

We see by the discoveries of Dr. Bryce, Mr. Jameson, and others that the Pleistocene mammalia must have invaded Europe during the first Glacial period before the submergence, for the reindeer and the mammoth have been found in Scotland under the deposits of Boulder-clay. Dr. Falconer and others have also discovered the latter animal in the pre-glacial forest-bed. The Glacial period can therefore no longer be looked on as a hard and fast barrier separating one fauna from another. If man be treated as a Pleistocene animal, there is reason to believe that he formed one of the North Asiatic group, which was certainly in possession of Northern and Central Europe in Pre-glacial times. The Pleistocene mammalia may again be divided into three groups, those which came from Northern and Central Asia, those from Africa, and those which were living in the same area in the Pliocene age. Had not the animals which lived in Europe during the Pliocene age been insulated from those which invaded Europe from Asia by some impassable barrier, the latter would occur in our Pliocene strata as well as the former. Such a barrier is offered by the northern extension of the Caspian up the valley of the Obi to the Arctic Sea. The animals of Northern and Central Asia could not pass westwards until the barrier was removed by the elevation of the sea-bottom between the Caspian and the Urals. The same argument holds good as to the African mammalia, which could not have passed into Sicily, Spain, or Britain, without a northward extension of the African mainland. The relation of the Pleistocene to the Pliocene fauna is a question of great difficulty. If the Pliocene fauna be compared with that of the Forest-bed, it will be seen that the difference between them is very great. The Pliocene mastodon and tapir, and most of the Cervidae, are replaced by forms such as the roe and reindeer, unknown until then; but many of the Pliocene animals were able to hold their ground against the Pleistocene invaders, although they were ultimately beaten in the struggle for existence by the new comers. The fauna which the author adopted as typically Pliocene is that furnished by the lacustrine strata of Auvergne, the marine sands of Montpellier, and the older fluviatile strata of the Val d'Arno. Mr. Prestwich was hardly prepared to accept the proposed division of the Pleistocene mammalia into three groups; at all events so far as Britain is concerned. Neither could he draw that distinction between the beds at Erith and Grays and those higher up the Thames, which found favour with the author. The barrier offered by the river itself might to some extent account for the absence of reindeer; and though there was a difference in the fauna in the two cases, it seemed hardly enough to mark any great distinction in time. As to the hippopotamus, which occurred over the whole of Northern Europe, associated with the musk-ox and large boulders, he could not see how the conclusion was to be escaped of its having been able to withstand greater cold than its present representative. Though the winters might have been colder, there was evidence in favour of the summers having been warmer; and the flora seems to have been much like that of the present day. The probable migrations of the different animal groups had already been pointed out by M. Lartet, though Mr. Dawkins had carried his investigation of the subject further. He called attention to the fact of the mammoth having been found in Italy. Mr. Boyd Dawkins, in reply, stated that in forming his conclusions, he had not left out of view the evidence afforded by the classes of remains other than those of mammalia, but they threw no light on the classification. With regard to the middle of his divisions of the Pleistocene mammalia, he relied to a great extent on the presence of *Rhinoceros megarhinus*, and of a large number of stags, to say nothing of the absence of reindeer. He did not attach so much importance to the question of the level, as such discrepancies as those pointed out appeared to him by no means impossible. He gave his reasons for not regarding the mammoth as an exclusively arctic animal. His remarks with regard to M. Lartet's classification referred rather to the expanded views of his followers than to those of M. Lartet himself. He acknowledged his obligations to Profs. Gaudry, Fraas, Rittmeyer, and Nilsson for various facts of which he had made use.

PARIS

Academy of Sciences, June 10.—M. Marie presented a memoir on the determination of the critical point at which the region of convergence of Taylor's series is situated; and M. A. Ribaucour a note on the theory of lines of curvature.—M. Yvon Villarceau exhibited and described to the meeting an isochronous regulator with vanes, constructed by M. Bréguet.—A note was

read by M. E. Vial on a new mode of printing on stuffs by means of metallic precipitations, in which the author described a method of printing either by means of clichés or of copper or steel plates upon any textile fabric by the agency of nitrate of silver.—M. A. Clermont presented a note on the metallic trichloracetates, in which he described the preparation and characters of trichloracetate of ammonium, and of acid and neutral trichloracetate of thallium, and noticed the action of permanganate of potash upon hydrate of chloral in producing trichloroacetic acid.—M. Wurtz communicated a note by M. Oré on M. O. Liebreich's experiments, from which the latter inferred that strychnine is an antidote to chloral. M. Oré shows grounds for the belief that M. Liebreich's experiments were inconclusive.—M. de Vibraye presented some further remarks on the spontaneous appearance in France of exotic plants in the track of the belligerent armies in the late war, in which he stated that the number of these plants introduced into the department of the Loir et Cher alone is 163.—In consequence of M. de Vibraye's statements, the sections of Botany and Rural Economy were instructed to prepare a scheme for the systematic introduction of Algerian forage plants suitable for the climate of France.—M. Decaisne presented a note by M. J. E. Planchon on the geographical distribution of the Ulmidæ.

BOOKS RECEIVED

ENGLISH.—Contributions to Molecular Physics in the domain of Radiation: J. Tyndall (Longmans).—Patterns for Turning: H. W. Elphinstone (J. Murray).—Symon's British Rainfall for 1871 (E. Stanford).—Brewton, or Over the Range (Tribner).—The Principles of Geology, 11th edition, Vol. ii: Sir C. Lyell (Murray).

AMERICAN.—Astronomical and Meteorological Observation made at the U. S. Naval Observatory, Washington, 1869.—The Science of Aesthetics in the Nature, kinds, laws, and uses of Beauty: H. N. Day.

FOREIGN.—Medizinische Jahrbücher, Heft i., 1872: S. Stricker.—Bulletin de la Société Impériale des Naturalistes de Moscou, iii. and iv., 1871.—Die Darwinische Theorie: J. W. Spengel.

DIARY

THURSDAY, JUNE 20.

ROYAL SOCIETY, at 8.30.—Volcanic Energy—an attempt to Develop its True Origin and Cosmical Relations: R. Mallet, F.R.S.—Preliminary Note on the Reproduction of Diffraction Gratings by means of Photography: Hon. J. W. Strutt.—On Voltaic Standard of Electromotive Force: Latimer Clark.—Pyrology, or Fire Chemistry: Capt. Ross, R.A.

SOCIETY OF ANTIQUARIES, at 8.30.—Hungarian Origin of the word Coach: A. Goldsmid.—On the Origin of the Christian Era: G. Oppert.

LINNEAN SOCIETY, at 8.—On the structural peculiarities of the Bell Bird (*Chasmorhynchus*): by Dr. Murie, F.L.S.

CHEMICAL SOCIETY, at 8.—On Deacon's Method of obtaining Chlorine, as illustrating some principles of Chemical Dynamics: H. Deacon.

MONDAY, JUNE 24.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.

WEDNESDAY, JUNE 26.

SOCIETY OF ARTS, at 4.—Anniversary Meeting.

ROYAL SOCIETY OF LITERATURE, at 8.30.—On the Extent of Ancient Libraries: W. E. A. Axon.—On a Service Book of Strassburg use, containing Dramatic representations: Walter de Grey Birch.

THURSDAY, JUNE 27.

SOCIETY OF ANTIQUARIES, at 8.30.

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