

gave a negative result, though in the experiments of Mott Smith a 10^9 volt electron should have been deflected through 2 cm. on reversing the field—a deflection that would have been easily measurable. Since the momentum of a proton of 10^9 volts energy is only double that of an electron of the same energy, the negative result of this experiment conflicts also with the suggestion of Prof.

Geiger that the radiation consists of streams of protons.

Considering that the range of energy open to experimental investigation is only a few million volts, however, it is scarcely surprising that no satisfactory hypothesis can be framed to account for phenomena exhibited by radiation of 1000 million volts energy.

L. H. G.

Obituary.

PROF. ALFRED WEGENER.

THE death of Prof. Alfred Wegener, leader of the German expedition to Greenland, has now been confirmed. By this event the sciences of meteorology and geophysics have lost a very valuable worker.

Alfred Wegener was born on Nov. 1, 1880. He studied at the Universities of Berlin, Heidelberg, and Innsbruck, obtaining the degree of Ph.D., at Berlin, with an astronomical thesis. He took part in a Danish expedition to Greenland under Mylius-Ericksen in 1906-8, taking charge of the meteorological work, including upper air observations with kites and captive balloons, and later summarising the observations for publication. He was a brother of Kurt Wegener, well known as a balloonist, and he took an active interest in his brother's work. From 1906 until 1908 the two brothers held the world's record for duration of balloon flight with a flight of $52\frac{1}{2}$ hours.

Wegener accompanied Col. Koch to Greenland in 1911-13. As an officer of the reserve, he served in the German army during the war of 1914-18, and was awarded the Iron Cross of the second class. In 1916 he was appointed to the meteorological service of the German army, and was meteorological adviser on a number of Zeppelin flights. After the War he joined the Deutsche Seewarte at Hamburg, and in 1925 he was appointed professor of geophysics and meteorology at the University of Graz.

Wegener's expedition to Greenland in 1929 was preparatory to the fourth, in which he perished. He set out from Kamarujuk in lat. 71° N., on the west coast, on April 1, 1930, and by the end of July had established a station on the central ice, about 250 miles from the coast. Wegener again set out in September with Dr. Loewe and a party of thirteen Greenlanders, with supplies and instruments for the observers at the central station, and he started with one Greenlander, Rasmus, on the return journey to Kamarujuk on Nov. 1. His non-arrival at the coast caused no uneasiness at first, as he was thought to have stayed at the central station, and it was only in late April that a search party was sent out. Wegener's body was found buried in the snow, but so far his companion, Rasmus, has not been found.

Wegener's contributions to meteorology included a number of papers on the investigation of the upper atmosphere, but his best known contribution to pure meteorology was a text-book, "Thermodynamik der Atmosphäre", which appeared in 1911, and of which a third edition appeared in 1928. This is a

particularly valuable book, in that it emphasises the physical aspects of meteorology. At the time of its first appearance it was almost the only text-book which gave a physical account of the processes of weather, and it remains a valuable part of the literature of a subject in which good text-books are rare.

In recent years Wegener has been better known as the author of the theory of 'continental drift', which was set forth in 1915 in the first German edition of "The Origin of Continents and Oceans". Later editions of this book appeared in German in 1920, 1922, and 1929; it was translated into English in 1924, and has also been translated into French, Russian, Swedish, and Spanish. Wegener claims that the continents are rafts of granitic rock floating in a heavier basaltic magma, and therefore free to move relative to each other and to the poles. He maintains that the continents have changed their positions considerably during geological times, and so accounts for the great apparent variations of geological climates and especially the glaciation of regions now within the tropics. The climatological aspects of the theory have been set out very clearly by W. Köppen and Wegener in "Die Klimate der geologischen Vorzeit". It cannot be said that general agreement has been reached on this subject, as can readily be seen by reference to the report of a discussion on this and kindred topics held at the Royal Society on March 27, 1930 (see *Proc. Roy. Soc., B*, vol. 106, p. 299; *NATURE* for April 5, 1930, p. 546). Wegener's ideas have, however, stimulated research in a marked degree, and his early death is a great loss to geophysical science.

Wegener's expedition to Greenland was part of a co-ordinated scheme of British, German, and American co-operation in an investigation of the weather conditions over the great inland ice-sheet of Greenland. The British expedition made a similar attempt to that of Wegener to set up a station in the centre of Greenland, but farther south, in the latitude of Angmagssalik. The narrow escape from death of Mr. Courtauld shows the dangerous nature of these attempts to solve the problems of the meteorology of Greenland. It is anticipated that the meteorological results obtained from the centre of Greenland and from the American station at Upernivik, on the west coast, will have important bearings upon the weather of Europe and America, as well as upon the practical problems of possible air-routes to Canada, which was a special subject of study by the British expedition.

D. B.