broken. The separation of the crystals was caused by weathering, as in some specimens they were still aggregated. A thin section under the microscope showed that the rock was composed of augite, nephaline, and titanite, imbedded in a green vitreous matrix. Dr. Blake also read a paper on the diatoms found in the Puebla hot spring, Humboldt county, Nevada. The temperature of the water where they were collected was 163° F. They were contained in the decomposing layers of an abundant growth of red algæ, which formed a membranous covering at the bottom of the channel, through which the waters of the spring were discharged. This growth consisted of oscillariæ and a minute hair-like alga, which presented nothing but a mere outline even when magnified 700 diameters. This alga seems identical with the *Hygrocrosis Bischofi* found by Cohn in carnallite. By the interlacement of its fibres it formed a tough membranous layer covering the bottom of the channel, but this layer was coloured red, apparently by the oscillariæ. In the upper layer of these algæ but few diatoms were found, but those layers which had been covered in by new growths, and which were in a semi-gelatinous state, afforded a nidus in which the diatoms seemed to flourish with the greatest luxuriance both as regards species and individuals. In one slide, without any previous preparation of the deposit, as many as forty-six species were observed. But the most interesting point in connection with them is their almost perfect identity with the diatoms found in the infusorial strata in Utah, and which have been so fully described by Ehrenberg in his recent memoir on the Bacillariæ of California. Amongst the more marked species which were peculiar to the Utah strata, Cocconema unciale-Hyalodiscus Whitneyi, Stephanolithis hispida, and Cosmiolithis Henryi were readily recognised; in fact, had it not been for the presence of a small quantity of these hair-like algæ in the recent specimen, it might have been regarded as having been taken from the Utah beds. The resemblance of form between these hot spring and Utah diatoms, and the fact of their growing so luxuriantly in water so hot as to render it unfit to support any other form of living being, makes it more than probable that the Utah infusorial layers were formed in an inland fresh-water sea, the temperature of which was probably about the same as that of the Puebla hot spring. The great difficulties in explaining the formation of these extensive infusorial deposits have been the time required for their formation, and also the entire absence of all other fossil remains in strata that were evidently quietly deposited in fresh water. Both these difficulties are removed by admitting that the inland sea in which they were formed was of a temperature which is seen to be most conducive to their rapid growth, and which, at the same time, was incompatible with the existence of other forms of living beings. It is probable that the temperature of the air was not much below that of the inland sea, so that no land plants or animals could exist at the time when the Utah beds were being deposited. The admission of the existence of such an extreme climate even in the temperate zone at so recent a period as the post-pliocene (the position these beds are supposed to occupy) would certainly lead to important modifications in our views as regards the condition of the surface of the earth at that period. The author thinks it probable that these Utah infusorial beds are miocene, as at the close of that period we know that the temperature of the Arctic region was some fifty or sixty degrees warmer than at present. He proposes in a future communication to enter more fully into this question, and also to consider the bearing of the discovery of the production of these low forms of living beings in such apparently abnormal conditions on the origin of living matter. — Prof. Whitney gave an account of the investigations carried on during the progress of the Geological Survey of California, having for their object the determination of the value of the barometer as a hypsometrical instrument, the expectation being, that after a sufficient stock of observations shall have been accumulated and reduced, it will be possible to designate the hours of the day for each month when the result will approach nearest to the truth; and in general to give practical rules in regard to the times of observing and the methods of reduction, the following of which will secure a close approximation to accuracy than can now be attained. An elaborate series of observations with this end in view was begun on this coast some ten years after by Colonel R. S. Williamson, of the U. S. Engineers; but the work was suspended by the Engineer Buseau just before being completed. Colonel Williamson's results, however, were published in the form of a superb quarto volume, as an "Engineer Paper," and this contains a large amount of valuable material, so that the work of the Geological Survey is only to be looked upon as supplementary to that so ably commenced by him. The stations at which observations are being carried on at present, under the direction of the Geological Survey, are along the line of the Central Pacific Railroad, and their elevations are presumed to be accurately known from the levellings of the railway surveyors. The points selected are San Francisco, Sacramento, Colfax, and Summit, approximately 0, 30, 2,400, and 7,000 feet above the sea-level. The observations have already been continued at these points nearly a year, and are made at the Smithsonian hours (7 A.M., 2 P.M., and 9 P.M.). The greatest care has been taken that the instruments should be kept in perfect order, well placed for accurate results, and carefully and punctually observed. The observations of the first ten months have already been partially worked over by Prof. Pittee, of the Geological Survey, and the results attained indicate very clearly that valuable assistance will be derived from the completed series in the reduction of the copious barometric determinations of altitude made during the progress of the survey.

BOOKS RECEIVED

ENGLISH.—Hardy Flowers: W. Robinson (Warne and Co.).

AMERICAN.—Mammals and Winter Birds of East Florida: J. A. Allen.

FOREIGN.—Verhandlungen des naturhistorischen Vereines der preussischen Rheinlande; Parts 1 and 2.—Sitzungsberichte der Niederrheinischen Gesellschaft zu Bonn, 1871.—Schriften der Naturforschenden Gesellschaft in Danzig.

PAMPHLETS RECEIVED

ENGLISH.—On the Spirit Circle: Emma Hardinge.—Transactions of the Literary Society of Sidcot School for 1870-71.—The Climate of Brighton: S. Barker.—The Dependence of Life on Decomposition: H. Freke.—A Complete Course of Problems in Plane Geometry: J. W. Pallisser.—Sixth Report of the Quekett Microscopical Club.—On the Relative Powers of Various Substances in Preventing the Generation of Animalculæ: J. Dougall, M.D.—Testimonials in favour of J. W. Davidson, candidate for the Chair of Anatomy in the Edinburgh Veterinary College.—The Traveller; Vol. I., No. 5.—Water not Convex, the Earth not a Globe: W. Carpenter.—On the Economical Production of Peat and Charcoal.—The Contagious Diseases Act and the Royal Commission.—Some Simple Sanitary Precautions against Cholera and Diarrhœa: M. A. B.—The proposed India and England Railway: W. Low and G. Thomas.—Contributions to the Knowledge of the Meteorology of Cape Horn and the West Coast of South America.—Transactions of the Geological Society of Glasgow; No 3, Supplement.

AMERICAN AND COLONIAL.—Fourth Annual Report of the Trustees of the Peabody Museum.—Transactions of the Entomological Society of New South Wales; Vol II., Part 2.—Notes on the Birds of New Zealand: T. H. Potts.—Arrangement of the Families of Molluscs: T. Gill, M.D.—On the Early Stages of *Terebratulina septentrionalis*: E. S. Morse.—What are they doing at Vassar? Rev. H. H. Macfarland.

FOREIGN.—Le Chiffre Unique des Nombres.—Sulle Distribuzione delle protuberanze intorno al disco solare: P. A. Secchi.

CONTENTS

ERRATUM.—Page 383, second column, lines 4, 11, for "Geneva" read "Genoa."

NOTICE

We beg leave to state that we decline to return rejected communications, and to this rule we can make no exception.