

were set forth. The invariable association even of the graphite-bearing pegmatites with Grenville sediments was emphasized, and the schists seemed most probably a metamorphosed carbonaceous sediment, or one which had been impregnated with a heavy oil.

The party next visited the potholes on Indian Kettles point, two miles north of Hague. These interesting relics of the glacial epoch are on a rocky point, and fifteen feet or more above the present lake.

In the evening a brief exposition of the local geology and physiography was given by J. F. Kemp, and illustrated by manuscript maps. The sediments of the Grenville series are the oldest rocks, now greatly metamorphosed. A syenitic series of eruptives, the most extensive of the local formations, succeeded the Grenville, and these are also greatly metamorphosed. There are also rocks intermediate between syenite and gabbro; true gabbros and granites. Lastly came a few basaltic dikes. There are no late Paleozoics in the region, but the Potsdam and Beekmantown are near or in the Lake George basin. The physiography was believed by the speaker to be chiefly due to block faulting, which was freshened up by the ice-sculpturing of the glacial epoch.

The next morning the party proceeded to Huletts, and visited an igneous contact on Tafts point. At Huletts dock interesting pegmatites and the effects of shearing and faulting were seen. Three sets of displacement could be detected. The party were kindly taken about the lake by Dr. Smith Ely Jelliffe in his launch, adding greatly to their pleasure and profit. After lunch in the charming summer home of Professor and Mrs. Kemp the members continued south through the lake and dispersed.

The following resolutions were passed by Section E:

Section E of the American Association

for the Advancement of Science in summer session assembled desires to express its high appreciation and gratitude

To Dr. John M. Clarke and the members of the New York Survey for valued advice in the preparations for this meeting, and for guidance during its progress;

To Professor and Mrs. George H. Hudson, to the Honorable Smith M. Weed, and to Professor and Mrs. J. F. Kemp for most gracious hospitality; and

To the governing board of the Champlain Assembly for giving us an attractive and convenient home during our session, and the opportunity to become acquainted with a valuable and interesting educational institution.

The following members were chosen to represent the geologists and geographers of the American Association at the centenary celebration of the Geological Society of London, to be held in September, viz:

Professor J. P. Iddings, University of Chicago, Chicago, Ill. Vice-President Section E, Geology and Geography.

Dr. John M. Clarke, State Hill, Albany, N. Y. Director Science Division, N. Y. State Education Department.

Professor R. S. Tarr, Cornell University, Ithaca, N. Y. Acting President Association of American Geographers.

F. P. GULLIVER

Secretary

SCIENTIFIC BOOKS

The Birds of North and Middle America:

A descriptive catalogue of the higher groups, genera, species and subspecies of birds known to occur in North America, from the Arctic lands to the Isthmus of Panama, the West Indies and other islands of the Caribbean Sea, and the Galapagos Archipelago. By ROBERT RIDGWAY, Curator, Division of Birds. Part IV., Family Turdidæ—Thrushes. Family Zeledoniidæ—Wren-Thrushes. Family Mimidæ—Mockingbirds. Family Sturnidæ—Starlings.

Family Ploceidæ—Weaver Birds. Family Alaudidæ—Larks. Family Oxyruncidæ—Sharp-bills. Family Tyrannidæ—Tyrant Flycatchers. Family Pipridæ—Manakins. Family Cotingidæ—Chatterers. Washington: Government Printing Office. 1907. Bulletin of the United States National Museum. No. 50—8vo, pp. xxii + 973, pl. i.—xxxiv.

As shown by the above transcript of the title-page, Part IV. of this monumental work includes the last six families of the Oscines and the first four families of the Mesomyodi. Two of these, the Sturnidæ and the Ploceidæ, are represented in America only by introduced species—the first by the common starling of Europe, of casual occurrence in Greenland, and introduced and apparently thoroughly naturalized over a considerable area about New York City; and the second by two weaver-finches, introduced long since from western Africa to Porto Rico, where they have become naturalized. The Alaudidæ, also almost exclusively an Old World family, is represented by only two genera, each with a single species in America, namely, *Alauda*, represented by the skylark (*Alauda arvensis*), of accidental occurrence in Greenland and the Bermudas, and also as an introduced species at various points in the United States; and *Otocoris*, comprising the horned larks, of which a single species is widely distributed in North America, reappearing in the highlands of Colombia. Other species of this genus occur in Europe and Asia, extending southward to northern Africa. The horned larks have evidently been long residents of North America, as shown by their wide distribution and multiplicity of forms, no less than twenty-five subspecies being currently recognized in America alone, and several others in northern Eurasia. This species shows great adaptability to diverse conditions of environment, it ranging from the Arctic barren-grounds to tropical northern South America, and from the most arid semi-desert areas of the southwestern United States and tableland of Mexico to the humid coast belt of Oregon, Washington, and western British Columbia. While

the extreme forms are very diverse in point of size and coloration, and occupy in the breeding season remote and widely different physical areas, they are all connected by intermediate forms, occupying intermediate areas. They are all more or less migratory, and during winter several forms are often found together, but in the breeding season they occupy distinct ranges, and admirably illustrate the law that, among vertebrates at least, two closely related forms do not occupy the same area.

Of the remaining seven families treated in the present volume, one, the Turdidæ or Thrushes, is nearly cosmopolitan, while the other six are exclusively New World and mainly tropical. Two—Zeledoniidæ and Oxyruncidæ—are monotypic, the first being for the first time given family rank in the addenda (p. 885), on the basis of structural characters made known by Pycraft during the printing of the present volume. The family Zeledoniidæ is allied to the mockingbirds (Mimidæ), and Oxyruncidæ to the tyrant flycatchers. The three remaining families—Tyrannidæ, Pipridæ, Cotingidæ—are tropical American, the last two exclusively so, the first with a few genera ranging widely in temperate latitudes. The Tyrannidæ constitute one of the largest, and is the most perplexing, of the families of American birds. It contains upward of 80 genera, and more than 550 species and subspecies, which have recently been arranged by Berlepsch¹ in seven subfamilies. They present great diversity of form and habits, developing types that strongly suggest birds of widely different families, inhabiting in some cases distant parts of the globe; some resemble titmice, others kinglets, others are thrushlike, and others strongly recall pipits, wagtails and stonechats. As only thrushes, of these several diverse types, share with them the same geographic area, these resemblances can not be ascribed to protective mimicry, but must be regarded as adaptive parallelisms. Indeed, adaptive parallelism in the develop-

¹ Studien über Tyranniden, von Hans Graf Berlepsch, Proc. Fourth Internat. Orn. Congress, 1905 (1907), pp. 463-493.

ment of color patterns, relative length of wing, tail and feet, the form of the bill, etc. (the latter features often combined with conspicuous resemblances in color markings), are common, not only in birds which inhabit different continental areas, but in other classes of animals, indicating that the range of differentiation is limited, and that repetition is necessary; such repetitions have no necessary genetic relationship, being for the most part adaptive.

In the three families Tyrannidæ, Pipridæ and Cotingidæ, there are several transpositions of genera from one to the other, on the basis of newly acquired evidence respecting their affinities. There are also several important changes in nomenclature, as where *Procnias* takes the place of *Casmarinchos*, etc., and current purisms are abandoned for the original forms of names.

As in the previous volumes of this series, the treatment is strictly systematic and technical, and shows the author to be the master of his subject, while his methods are eminently worthy of emulation. With this volume his great task is half completed, and it is the wish of all systematic ornithologists that he may have the health and strength to finish in due time this vast undertaking, which easily takes rank as the most important contribution to American systematic ornithology yet undertaken.

J. A. A.

Annals of the Lowell Observatory. Volume III.: Observations of the Planet Mars during the Oppositions of 1894, 1896, 1898, 1901 and 1903 made at Flagstaff, Arizona. Percival Lowell, Director of the observatory. 1905. Pp. xiv + 293 + 60. 4to.

In the body of this book are 293 pages, with all the details of observations during the oppositions of 1894, 1896, 1900-1 and 1903 treated separately, and subdivided into eleven chapters. The first chapter under each opposition deals with general matters pertaining to methods and dates of observation. Each of the other ten chapters gives the details of the observed surface features in order of longi-

tude from Syrtis Major back to the two Syrtes.

Nearly all the observations were made by the director himself, and are described individually and relatively in such manner as shows a symmetry of method and similarity of purpose running through work on all the four oppositions. The observations made by Mr. Douglass and Mr. Drew, while being narrated in the same methodical sequence, have been published as the supplement of sixty pages. These embody the entire report on the opposition of 1898-9, and an auxiliary report on the opposition of 1900-1.

While there are many illustrations scattered through the volume, yet the major portion is given in the appendix of twelve plates inserted between pages 266 and 267, under the title: "1903 Drawings of Mars, being selected reproductions direct from the record-book Views from the Globe made from Observations of the Opposition"—whatever that may mean. Following these plates, pages 267-281, is a complete "Index of Names on Maps and Globes of Mars" inclusive of an index to volumes one and two of the *Annals*.

"Of the making of books, there is no end" is a dictum of about twenty centuries ago, and a thousandfold more true since the advent of printing than then. That this book is a handsome example of the "art preservative" no one can deny: large type, leaded; extra wide margins, with marginal headings; typography for the most part even, and press-work superb: the paper, heavy plate. It is a pleasure to read such books, whatever be their contents. It is all the greater pleasure when one finds such a piquancy of style, and such a wealth of detail of observation coupled with such explicitness of statement through so many pages, concerning objects which so many other able astronomers claim are either nearly invisible or totally non-existent. The writer of this review is as ignorant as any astronomer can well be of the objectivity of all these claimed observances on the face of our neighboring planet. During seventeen years' experience as an observational astronomer he has never had an opportunity of seeing Mars through a larger aperture than 4".5. That he was requested