

## 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.]

## The Principle of Relativity

In reading through Mr. Cunningham's article on "The Principle of Relativity," I have been struck by several points which seem to require some elucidation.

Whether these difficulties are inherent in the "principle of relativity" as it is generally understood, or whether it is merely owing to the fact that for some time I have been accustomed to look at the matter from a different point of view, which I believe solves these difficulties, and that, on this account, I am rather obtuse towards other views, I cannot say.

Some of these points may be best indicated by Mr. Cunningham's own words, as follows:—

(1) "Now the very first thing that appears, if we accept the hypothesis of relativity, is that it is impossible for us to determine uniquely whether two events are or are not simultaneous."

(2) "We find that the conception of 'simultaneity' does not become definite until we have assigned a definite velocity to a certain point."

Query—What is a "definite velocity"? Is it to be defined in terms of length and time in the usual way, and, if so, how are length and time to be measured? For, as Mr. Cunningham remarks:—

(3) "The next thing we may notice is that the notion of the 'length of a body' becomes indefinite along with the term 'simultaneous.'"

(4) "If now we start from the fundamental law that there is a definite physically-determined velocity, that of light. . . ."

Query—What does Mr. Cunningham mean by a "definite physically-determined velocity" in view of statements (1), (2), and (3)?

Things apparently indefinite:—(1) "Simultaneity"; (2) mode of measuring length; (3) mode of measuring time intervals; (4) meaning of velocity.

Query—What are Mr. Cunningham's fundamental concepts?

A. A. ROBB.

Cambridge, June 20.

It should be fairly clear that the articles referred to by Mr. Robb were written with the intention of showing the need for a revision of the common ideas about space and time, which discussions on the principle of relativity have shown to be deeply ingrained. Mr. Robb would be the first to admit that such a revision is a necessity. The passages quoted above—(1), (2), (3)—were written to emphasise it.

To Mr. Robb's first query it must be replied that in the conceptual scheme of relations which we have evolved out of the data of perception, velocity is defined in terms of length and time in the usual way; but unfortunately experiment has not enabled us to think out a unique way of "measuring" space and time.

To the second query it need only be said that it is universal to think of light as being propagated in time, that this propagation is determined by physical considerations, and that it is at any rate a possible hypothesis that in the conceptual representation of the phenomena this propagation takes place always at a definite rate.

To the third query the reply is that the fundamental "concepts" in the representation of physical phenomena are space and time.

NO. 2331, VOL. 93]

But the articles did not profess to describe in detail a logical scheme of the universe of motion. Mr. Robb's forthcoming work in which this is attempted is anticipated with much interest. E. C.

## Distribution of Rainfall on Sunday, June 14.

I AM endeavouring to trace out the distribution of the rainfall on Sunday, June 14, in a similar manner to that in which I investigated a thunderstorm some three years ago. May I ask anyone who is interested, and has not already communicated with me, to send as full details as possible either to me or to the British Rainfall Organisation, 62 Camden Square, N.W., unless they would report in due course to the Meteorological Office or to the Royal Meteorological Society?

Especially should I like information on the following points:—When the rain began; when it fell or did not fall; whether there was hail; if so, when and for how long; whether there was wind, and from what directions. It would add to the value of the facts if the precise point of observation were stated.

Information is desired as to the weather outside the storm area, as well as to the conditions where rain fell.

Any observations, however slight, even if they refer only to one particular time, will be welcome and useful.

J. FAIRGRIEVE.

London Day Training College (University of London), Southampton Row, London, W.C.,  
June 26.

## The Photo-electric Effect of Carbon as Influenced by its Absorbed Gases.

THE existing contradictory results on the photo-electric effect of carbon can be explained by means of the quantity and quality of the gases absorbed by the carbon. The influences of ammonia, hydrogen, air, and carbon dioxide were investigated. The most consistent results were obtained from carbonised bamboo and hydrogen. Saturation curves showed ammonia to be the most active, and carbon dioxide the least. Distribution of velocity curves were obtained for bamboo and hydrogen. The maximum initial velocity was found to be independent of the quantity of hydrogen absorbed, while the maximum current was proportional to the quantity of gas absorbed.

O. STUHLMANN.

R. PIERSOL.

University of Pennsylvania, June 17.

MAYA ART.<sup>1</sup>

EXCEPTING the splendid labours of A. P. Maudslay, embodied in four volumes of beautiful illustrations, with a descriptive text, the study of old Maya civilisation is almost entirely German-American, and it became a science through Foerstemann, who, with marvellous intuition, was the first to read some of the glyphs.

It is a study quite self-contained, fascinating, but leading apparently nowhere. When the Spaniards conquered Middle America, the Maya glory was already a thing of the past, whilst the Mexican civilisation was at its height. This also has vanished without in the slightest degree

<sup>1</sup> *Memoirs of the Peabody Museum of American Archaeology and Ethnology, Harvard University. Vol. vi. A Study of Maya Art: Its Subject Matter and Historical Development.* By H. J. Spinden. Pp. xxiii+285+29 plates+map. (Cambridge, Mass; Peabody Museum, 1913.)