

Perhaps the phenomenon was not seen in England or even in Europe. The night may have been foggy, or the transit of the meteors may have taken place in the daytime there.

It does not seem impossible that Shakespeare may have heard of the display from sailors and other travellers in the east when he wrote about the close of the sixteenth century of certain stars shooting madly from their spheres. H. BEVERIDGE.

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October 26.

Skin Effect in Solenoids.

SKIN effect in long, single layer solenoids wound with solid round wire and used at very high frequencies has been treated by Sommerfeld,¹ Lenz,² and Abraham, L. Bloch, and E. Bloch.³ (The frequency is supposed so high that the Rayleigh approximation applies.)

The last of these disagrees with the first, giving the ratio of the resistance of a closely wound solenoid to the resistance of the wire of the solenoid when stretched out straight and used at the same frequency as equal to 3.73, while Abraham, L. Bloch, and E. Bloch obtained 3.46. The writer calculated the same ratio by a different method and obtained 23.4 ± 0.02 . Going through the calculation of Sommerfeld and correcting for an error in the graphical evaluation of the area under Sommerfeld's curve, the same result (3.41) is obtained by Sommerfeld's method. For loosely wound solenoids the calculations of Abraham, L. Bloch, and E. Bloch, Lenz, and the writer are in fair agreement.

On reading this letter Prof. Sommerfeld has informed the writer that he agrees with this conclusion.

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Colour Vision and Syntony.

AFTER reading the letter of Dr. Edridge Green (NATURE, October 14, p. 513) it occurred to me that the following method, involving no head movement, of observing the movement of positive retinal "after images" might be of interest. If, in a dark room, the eyes being in a state of "dark adaptation" and one covered, a dry petrol lighter of the spring release type be flashed, a fan-shaped pattern of brilliant streamers will be seen. This pattern is followed by a similar "after image." The "after image" immediately begins to contract. This contraction continues till the after image appears as a rather thick irregular line of smaller area and greater brilliancy than the original pattern. The rapidity of the change, and the final form varies for different parts of the retina. Two points are of interest, the contraction of the image, and the increase of brilliancy.

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London, S.E.,
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Mosaic Disease in Plants.

THERE has been considerable speculation recently upon the cause of the so-called "virus diseases," which occur in both animals and plants, such as typhus and Rocky Mountain fever in man, and

¹ A. Sommerfeld, "Über den Wechselstromwiderstand von Spulen," *Ann. d. Phys.*, 329, p. 609, 1907.

² W. Lenz, "Über die Kapazität der Spulen und deren Widerstand und Selbstinduktion bei Wechselstrom," *Ann. d. Phys.*, 342, p. 923, 1912.

³ H. Abraham, L. Bloch et E. Bloch, "Radio-télégraphie militaire," 1919, E.C.M.R. Report No. 4629.

"mosaic" disease in plants. These diseases are supposed to be due to the presence of some ultra-microscopic filter-passing organism. Many small bodies, some of a granular nature, have been described in connexion with these disorders, such as Rickettsia, Negri bodies, etc. As regards the mosaic disease of plants, L. O. Kunkel, a worker in Hawaii, last year demonstrated the presence of a peculiar body of amoeboid appearance in the diseased cells of maize affected with mosaic.

The purpose of this communication is to place on record the discovery of apparently similar bodies in the tissue of potato plants affected with mosaic, a disease which, so far as the potato is concerned, has become of considerable economic importance. No attempt is made at present to define the nature of this body, but it is hoped that further work may throw more light on the subject. All that can be said is that there is invariably present in the cells of mosaic potato tissue, in close association with the nucleus, an abnormal body which is definitely connected with the disease. Preparations showing these bodies were demonstrated at a recent meeting of the Association of Economic Biologists in London.

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Einstein's Paradox.

IN his review of Bergson's new book (NATURE, October 14) Prof. Wildon Carr refers to "Einstein's paradox," which he quotes in inverted commas as follows:—"Suppose a traveller to be enclosed in a cannon-ball and projected from the earth with a velocity amounting to a twenty-thousandth of the velocity of light; suppose him to meet a star and be returned to earth; he will find when he leaves the cannon-ball that if he has been absent two years, the world in his absence has aged two hundred years." It so happens that a paradox of this identical kind was proposed to Einstein himself by M. Painlevé at the Paris conferences in April of this year. Unless I have greatly misunderstood Einstein's reply, as recorded by M. Nordmann in the *Revue des Deux Mondes* of May 1, this particular paradox, arising from the imaginary departure and return of an observer travelling with great speed from a given point and back again, was shown to be one not legitimately derivable from the restricted theory—the theoretical construction is not one to which the transformation formulæ can properly be applied (pp. 146-152).

The humble student of relativity is therefore in the position of a schoolboy who finds that what he learns from one master to-day is contradicted by another to-morrow. Bergson and Nordmann both speak with Einstein's voice; but whereas the former apparently puts the paradox before us categorically as an inescapable Einsteinian fact, the other represents it as a non-Einsteinian fiction. Which of these two views are we to accept? They cannot both be true. Einstein, as quoted by M. Nordmann, advanced good reasons for putting the paradox out of court; but as Bergson was present at some at least of the conferences it appears that these reasons did not seem to him to be convincing.

There is a certain indefiniteness of phrase about the paradox as quoted above which gives rise to doubt. The only observer mentioned is the traveller in the cannon-ball; and it is quite overlooked that he would naturally expect the difference between his time and earth time to be in exactly the opposite direction—he would expect earth time to have advanced by only one-hundredth of his own time.