

is known to exist, and contrasting the results with those obtained elsewhere with the same instruments.

Prof. Milne mentions Kew and Greenwich as representatives of stations where magnetic and gravitational anomalies do not exist, but, as a matter of fact, Rücker and Thorpe's magnetic survey does show a small magnetic anomaly in the Thames Valley, and certain foreign observers have also inferred a gravitational anomaly.

As to Prof. Milne's special term "gëite" for material in the earth's interior, I must confess that the application of a new word to the unknown material of a problematical core seems to me more likely to hinder than assist. Such special terms constitute an additional obstacle in the way of those who are not specialists. Also existing terms, such as nucleus and core on the one hand, and layer or crust on the other, seem not inadequate, the context showing whether it is the material that is immediately in view.

I have had repeated occasion to deal with elastic problems involving a core and a layer or layers. In fact, the very "earth" for which Prof. Milne expresses a preference, consisting of a layer of about  $1/20$  of the earth's radius in thickness with a density of average surface rock, and a core of specific gravity approaching 6, is one which I selected some years ago for the purpose of investigating luni-solar tidal action (*Cambridge Phil. Trans.*, vol. xvi. p. 151). Thus I do not speak without experience.

A final point to be remembered is that, according to the investigations of Gauss and others, the earth itself is a magnet of considerable moment. Any theory which claims even provisional acceptance may be expected to give a plausible explanation of this fact, and of the secular change observed in terrestrial magnetism.

C. CHREE.

#### Photograph of Oscillatory Electric Spark.

THE enclosed photograph of an oscillatory electric spark, like most of those which I have taken, differs in some respects, so far as I have seen, from those which have been recorded by other experimenters. It was obtained by the discharge of 22 square feet of coated surface through

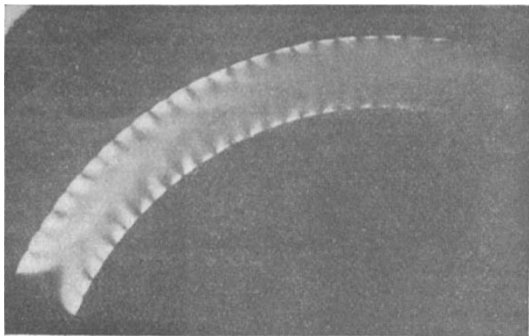


FIG. 1.—Oscillatory electric spark.

$\frac{1}{4}$  mile of coiled wire, the electrodes being of magnesium. The picture was focused on a circular plate fixed on the end of an electric motor, so as to revolve in its own plane. The number of double oscillations was about 3000 per second.

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#### Our Rainfall in Relation to Brückner's Cycle.

IN the instructive paper on solar and meteorological changes in NATURE (May 7), I observe that Dr. Lockyer suggests 1913 as probably about the centre of the next wet period. A consideration of barometric changes appears to lead to a similar result, and I may be permitted to recall a letter sent you in 1898 (NATURE, December 22, p. 175), in which, discussing with such data the question, "Where do we stand in Brückner's cycle?" I mentioned 1911 as probably near that centre. Such estimates must, of course, be regarded as merely approximate, and open to revision.

This important cycle of Brückner's was lately discussed in a number of letters to the *Times*, and it is satisfactory

to see that more adequate attention is now, though tardily, being given it.

Is it not objectionable to treat the British Isles as a whole, since, on Brückner's theory, the western portion shows opposite variation to the eastern?

There is a method of curve-making which seems to be little used by meteorologists, but which is, I think, to be recommended. A series of annual rainfall figures (say) is first translated into a series of plus and minus values (related to the average), and this series is then added algebraically step by step, e.g.

$$+9.3-1.4+0.6+0.9-1.6+1.3, \text{ \&c.} \\ +7.9+8.5+9.4+7.8+9.1, \text{ \&c.}$$

This second series is then thrown into curve form. The process is analogous to paying in money to a bank, and drawing money out, and the point reached by the curve at any given time indicates the balance.

Each upward (annual) extension in such a curve represents a wet year, and each downward extension a dry year, and the degree of wetness or dryness is also indicated.

A large comparison of such curves for European and other stations would, I think, throw a good deal of light on the Brückner theory.

ALEX. B. MACDOWALL.

#### The Propagation of Phthisis.

IN a work called "Opera nuova intitolata il Perche, utilissima ad intendere le cagioni de molte cose, &c.," published in Venice in 1520, the following passage occurs:—"Dal sputo del Tisico o da la sua boca viene fuora un vapore fetido e acuto che entra poi per la boca de colui che conversa con quello e corrode simelmente il pulmone de esso e in questo modo genera tistica."

Substitute for *vapore* "material particles," and we have the modern conception of the mode of propagating consumption. This anticipation of modern science seems worthy of note.

EDMUND McCCLURE.

#### TANGANYIKA.<sup>1</sup>

THE title of this work is perhaps somewhat misleading. The reader who expects the book to contain only discussions of speculative questions will be agreeably surprised by finding that the positive contributions made in it to our knowledge of the geology, botany and zoology of Central East Africa are of the most extensive and valuable character. The two expeditions which the author undertook in 1896 and 1899 to Lake Tanganyika and the surrounding districts, following upon the researches of earlier travellers, have thrown a flood of light upon both the geological structure and the fauna and flora of this part of the world, while they have incidentally suggested a number of difficult problems of no small interest alike to the geologist and the biologist.

The surveys of Mr. Moore and of Mr. Malcolm Ferguson, the geologist who accompanied him, have been of value in rectifying and making noteworthy additions to the maps of the area visited. The geographer will find references to a number of new mountain peaks, the heights of many of which are given, with the determination of the heights above sea-level and the depths of many of the lakes, in several of which numerous soundings and dredgings were made.

One of the most valuable results of Mr. Moore's explorations is the confirmation he is able to supply to the conclusions of Mr. Scott Elliot that there exists in East Central Africa a great mountain chain running north and south, and rising at many points, even in this Equatorial region, above the limits of perpetual snow. The height of the snow-line is fixed by Mr.

<sup>1</sup> "The Tanganyika Problem; an Account of the Researches undertaken Concerning the Existence of Marine Animals in Central Africa." By J. E. S. Moore, F.R.G.S., author of "To the Mountains of the Moon" Pp. xxiii + 371; with 7 maps and 140 illustrations. (London: Hurst and Blackett, Ltd., 1903.)