

to stimulate them to further inquiries, "the object of which is to interpret truthfully and earnestly those records of past creations, the memorials of which exist within our reach, although buried and obscured in the ground beneath our feet."

Besides the illustrations of fossils and diagrams, the work is accompanied with an outline geological map of the neighbourhood of London, and section of the Drift and London Tertiary strata.

A Catalogue of the Lepidopterous Insects in the Museum of the Hon. East India Company. By THOMAS HORSFIELD, M. and Ph. D., F.R.S., Keeper of the Company's Museum, and FREDERIC MOORE, Assistant. Vol. I. Printed by Order of the Court of Directors. London, 1857. 8vo, pp. v and 316, and 18 Plates.

The recent opening of the very extensive and splendid additional Museum in the East India House, and the publication of the volume before us, at a time when the Hon. Company itself is overshadowed by so dense a political cloud, are circumstances which speak volumes for the energy of the Company and the activity of its servants.

Thirty years ago, the veteran naturalist whose name first appears on the title-page of the work above noticed, published two Parts of a Treatise on the Lepidopterous Insects of Java, the materials for which had been collected by himself, comprising a truly valuable series of illustrations of the transformations of a great number of highly interesting species of butterflies. The plan on which the work was published, we are now told by the author, could not ensure public support. It was in fact far too costly and elaborate, and consequently the publication of it was discontinued after two Parts had appeared in 1828 and 1829. The materials, however, which those two numbers contained were of the utmost value for a true classification of the Order, consisting as they did not only of truthfully executed illustrations of the transformations, but also of elaborate analyses of the perfect insects themselves. Entomologists therefore who felt an interest in the subject beyond the mere possession of a cabinet of specimens, regretted the discontinuance of the work, and the non-publication of the abundant materials remaining in the portfolios of the author. Time, however, wore on, and the system of Catalogues published by the Trustees of the British Museum induced the Hon. Company to commence the publication of a similar series of Catalogues of the contents of their Museum. Several of these have appeared, and now we have before us the first volume of the Entomological Series, in which the whole of the Eastern Diurnal and Crepuscular Lepidoptera, six hundred and fifty in number, are catalogued, accompanied with coloured illustrations of their transformations, occupying twelve crowded plates, together with six plates filled with figures of new species. Not only are the whole of Dr. Horsfield's own collection of drawings of the transformations of the Javanese species of these two divisions now published, but also several valuable series of similar drawings of continental Indian species by A. Grote, Esq., Lady

Isabella Rose Gilbert, Mrs. Hamilton, and Capt. Mortimer Slater, and of Ceylonese species by E. L. Layard, Esq.

As in his former work, Dr. Horsfield here expresses his conviction that the transformations of Lepidoptera afford the chief clue to the discovery of the natural system; and in his introductory remarks he has paid a just compliment to the 'Systematisches Verzeichniss' of the Theresianer, whose maxim, "ein Auge auf den Schmetterlinge, das andere auf die Raupe," ought never to be lost sight of by Lepidopterists. In like manner, he avows his continued adherence to the circular and quinary system of MacLeay, supported as it has been by Gray in Mammalia, Vigors and Kaup in Birds, De Haan in Crustacea, and Fries in Fungi.

As, however, in a collection from a territory of limited geographical extent, large chasms remain to be supplied from other localities, Dr. Horsfield "desires that it may be distinctly understood, that it is not his purpose to give an illustration of MacLeay's particular system; his object being to contribute a fragment towards a future enterprise of a more qualified entomologist." The attempt, indeed, to work out the MacLeaian system in such a catalogue as that now before us, would have occupied not only too much space, but also far too much time at Dr. Horsfield's very advanced age.

The Diurnal Lepidoptera are arranged in five Stirpes, from the supposed analogical resemblance of their larvæ with the five Orders of Ametabola according to the system of MacLeay:—1. Those with vermiform larvæ, containing the family Lycænidae. 2. Those with Chilognathiform or Iuliform larvæ (Pierides and Papilionides). 3. Those with Chilopodiform or Scolopendriiform larvæ (Nymphalidae). 4. Those with Thysanuriform larvæ, having the head and tail furcate, containing the Morphides, Hipparchiides, and portion of the Nymphalidae; and 5. Those with Anopluriform larvæ, comprising the Erycinidae, Hesperiidæ, and the genus *Nyctalemon*. The Sphingides are comprised in five Stirpes: of the first, containing *Castnia* and *Euschemon*, there is no Indian representative; the second is typified by *Sesia* and *Macroglossa*; the third by *Smerinthus*; the fourth by *Acherontia* and *Sphinx*, and the fifth by *Deilephila* and *Choerocampa*; the Zygænidae and Trochiliidae being removed to the Nocturnal division.

We are not disposed to enter into any extended criticism of the classification proposed above, but shall simply state our opinion that the group or class Ametabola of MacLeay, involving the analogical classifications founded thereupon, is entirely faulty in its construction; that the Morphides and various Nymphalideous genera placed in the Thysanuriform section are more naturally allied to the Chilopodiform group; that *Adolias* even affords perhaps as good an instance of analogy as could be desired with a Chilopod genus, namely *Scutigera*; that the Erycinidae and Hesperiidæ belong to totally different types; that *Nyctalemon* is a Heterocerous genus; that the 2nd, 3rd, 4th and 5th Stirpes of the Sphingides are far too closely allied together to be considered separately as of equal rank with *Castnia*; and that *Euschemon* belongs to the Diurna.

We must not conclude without referring to the excellent observations on the divisions proposed in the great genus *Papilio* by Dr. Horsfield, nor to the very careful manner in which the synonymy of the old and the description of the new species have been worked out by Mr. Moore. We could have wished that the classical system of giving short Latin characters of each species had been adopted, as we know by experience how apt entomologists are to overlook descriptions of species written only in the vernacular language of authors of other countries. We trust, in conclusion, that this volume is only the precursor of several others, in which the remainder of the Order will be described. We know that there are ample materials for such additional volumes, and we trust that Dr. Horsfield will be spared to see their publication.

General Report upon the Zoology of the several Pacific Railroad Routes. Part I. Mammals. By SPENCER F. BAIRD. 1 vol. 4to. Washington, 1857.

The contributions already made to our knowledge of the Fauna of North America by the zoological appendices to the Reports of various Surveys and Explorations ordered by the Government of the United States, are neither few nor unimportant. The accounts of expeditions to the Red River of Louisiana, the Great Salt Lake of Utah, and the Zuni and Colorado Rivers, all contain materials worthy of much attention, and especially calculated to throw light upon the theory of the distribution of animal life in the North American continent. And in the Reports of the recent U. S. Astronomical Survey in the Southern Hemisphere, and of Commodore Perry's Japan expedition, we have evidence that the American Government is sufficiently 'catholic' in its promotion of scientific investigation not to refuse assistance in extending our knowledge of the zoology of other parts of the world besides those immediately subject to its sway. The seventh volume of the 'Reports of Explorations and Surveys to ascertain the most practicable and economical route for a Railroad from the Mississippi to the Pacific Ocean, made under the direction of the Secretary of War in 1853-56,' the title of the first part of which is given above, promises to bring still greater additions to our knowledge of North American Zoology than any of the previous publications. This first part only embraces the *Mammalia*; but if the Birds, Reptiles, Amphibians, Fishes, and other orders of organized beings are treated of in the same way, the result will be a complete and very interesting *résumé* of the zoology of this portion of the globe. The numerous different surveying parties which were employed on the proposed Pacific railway-routes, amassed a very large quantity of materials for scientific research, which were all transferred by the U. S. Government to the guardianship of the Smithsonian Institution at Washington. The energetic Assistant-Secretary of that establishment, Professor Baird—than whom no one could be found better qualified for the task—has himself undertaken to work out the specimens of *Mammalia* collected. The same gentleman, together



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