

I trust, therefore, that the experiments described in the Bakerian Lecture will show that the diffusion can readily be measured in solid metals, and that they will carry one step further the work of Graham.

W. C. ROBERTS-AUSTEN.

BOOKS ON BIRDS.¹

THE issue of works on ornithology continues in an unbroken stream. There can be little doubt that since the arrangement of the birds in the National Museum in South Kensington, in their natural attitudes and surroundings, was adopted—a system largely followed in many of our provincial museums—there has been a distinct increase in the interest taken in natural history, and, as might be expected from the amount of knowledge as to their life and habits which these groups convey, the study of birds has largely increased. The constant demand for work after work on the limited subject of British birds is very remarkable, and is to some extent a measure of the growing interest in this branch of science.

With the second volume, which has lately appeared, Dr. R. Bowdler Sharpe has completed his "Handbook to the Birds of Great Britain" in Allen's Naturalist's Library, of which he is the editor. His knowledge of the subject of which he treats is admittedly unrivalled, while the thorough manner in which he performs all his work—though vast in amount—is so well known, that his name, as editor and author, is sufficient guarantee for the value and excellence of these two volumes. All that is essential to be known in the life-history of British birds is related shortly yet fully, in clear, popular language. This work forms a concise monograph of our native birds; indeed, no better or more authoritative work on the subject has yet been published. It is illustrated by numerous coloured full-page plates, the bulk of them the resuscitated drawings of Lizars from Jardine's Library. As has been often already pointed out, and pressed upon the attention of the publishers in regard to other volumes of this series, those plates are quite unworthy of the text. In the preface to the second volume the author replies to the critics who have attacked his method of nomenclature adopted in this and other volumes of the Library, the result of which is that certain species come to be

designated by a duplication of their generic and specific names. Dr. Sharpe appears to us to have adopted the only logical course open to him, and his reply would seem to be unanswerable. "Thus if Linnæus," he says, "called the Partridge *Tetrao perdix*, the name *perdix* ought to be retained at all costs for the species. When *Perdix* was taken in a generic sense and the species was called *Perdix cinerea*, I contend that it ought never to have been allowed, and if in restoring the Linnæan specific name of *perdix*, it results that the oldest generic name is also *perdix*, and the species has to be called *Perdix perdix* (L.), I can only say I am sorry, but it cannot be helped."

In Mr. Hudson's "British Birds" a brief account is given of the appearance, language and life-habits of all the birds that reside permanently or for a portion of each year within the limits of the British islands. The descriptive accounts of the various species are shorter, less technical and precise, but not less accurate than those in Dr. Sharpe's "Handbook." On the other hand, our author trusts that his work has the merit of simplicity, as it is intended for the general reader and, more especially, for the young. The species alone are described, the family and generic characters being omitted, as there was not space to make the book, "at the same time, a technical and a popular one." Like all that comes from Mr. Hudson's pen on this subject, the present volume is sympathetically and attractively written. It is illustrated by eight chromolithograph plates from original drawings by A. Thorburn, in addition to eight full-page plates and one hundred figures in black-and-white, from drawings by G. E. Lodge, prepared for this work, the whole of which are exquisitely reproduced. Altogether the book is to be very highly recommended. It is prefaced by a chapter on structure and classification by so competent an anatomist as Mr. F. E. Beddard, F.R.S. His contribution, however, though very clear and condensed, is, we fear, somewhat above the heads of the bulk of the young readers for whom Mr. Hudson's pages have been written. On p. 17, he remarks, with reference to the fore-limb in *Dinornis* that no trace of a wing has been so far discovered. In 1892 a scapulo-coracoid, with a distinct glenoid cavity, was figured in NATURE (vol. xlv. p. 257), indicating the presence of a humerus, which is surely at least a "trace" of a wing.

In the "Wild Fowl and Sea-Fowl of Great Britain," a "Son of the Marshes" depicts the haunts rather than the habits of the birds of our estuaries and fen-lands. His volume is more a collection of shooting sketches than a serious contribution to ornithology, notwithstanding the short technical descriptions, at the conclusion of each chapter, of the several species of the group to which the chapter is devoted. The author has given us during many years numerous delightful sketches of marsh-land life at every season, and under all conditions of sky and temperature; but we have had his message so often now that it has begun to lose much of its freshness and flavour. In this latest delivery we cannot resist the impression that we have heard all he tells us before, and said even better than here. Many of his pages leave with the reader the irritating suspicion of having been elaborated with toil, and the matter beaten out to cover an allotted space. The numerous quotations from all sorts and conditions of marsh-folk, "coy" men, net-setters, and wild-fowlers, in which we fail, through obtuseness probably, to perceive anything humorous, quaint or original, might have been largely curtailed with advantage to the narrative. J. A. Owen, who edits the volume, has allowed to escape detection such unorthodox expressions as "to flight" and "fighting birds," as also the use of that most objectionable term "scientist," to indicate the professed man of science. The volume has numerous excellent full-page black-and-white illustrations by Bryan Hook.

¹ "A Handbook to the Birds of Great Britain." By R. Bowdler Sharpe, LL.D. Vol. i. 1894. Pp. xxii + 342. Vol. ii. 1895. Pp. xi + 308. (London: W. H. Allen and Co., Ltd.)
 "British Birds." By W. H. Hudson, C.M.Z.S. With a Chapter on Structure and Classification, by Frank E. Beddard, F.R.S. Pp. xviii + 363. (London and New York: Longmans, Green, and Co., 1895.)
 "The Wild-Fowl and Sea-Fowl of Great Britain." By a "Son of the Marshes." Edited by J. A. Owen. With Illustrations by Bryan Hook. Pp. 326. (London: Chapman and Hall, Ltd., 1895.)
 "Birds from Moldart and Elsewhere; drawn from Nature." By Mrs. Hugh Blackburn. Pp. viii + 191. (Edinburgh: David Douglas, 1895.)
 "The Birds of Berwickshire, with Remarks on their Local Distribution, Migration, and Habits, and also on the Folk-lore Proverbs, Popular Rhymes and Sayings connected with them." By George Muirhead, F.R.S.E. In two volumes. Vol. i. 1889. Pp. xxvi + 334. Vol. ii. 1895. Pp. xii + 390. (Edinburgh: David Douglas.)
 "North American Shore Birds: a History of the Snipes, Sandpipers, Plovers, and their Allies." By Daniel Giraud Elliot, F.R.S.E. With seventy-four plates. Pp. viii + 268. (London: Suckling and Galloway. New York: Francis P. Harper, 1895.)
 "The Birds of Ontario, being a Concise Account of every Species of Bird known to have been found in Ontario, with a description of their Nests and Eggs, and Instructions for Collecting Birds and Preparing and Preserving Skins, and Directions how to form a Collection of Eggs." By Thomas McLwraith, 2nd edition. Pp. ix + 426. (London: T. Fisher Unwin; Toronto: William Briggs, 1894.)
 "Birdcraft; a Field-book of Two Hundred Song, Game, and Water Birds." By Mabel Osgood Wright. With full-page plates. Pp. xvi + 317. (New York and London: Macmillan and Co., 1895.)
 "Photographs of the Life-History Groups of Birds in the Grosvenor Museum, Chester." Prepared by Mr. R. Newstead, Curator; photographed by G. W. Webster. 1895.
 "The Royal Natural History." Edited by Richard Lydekker, B.A., F.R.S. Vol. iv. Birds (chaps. viii.-xxi.). Pp. xv + 583. (London: Frederick Warne and Co., 1895.)
 "The Fauna of British India, including Ceylon and Burma." Published under the authority of the Secretary of State for India in Council. Edited by W. T. Blanford. Birds. Vol. iii. By W. T. Blanford, F.R.S. Pp. xiv + 450. (London: Taylor and Francis; Calcutta and Bombay: Thacker and Co.; Berlin: Friedländer, 1895.)

We next come to notice two local faunas. The first of which is Mrs. Hugh Blackburn's "Birds from Moidart and Elsewhere." The authoress is a well-known artist, and the volume before us is not so much a systematic avi-fauna of the region in which she resides, as a series of drawings from nature, all of them artistic, vigorous, and true to life, of such birds as she has known personally, "to which are added," as she tells us in the preface, "simply, and I trust truthfully, a few observations which I have had the opportunity of making on their life and habits." Her sketch of the young and callow cuckoo ejecting the rightful meadow pipits from their nest, is the original illustration of this most interesting fact, which, first made known by Henry Jenner in 1788, and long rejected as apocryphal, was in 1871 re-described, and still more fully established in 1872, when it was sketched from actual observation by Mrs. Hugh Blackburn. Her plates illustrating the habits of many species not to be observed everywhere, such as "Solan-geese fishing," "Cormorants feeding their young," "Osprey carrying a fish," are of real scientific interest and value. So also are the sketches of the nestlings of several birds whose breeding-places are chosen in out-of-the-way corners, whither our artist seems to have followed them. Mrs. Blackburn states the interesting facts that in 1856 there were no starlings in Moidart, where they are now plentiful, and not for many years after were there any common sparrows. On the advent of the latter, however, the yellow-hammers, "which used to be very common," began to decrease rapidly. She records also, on the faith of a correspondent, that a nightingale was heard for three weeks, and also seen during the month of June 1889, "at Achnacary," which, if the observation can be depended on, is a far cry beyond its usual northern limit. On turning to Dr. Sharpe's and Mr. Hudson's volumes, noticed above, we find it recorded that in Scotland and Ireland the nightingale is unknown. (!)

"The Birds of Berwickshire," by Mr. George Muirhead, of which the first volume was published in 1889, and the second in 1895, contains a full account of every bird known to occur in that extensive shire. The work, published by David Douglas, of Edinburgh, is printed on special paper, and on its pages space and variety of type have been generously lavished. Each bird's history is concluded by a charming pen-and-ink etching of its nest, of one of its favourite haunts, or of some interesting, historical, or beautiful Berwickshire "bit," which has more or less direct reference to the subject of the chapter. There are, in addition, several full-page etchings by Scottish Academicians, and an excellent map of the county. Altogether, therefore, no expense has been spared (as is wont with the publishing house of David Douglas) to produce a work worthy of its predecessors in their sumptuous Natural History Library. And although these volumes can but record few new facts about the birds described in them except what is of local distributional interest, they are full of folk-lore, proverbs, popular rhymes and sayings about them, which must ensure the book being greedily desired as a prized addition to his volumes *de luxe*, not only by every lover of birds and their haunts, but by all who treasure dainty books.

The three volumes next on our list follow much the same lines as those above noticed, only they deal with American instead of British birds. "North American Shore Birds," by D. G. Elliott, who is well known by his numerous magnificent scientific monographs, "is a popular work and in no sense a scientific treatise," as the preface informs us. Its object is to enable the sportsman and those who love to study birds in their haunts, to know and recognise those they shoot or observe on the wing. "The accounts of their habits have been written, to the best of the author's ability, in language 'understood of the people.'" Mr. Elliott

will, we have no doubt, be fully successful in his object, for his book cannot fail to satisfy both those classes; and we are confident it will be their frequent companion, both "in the open" and in the study. The volume is not a mere compilation, for the record of the habits of most of the species are derived from the author's own experience in the many hunting excursions he has undertaken from arctic Alaska all over the North-American continent, and as far south as Rio de Janeiro. Nearly every species described in the book is illustrated by a full-page plate in black-and-white from drawings of great beauty by Edwin Sheppard, of the Academy of Sciences of Philadelphia, "an artist possessing exceptional talent for portraying birds and bird-life."

Mr. McIlwraith, in his "Birds of Ontario," enumerates 317 species, which he believes to be the complete tale of the birds occurring in the province of his domicile. A short, but sufficient, account is given of their plumage, their range, their distribution in Ontario, and, as they are nearly all migratory, of where they spend the breeding season, as well as of their nests and eggs. In the introduction full instructions are provided for the young collector how to obtain and preserve his specimens.

In "Birdcraft," Mabel Osgood Wright describes and illustrates two hundred song, game, and water birds of North America. Her book is written for the young, in whom she wishes to encourage the study of "the living bird in his love songs, his house-building instincts, and his migrations," to discourage in them the "greed of possession" of the skin, nest and eggs of her feathered friends, and to enable them to identify and properly name the species they may observe in their excursions. To her disciples—may they be many!—she gives this excellent advice: "Take with you three things, a keen eye, a quick ear, and loving patience"; but leave to "the practised hand of science," "the gun that silences the bird-voice, and the looting of nests." The authoress, who is herself, apparently, a keen and sympathetic observer of nature, believes that all the lover of birds wishes to know of their forms closer at hand, on his return from the field, should be sought for, and will be found, in those "great picture-books"—the museums. "Birdcraft" should form an excellent guide to the young American field-naturalist. Unfortunately the chromolithograph plates, on which eight to ten species, varying greatly in colour and size, are crowded, leave much to be desired. A "key to the birds" is provided at the end of the book, by which (a) land birds, (b) birds of prey, and (c) game, shore and water birds may be identified by their predominant colours.

The "Life-History Groups of Birds" in the Grosvenor Museum, Chester, most of which have been mounted by the Curator, Mr. Newstead, have been photographed "in life-like attitudes" with the "natural surroundings proper to the particular specimens," by Mr. G. W. Webster of the same city, and offered to the public in a handsome volume. It is hoped by the authors that these pictures "will appeal to curators and museum authorities, to all lovers of birds and nature, and to artists." To curators of museums they may on occasion afford suggestions; but as they are a class who strongly object to imitate slavishly the methods of even the greatest of their colleagues, they will probably prefer to seek inspiration from the same source as Mr. Newstead. To artists and lovers of birds we have no doubt these platinotypes will afford a great deal of pleasure, and in the case of the former they will be extremely useful as models. The weight of the volume and its high price (necessary from the costliness of its get-up) will, however, we fear, militate against a wide circulation, and certainly against its use for frequent and comfortable reference.

The fourth volume of the "Royal Natural History," edited by R. Lydekker, F.R.S., completes the account of

the birds. The contributors on this occasion are Dr. Bowdler Sharpe, Mr. Ogilvie-Grant, and the editor, whose names are sufficient sponsors that the present volume is in no way behind its predecessors, which every section of the press has been unanimous in praising on account of the scientific excellence of the text, and the beauty of the illustrations. As a "Natural History," presenting a popular and comprehensive survey of the subject, the "Royal" is unsurpassed.

The now well-known two first volumes of the "Birds" in the valuable "Fauna of British India," which the India Office has been so well advised in publishing, were written by Mr. Oates. The present volume has been prepared by the editor of the series, Dr. W. T. Blanford, "who," as he says, "has endeavoured to keep the [continuation of the] work uniform in general plan, and to render the change in authorship as little conspicuous as possible." Everywhere throughout the book, the same care and pains that were manifest in Mr. Oates' two volumes are evident in the third before us. Thanks to Hume—the value or extent of whose unsurpassed gift to the nation has yet hardly begun to be appreciated as it must one day be—never before has material for an avi-fauna of India, approaching in its richness been anywhere brought together as that now conserved in the British Museum. The amount of comparison and original investigation demanded, consequently, of the authors in compiling for the first time since this collection has been available, the bird-fauna of our Eastern empire, has been enormously extended, as well as facilitated. Although Mr. Oates, on being prevented from completing the work he commenced, by his recall to official duty in India, handed over to Dr. Blanford, on his departure, the notes he had prepared for its continuation (which have been "of very great service," as the author admits), yet the more arduous part of the work had still to be done. That this task, slow, full of drudgery, and testing all the penetration and discrimination of the ornithologist, has been most conscientiously fulfilled, is evident on every page, and with a result in all respects on which Dr. Blanford is to be congratulated.

It had been intended to complete the "Birds" and (with that section) the Vertebrata of India with the present volume; but as the work progressed, it "became evident that the proposed third volume would be of inconvenient size," and it was, therefore, decided to divide it into the present and a concluding volume, which, it is stated, is now in an advanced state of preparation. The volume under notice includes the *Eurylami*, *Pici*, *Zygodactyli*, *Anisodactyli*, *Macrochires*, *Coccyges*, *Psittaci*, *Striges*, and *Accipitres*. The different orders are distinguished chiefly by their anatomical characters. The *Striges* are rightly kept distinct from the *Accipitres*; but the *Pandionide* are included within its limits. We should rather have seen them constituted a distinct order, *Pandiones*. It is with satisfaction we note that the publication of the final volume will not be long delayed.

NOTES.

THE long list of birthday honours contains the names of a few men distinguished for their scientific attainments. Prof. Max Müller is to be sworn of the Privy Council. Mr. Clements R. Markham, C.B., F.R.S., the President of the Royal Geographical Society, is promoted to be K.C.B., and Dr. David Gill, F.R.S., Astronomer Royal at the Cape, is made a C.B. Dr. J. G. Fitch, who until lately was Chief Inspector in the Education Department, and Mr. Le Page Renouf, the Egyptologist, have been knighted.

THE Chemical Society's Lothar Meyer Memorial Lecture will be delivered by Prof. P. P. Bedson, at an extra meeting of the Society on Thursday, May 28.

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THE Cracow Academy of Sciences has appointed Prof. L. Natanson as its representative at the forthcoming Kelvin celebration at Glasgow.

THE Council of the Sanitary Institute have accepted an invitation from the city and county of Newcastle-upon-Tyne to hold a Sanitary Congress and Health Exhibition in that city in the autumn of this year.

PROF. ANGELO HEILPRIN has been appointed to represent the Academy of Natural Sciences of Philadelphia at the Mining and Geologica Millennial Congress, to be held at Budapest, September 25 and 26, in connection with the celebration of the founding of the kingdom of Hungary. Messrs. Persifor Frazer, Angelo Heilprin, Benjamin Smith Lyman, and Theodore D. Rand have been appointed by the Academy as the Committee on the Hayden Memoria Geological Award for 1896.

ON the occasion of the Hungarian Millennium, the Emperor Francis Joseph has authorised the Budapest University to confer the following honorary degrees:—On Prof. Henry Sidgwick, of Cambridge, the honorary degree of Doctor of Political Economy; on Prof. J. S. Billings, of Philadelphia, and on Sir Joseph Lister the honorary degree of Doctor of Medicine; on Mr. Bryce, M.P., Mr. Herbert Spencer, Lord Kelvin, and Prof. Max Müller, the honorary degree of Doctor of Philosophy.

THE conversazione of the Society of Arts will be held at the South Kensington Museum on Wednesday, June 17.

PROF. E. SUESS, the well-known geologist, and Liberal politician, has just retired from his party in the Austrian Parliament.

THE death is announced of Prof. Germain Sée, the distinguished French pathologist, and member of the Paris Academy of Medicine.

A CONVERSAZIONE of the Society for the Protection of Birds will be held at the Royal Institute of Painters in Water Colours, Piccadilly, to-morrow evening.

WE learn, from the *Journal de Botanique*, that M. L. Digue has been commissioned by the Minister of Public Instruction for France, and by the Museum of Natural History, with a botanical mission to Lower California, where he will probably make a prolonged stay.

MR. MARK JUDGE, Honorary Secretary to the Sunday Society, sends us the following statement of attendances on Sunday last at the great national museums in London:—South Kensington Museum, 2659; Bethnal Green Museum, 799; Geological Museum, 212; British Museum, 1790; Natural History Museum, 2398; National Gallery, 2106. The total is 9864, which number of visitors may be taken to justify the continuance of the Sunday opening of the museums.

THE Croonian Lectures of the Royal College of Physicians will be delivered on June 2, 4, 9 and 11, by Dr. George Oliver, who will take for his subject "The Study of the Blood and the Circulation."

ON Tuesday next, May 26, Prof. T. G. Bonney, F.R.S., will begin a course of two lectures, at the Royal Institution, on the "Building and Sculpture of Western Europe" (the Tyndall Lectures). On Thursday (May 28) Dr. Robert Munro will deliver the first of two lectures on "Lake Dwellings," and on Saturday (May 30) Dr. E. A. Wallis Budge, Keeper of the Egyptian and Assyrian Antiquities, British Museum, will begin a course of two lectures on the "Moral and Religious Literature of Ancient Egypt." The Friday evening discourse on June 5 will be on "Electrical and Magnetic Research at Low Temperatures," the lecturer being Prof. J. A. Fleming, F.R.S.