

species of mammals, nearly three times as many birds, considerably over four times as many batrachia, and about eight times as many reptiles as the whole of Europe. The moths known to be found in Europe are 3040 in number, those of India 5600; and in this case there is no doubt that the Indian list is far from complete.

The interest attaching to the botany and zoology of India makes the circumstance noteworthy that two important works published by order of the Government of India, and at its cost, have been completed within the last six months. These works are the "Flora of British India" and the vertebrate section of the "Fauna of British India." In neither case is the work exhaustive, but each deals with the most important group of plants or animals respectively, the "Flora" containing descriptions of all flowering plants, and the "Fauna" accounts of all vertebrate animals. It is scarcely necessary to say that flowering plants form a much larger proportion of the whole flora, than vertebrate animals do of the entire fauna; but some progress has already been made with an addition to the "Fauna" as originally planned, and with the description of the huge mass of Indian Invertebrata. Except that the plants of the Malay peninsula are included in the "Flora," whilst the animals are omitted from the "Fauna," the British India of the two works is the same, and includes all India proper with the Himalayas, Ceylon, Assam, and Burma.

The "Flora of British India" is a work to which Sir J. D. Hooker has devoted many years of his life, and it is chiefly written by him, portions having been contributed by other botanists, amongst whom are Mr. Thiselton-Dyer, Mr. C. B. Clarke, Dr. Maxwell T. Masters, Mr. J. G. Baker, and the late Dr. T. Thomson and Dr. T. Anderson. The undertaking may be said to have commenced originally by the publication of the first (and only) volume of Hooker and Thomson's "Flora Indica" in 1855; but the present work, which is on a smaller plan, has been brought out in parts, of which the first appeared in 1872, and the last, containing the index, in November 1897. The whole consists of seven thick octavo volumes, comprising altogether over 5000 closely printed pages, and containing descriptions of 14,520 species.

The "Fauna of British India" is on a different plan, and the completed portion, containing the Vertebrata, consists of eight octavo volumes and of over 4100 pages. Of the eight volumes, one contains the Mammals (402 species), four the Birds (1626), one the Reptilia (534) and Batrachia (130), and two the Fishes (1418). The whole is edited by Mr. W. T. Blanford, who is also the author of the volume of Mammals and of two volumes of Birds, the remaining two volumes of the latter being the work of Mr. E. W. Oates; whilst Mr. G. A. Boulenger has contributed the part containing the Reptilia and Batrachia, and the late Dr. F. Day wrote the account of the Fishes. The first part appeared in 1888, and the last volume of Birds has just been issued from the press.

As already mentioned the "Fauna," as originally projected, was intended to contain an account of the Vertebrata alone, and this is now complete. But some years ago the Government of India authorised an extension of the work, on the same plan and under the same editor, to certain Invertebrate groups, with the result that up to the present time four volumes on Moths, by Sir G. F. Hampson, have been published, with descriptions of 5618 species; and one volume on Bees and Wasps, by Colonel C. T. Bingham, containing descriptions of 995 species. Thus at present the series of the Fauna comprises thirteen volumes. No intimation has been given of any additional parts being in preparation. It may be hoped, however, that further additions will be made, and that, so far as is practicable, both the Flora and Fauna may be completely described. A thorough knowledge of the productions of India is as important for economic reasons as for scientific inquiry.

A. KERNER VON MARILAUN.

WE regret to announce that Dr. Anton Kerner von Marilaun, Professor of Botany in the University of Vienna, died suddenly on June 21 in that city from apoplexy. He was born at Mautern, Lower Austria, on November 13, 1831. He acquired at a very early age a considerable knowledge of the flora of his native province, and had already a good reputation as a botanist when still a student of medicine in the University of Vienna. After having taken his degree as Dr. Med. et Chir., he practised for a short time in one of the Vienna hospitals; but finding the medical career not to his taste, he accepted a professorship in the Josef's Polytechnicum at Ofen, Hungary. In 1861 he was called to the chair of Botany in the University of Innsbruck, which he occupied till 1878, when he succeeded Eduard Fenzl as Professor of Botany and Director of the Botanic Garden and Museum at Vienna, in which position he remained up to his death. In 1875 he was elected a member of the Imperial Academy of Science of Vienna; he received the order of the Eiserne Krone in the following year, in recognition of his achievements as a teacher and man of science, and was knighted in 1877, when he added the title "von Marilaun" to his name. When Eichler, the eminent morphologist, died, the University of Berlin invited him to the vacated chair; but Kerner, who had always been a staunch Austrian, declined.

Kerner's principal claims as one of the most prominent botanists Austria has produced, rest chiefly on his researches in phyto-geography and biology—this term to be understood in the narrower sense, in which it is so often used in Germany. Trained from early youth to observation in the field, thoroughly familiar with the Central European flora, gifted with a keen eye for the salient features of vegetation and, at the same time, with an analytic mind ready to break up the general aspect in which a given vegetation presents itself into its elements, he was eminently fitted to develop that particular branch of phyto-geography which deals with the association of plants in so-called plant-formations. This doctrine had just then assumed a definite shape through Grisebach's investigations, although it may well be traced back to Alexander Humboldt. In his book, "Das Pflanzenleben der Donauländer" (1863), Kerner applied with great success the new method to the vegetation of the Eastern Alps and a large part of Hungary, which he had explored in numerous excursions. In a contribution to "Die Oesterreichisch-Ungarische Monarchie im Wort und Bild," which was published under the auspices of the late Crown Prince Rudolf, he worked out in a general way the distribution of the various floras within the monarchy, their principal subdivisions and their history, and he added soon afterwards an excellent map, under the title "Florenkarte von Oesterreich-Ungarn." If he was early a master of descriptive phyto-geography, he was by no means indifferent to the historical side of the science, as his paper, "Beiträge zur Geschichte der Pflanzenwanderungen" (1867), in which he sided with Forbes and against Grisebach and his creation theory, an interesting essay, "Studien über die Flora der Diluvial-Zeit in den östlichen Alpen" (1888), and several more show. Of his biological researches the most remarkable are those dealing with the relations of flowers and insects.

His splendidly illustrated book, "Schutzmittel der Blüten gegen unberufene Gäste" (1876), was translated into English ("Flowers and their unbidden Guests"), and, no doubt, gave a powerful impetus to the development of one of the most fascinating chapters in biology. In fact, I believe, nothing appealed more to his constitution of mind than investigations of this kind; for he was endowed with a wonderful amount of imagination which, in that inexhaustible field, found ample

opportunity for asserting itself—now divining the explanation of some puzzle, now losing itself in fanciful flights. Among his other papers of this category, I may mention, as more widely known, "Können aus Bastarden Arten werden?" and "Parthenogenesis einer angiospermen Pflanze" (1876). The latter referred to *Antennaria alpina*, and the correctness of the construction he put on the facts observed has been doubted for a long time; but a paper by Dr. Juel, of Upsala, published just a week previous to Kerner's death, must have given him great satisfaction if it reached him, as the author confirmed fully the disputed points by independent observation and careful microscopical investigation. Among his papers concerning systematic botany may be mentioned one under the title, "Abhängigkeit der Pflanzengestalt von Klima und Boden" (1868), which contains a valuable and highly philosophical essay on the section Tubocytisus of Cytisus; further, his "Monographia Pulmonariarum" (1878), and a very great number of critical notes, which are scattered through his "Vegetations-Verhältnisse des mittleren und östlichen Ungarns und angrenzenden Siebenbürgens" which, began in 1867, run through thirteen volumes of the *Oesterreichische Botanische Zeitschrift*, however, without having been completed. Numerous similar notes are also contained in the "Schedae ad Floram Exsiccatae Austro-Hungaricam," a beautifully prepared collection of Austrian and Hungarian plants, the issue of which proceeded to Century xxii. In his investigations into subjects of systematic botany, Kerner hardly ever ventured beyond the boundaries of his special domain, *i.e.* Austria-Hungary and the adjoining districts. This, perhaps, was partly the cause of his strong tendency towards "Jordanism," or the excessive subdivision into species, of his occasional one-sidedness, such as is often found in strictly local botanists, and of the almost complete absence of any attempt at dealing with groups of a higher order and from a broad standpoint. The only time he tried a problem of this category, namely in the chapter on the "Stämme des Pflanzenreiches," or the phyla of the vegetable kingdom, in his "Pflanzenleben," he was rather unfortunate, and he wisely omitted it in the second edition.

His great work, "Pflanzenleben," well known to the English public from the translation by Prof. F. W. Oliver ("The Natural History of Plants") was in many respects the crowning result of his life-long labours. When he undertook to write the book, which was to be one of a series of popular treatises on natural history, published by the Bibliographische Institut of Leipzig, his plan was to incorporate all his own experiences and observations, many of which were only laid down in rough notes, to assimilate those of other authors, and to produce a standard work which would treat homogeneously all the various phases of plant-life. It was a tremendous task, and must have heavily taxed his constitution, which was not over-strong, although he was scarcely yet past the prime of life when he commenced it. The work is known for its lucid, nearly always fascinating and often classic style, its beautiful illustrations, few of which are not original, its fulness of suggestive matter, its occasional quaint mixture of truth and fiction—of course, unconscious fiction—and its independent conception, and little need be said about it in this place. It is the very embodiment of the genius of its author, and it reflects equally well his strong and his weak points. Measured by it, Kerner might appropriately be called the poet-botanist.

Kerner was an excellent lecturer, who raised the subject of his lecture high above the ordinary level by enlivening the purely morphological and otherwise dry details by constant references to the relations which exist between form and function, and also by his bold and highly artistic draughtsmanship. He was a man of refined culture, but naturally nervous; he came not

rarely into collision with others, from the effects of which he, no doubt, ultimately suffered most. Many of his smaller papers are so scattered or buried in all but inaccessible periodicals, and even daily papers, that a careful selection and reissue of those amongst them which are really valuable is very desirable.

OTTO STAPP.

NOTES.

THE Cambridge Anthropological Expedition to Torres Straits arrived at Thursday Island on April 22. The Hon. John Douglas, C.M.G., the Government Resident, did all in his power personally and officially to advance the aims of the expedition, as did also the other Government officials and many others. The Hon. C. T. J. Byrnes, Chief Secretary, sent a cordial telegram of welcome and offers of assistance on behalf of the Government. After a week's delay a start was made for Murray Island, and owing to unfavourable weather it took another week to traverse the hundred and twenty miles between the two islands. The Murray Islanders gave Dr. Haddon a very cordial reception; they appear to understand the main objects of the expedition, and many of them are assisting in various ways. A deserted mission-house is occupied as a dwelling, and it has been converted into a temporary anthropological and psychological laboratory, photographic studio, surgery and dispensary. All the members of the expedition are in good health, and work has commenced in earnest.

THE French Société d'Encouragement has awarded the grand prize of 12,000 francs to M. Moissan for his numerous researches in chemistry; the prize of 2000 francs for the experimental study of the properties of metals and alloys to M. C. E. Guillaume; the prize of 1000 francs for an investigation of albuminoids to M. Fleurent; a prize of 2000 francs to M. Cord for his work on the agriculture and geology of the soils in the department of Lozère; an *encouragement* of 500 francs to M. Capredon for his work on metallurgical chemistry; of 500 francs to M. A. Bigot for his work on enamels; of 1000 francs to M. Pagès for his work on the agriculture of the Cantal Department; and 500 francs to M. Mazel for his work on the agriculture of the Vivarais district.

THE Committee appointed in 1895 to examine and report upon the various monographs submitted in competition for the Loubat prizes to be awarded in 1898 have issued their report to President Low, of Columbia University. The monographs that were formally submitted for examination were the productions of eight different authors; of these the committee consider as being the most meritorious, and as most fully complying with the conditions prescribed for the competition, the treatise on "Stone Implements of the Potomac Chesapeake Tide-water Provinces," by Mr. William Henry Holmes, Curator of the Department of Anthropology in the National Museum at Washington, and to this author therefore the committee recommend the awarding of the first prize, value 1000 dollars. In the opinion of the committee the second prize, value 400 dollars, should be given to Dr. Franz Boas, of the Metropolitan Museum of Natural History of New York City, for his monograph entitled "The Social Organisation and Secret Societies of the Kwakiutl Indians." Special mention is also made in the report to a work by Mr. Alfred P. Maudslay, of London, dealing with the archæology of Central America. This work was not submitted for competition, and is not yet in a complete state, but its great merit is such as to be considered worthy of special mention by the committee.