DISCUSSION

SOLAR AND RADIO PERIODICITIES

AT the April, 1932, meeting of the National Academy of Sciences I gave a paper which has been published under the title "Periodicity in Solar Radiation," by C. G. Abbot and Gladys T. Bond (Smithsonian Misc. Coll., Vol. 87, No. 9). Dr. L. W. Austin has published "Tables of North Atlantic Radio Transmission Conditions for Long-wave Daylight Signals for the Years 1922–1930" (Proc. Radio Engineers, Vol. 20, No. 4). It occurred to Mrs. Bond and me to see whether the departures from monthly normals in radio transmission showed the seven periodicities of 7, 8, 11, 21, 25, 45 and 68 months, respectively, which occur in the variation of solar constant values. We therefore computed the monthly normals from Dr. Austin's figures, and obtained the departures of all his observed monthly radio transmission values, 1922–1930. This series we analyzed by the aid of the periodometer. We found the seven periodicities above named and one other of 18 months, all well indicated. Combined they account for all longer period radio transmission variations. On the whole, the amplitudes of the solar periods and of the radio periods run nearly parallel. The cycle of eighteen months, though not found in solar variations, is conspicuous in terrestrial temperatures, as pointed out in our paper above cited. The phase relations between solar and radio periodicities are very interesting. We hope to publish details of the investigation in the autumn, but believe that the readers of SCIENCE will be interested to know that periodicities in solar radiation seem to accompany periodicities in radio transmission.

C. G. ABBOT

REPORTS OF THE PRINCETON UNIVERSITY EXPEDITIONS TO PATAGONIA

1896–1899

THE late Mr. J. B. Hatcher, at that time curator of vertebrate paleontology in the Princeton Museum, planned these expeditions and raised the principal funds for them from the students who had been with him in his various western explorations.

The first and third of the expeditions comprised Mr. Hatcher and Mr. O. A. Peterson, now of the Carnegie Museum in Pittsburgh; and the second one, Mr. Hatcher, and Mr. Colburn, of Washington, as ornithologist.

The principal object of the expeditions was to collect the wonderful fossil mammals of the Santa Cruz formation, which had been made known to the world by the late Dr. F. Ameghino, of Buenos Aires. In this the work was eminently successful; but was so expanded as to cover a great many other fields, and very extensive collections of invertebrate fossils and of the recent mammals, birds, fishes, reptiles, freshwater shells, plants, etc., of southern South America and Tierra del Fuego were made.

It was Mr. Hatcher's idea to publish this great wealth of new material in a series devoted to those topics alone; and when this project was laid before the late Mr. J. Pierpont Morgan, he generously contributed a large sum, which was at that time estimated to be sufficient for the whole publication. The various groups of fosils and recent animals and plants were entrusted for study and report to various specialists, nearly all of whom found it necessary to demand much more text and many more plates than they had originally estimated. The additional expense over the original scheme was met by contributions from the trustees of the Carnegie Institution of Washington and of Princeton University. Planned for six quarto volumes, the series has grown to twelve such volumes with three atlases of plates.

The first part was issued in the spring of 1901; the last part, concluding Volume VII, has just appeared. Needless to say, the editor is very much gratified at being able to issue the entire work over the thirty-one years which have elapsed since the publication of Part 1.

W. B. SCOTT
Editor

PLEISTOCENE MAN IN MINNESOTA[1]

DR. FRANK LEVERETT, geologist of the U. S. Geological Survey, prepared volume number 12 of the Minnesota Geological Survey, under Director Professor William H. Emmons. The volume is entitled "Surface Formations and Agricultural Conditions of Northwestern Minnesota." It was published in 1914. On sheet 1 of the map accompanying said volume Dr. Leverett shows certain "clayey lake beds," designated "L C"—one of which in Ottertail County is now of peculiar importance. The legend on the map which describes these clayey lake beds reads, "Chiefly in low part of areas of extinct lakes where fine material found lodgement below level of wave action."

From twelve feet beneath the existing varved silt which in glacial time flowed into and filled the ancient lake in Ottertail County, a human skeleton has been recovered under controlled and documented conditions.

May 7, 1932, Drs. C. R. Stauffer, G. A. Thiel, geologists, and F. K. Butters, botanist, colleagues in the University of Minnesota, visited the site of the find and, in agreement, bear scientific testimony concerning the geological nature of the extinct lake from whose silted depths the human skeleton was rescued.

[1] A preliminary announcement.