not complain; they are unwilling even to give the name of the dowser who has "let them in." I should not myself have any knowledge of these failures were it not that our Geological Department, especially my friend and assistant Mr. C. J. Bayzand, takes a lively interest in water supply and the application of our knowledge of the structure of the country to the finding of water. We are thus brought into contact with dowsers.

Perhaps I may be allowed to give one example of failure of several from out my own experience. One of my friends, having built a house in the country, had to be provided with water, and a dowser was called in to exercise his art. Acting on his advice the well was sunk in the Kimmeridge clay and, as might have been expected, after reaching a depth of nearly fifty feet it gave no sign of water. I was then asked how much deeper it would be necessary to go, and was able to give a definite answer. The distance was close on 68 feet; but I was also able to add that plenty of good water could be got from the Lower Greensand at several places within twenty yards of the ill-chosen spot and at a few feet from the surface. Here the chances were ten to one in favour of the dowser, and his rod gave him the wrong one.

Again, much is heard of the rare cases where a dowser has made a hit after the professional geologist has failed, but instances to the contrary pass without comment. Yet they are not infrequent. Here is a very recent one.

In a district where water could be found at any spot within a mile's distance from a certain village a dowser chose his site for a well; the well was sunk to a depth of 38 feet, but no water was found. The dowser said it was no use to go any deeper, and frankly admitted that he had failed. A geologist was consulted; his advice was to sink a little deeper, and he predicted that water would be found well within an additional 12 feet. The well was deepened and plenty of water was struck at 42 feet. If the dowser could find water at the surface, why not when he was within a few feet of it?

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Feb. 27.

I HAVE every sympathy with Prof. Sollas and with all geologists whose scientific studies have been impudently challenged by ignorant charlatans. But I have met one honest and modest dowser who never exercised his powers for payment and had no theory as to the nature of the faculty which he believed he possessed. From the cases described by