

"On the geology and physical geography of the West Indies, with reference to the distribution of mollusca." He stated that the land shell faunas of Porto Rico and the Virgin Islands, Sombrero, Anguilla, St. Martin, and St. Bartholomew, are closely allied, and may be called distinct from that of Haiti on the west and the islands to the south. He came to this conclusion from the facts of distribution, and now finds corroborative evidence from the depth of water. An elevation of the bank on which Porto Rico and the Virgin Islands stand (to and including Anegada) of less than 40 fathoms would make one island of the whole. Anguilla, St. Martin and St. Bartholomew stand on one bank, and a similar elevation would unite them; there is deep water around Sombrero. The fauna of the group is Mexican and Central American, with peculiar genera not represented in the islands south of the Anguilla bank. There are genera represented in Cuba and the Bahamas, Haiti, Porto Rico, and the islands on the Virgin and Anguilla banks, but not in the islands south. One *Strophia* fossil in Sombrero and in St. Croix, recent in the others. The depth of water between St. Thomas and St. Croix is 2,000 fathoms, telling of long separation. These facts point to a large island or continent, which embraced the Anguilla bank in its southern limit. Barbuda and Antigua stand on one bank, St. Eustatius, St. Kitts, and Nevis on another, with land shell fauna alliance with Guadeloupe, Dominica, Martinique, and Barbados—that group by their fauna connected (not a few species in common) with Guiana—water over 1,000 fathoms deep between Dominica and Martinique, and the latter and St. Lucia and St. Vincent. Now Trinidad and Tobago (both on soundings) Grenada (300 to 400 fathoms between it and Trinidad), the Grenadines (all on one bank with Grenada), and St. Vincent (1,300 fathoms between it and St. Lucia) have peculiarly the fauna of Venezuela. *Bulimus* proper (South American) is only found on those islands and St. Lucia. The greatest depth between St. Vincent and the Barbados is 1,218 fathoms, and between the latter and Tobago 1,060. These facts point to an extension of the South American continent, say from north of the Amazon River to a point west of Trinidad, and northerly to Barbuda, the west side (now Trinidad, Tobago, Grenada, Grenadines, St. Vincent, and St. Lucia), having the Venezuelan fauna, and the east side (now Barbados, Martinique, Dominica, Guadeloupe, Antigua, &c.) having the Guiana fauna—Prof. Cope read a paper entitled "Supplement to the Synopsis of Extinct Batrachia and Reptilia, &c.," in which several extinct reptiles were described. Portions of the jaws and teeth of one of these from New Jersey were exhibited. It was named *Liodon sectorius*, and was characterised by a greater amount of compression of the teeth than in any certainly known Mosasaur, the crown resembling those of some sharks.—Prof. Cope read a paper "On extinct forms of fishes of the neotropical region." Two new genera, *Prymnates* (Clupeidæ) and *Anædopogon* (? Characinidæ) were determined. He also exhibited some fossil Batrachia from the Carboniferous of Linton, Ohio, obtained by the Geological Survey under Prof. Newberry. One a specimen of *Sauropleura remex* Cope presented a well-developed hind limb. *Ostecephalus amphiuminus* was branched, and probably limbless. Another fossil, representing a new genus, was referred to as *Conchiocephalus piscinus* Cope. It had two operculum-like bones on the sides of the cranium, the teeth obtuse and in brushes; the size of *Protonopsis*.—Mr. Pliny Earle Chase read a paper on American and European rain-falls, showing an opposition at different seasons of the year, analogous to that which he had pointed out at different periods of the lunar month. Comparing the quarterly rains at Lisbon and at Philadelphia for the sixteen years, 1855 to 1870 inclusive, he found that the half years which were the most rainy at one station were the least so at the other. He also found that, in ten years out of the sixteen, an annual rainfall above the average at one station was accompanied by one below the average at the other. Mr. Chase also communicated some of the results which he had obtained by a discussion of the meteorological observations of the Signal Service Bureau, United States War Department. Perhaps the most important of his deductions were the following:—(1) The greater importance of the barometric gradients than of the isobars, in making American forecasts; (2) the great frequency of anti-cyclonic storms in the United States; (3) the probable origin of a large proportion of our storms in the blending of the polar and equatorial currents, near the latitudes at which the general tendency of the winds changes its direction; (4) the greater severity and briefer duration of cyclonic commotions than of those which are primarily anti-cyclonic.

## BOOKS RECEIVED

ENGLISH.—Fragments of Science for Unscientific People: J. Tyndall (Longmans).—Classical and Prehistoric Influences upon British History, pt. 1: S. Bannister (Longmans).—British Rainfall for 1870: G. J. Symons (Stanford).—Symons' Meteorological Magazine for 1870 (Stanford).—The Beginning: its When and its How: M. Ponton (Longmans).—The Poor Artist: R. H. Horne (Van Voorst).—Half-crown Saturday afternoon Rambles round London: H. Walker (Hodder, Stoughton, and Co.).—A Sketch: Romance of Motion: A. Lee (Longmans).—What is Industrial and Technical Education? two Orations by Dr. John Mill (Simpkin and Co.).

FOREIGN.—(Through Williams and Norgate)—Die Elektromagnetische Telegraph: Dr. Schellen (2 vols.).

## DIARY

## THURSDAY, APRIL 20.

ROYAL SOCIETY, at 8.30.—Note on the Circumstances of the Transits of Venus over the Sun's Disc in the years 2004 and 2012: J. R. Hind, F.R.S.—On the Existence and Formation of Salts of Nitrous Oxide: Dr. E. Divers.—Research on a new group of Colloid Bodies containing Mercury, and certain members of the series of Fatty Ketones: Dr. J. E. Reynolds. SOCIETY OF ANTIQUARIES, at 8.30.—On the Original Purport and Use of the Galilee of Durham Cathedral: W. White, F.S.A.

LINNEAN SOCIETY, at 8.—Notes on Mr. Murray's paper on the Geographical Relations of the chief Coleopterous Fauna: Roland Trimen, F.L.S.

CHEMICAL SOCIETY, at 8.

ROYAL INSTITUTION, at 3.—On Sound: Prof. Tyndall.

## FRIDAY, APRIL 21.

ROYAL INSTITUTION, at 9.—On the pre-Socratic Philosophy: Prof. Blackie, F.R.S.E.

## SATURDAY, APRIL 22.

ROYAL SCHOOL OF MINES, at 8.—Geology: Dr. Cobbold.

ROYAL INSTITUTION, at 3.—On the Instruments Used in Modern Astronomy: Mr. Lockyer.

## MONDAY, APRIL 24.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.

INSTITUTE OF ACTUARIES, at 7.—On Industrial Assurance: H. Harben.

LONDON INSTITUTION, at 4.—On Astronomy: R. A. Procter, F.R.A.S. (Educational Course).

SOCIETY OF ANTIQUARIES, at 2.—Anniversary Meeting.

## TUESDAY, APRIL 25.

ROYAL INSTITUTION, at 3.—On the Geology of Devonshire, especially of the New Red Sandstone System: William Pengelly, F.R.S.

## WEDNESDAY, APRIL 26.

GEOLOGICAL SOCIETY, at 8.—On a new species of Coral from the Red Crag of Waldringfield: Prof. P. Marti Duncan, F.R.S., F.G.S.—Notes on the Minerals of Strontian, Argylshire: R. H. Scott, F.R.S., F.G.S.—On the probable origin of Deposits of "Loess" in North China and Eastern Asia: T. W. Kingsmill, of Shanghai.

SOCIETY OF ARTS, at 8.—Photography in the Printing Press, being a Description of the Working of the Heliotype Process: Ernest Edwards.

ROYAL SOCIETY OF LITERATURE, at 8.30.—On the Classical Names of Rivers: Hyde Clarke.—On Shakespeare's Birthday: C. M. Ingleby, LL.D.

LONDON INSTITUTION, at 12.—Annual Meeting of Proprietors.

## THURSDAY, APRIL 27.

ROYAL SOCIETY, at 8.30.

LONDON INSTITUTION, at 7.30.—On Economic Botany: P. of. Bentley.

ROYAL INSTITUTION, at 3.—On Sound: Prof. Tyndall.

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