

William J. Gies (*secretary*), Walter Jones, Waldemar Koch, John Marshall, Lafayette B. Mendel (*treasurer*) and Thomas B. Osborne.

No plans have been made for a meeting before next December, although the council was authorized to use its discretion in this and all other matters affecting the welfare of the society.

WILLIAM J. GIES,
Secretary

SCIENTIFIC BOOKS

The Bird: Its Form and Function. By C. WILLIAM BEEBE, Curator of Birds, New York Zoological Park. New York, Henry Holt & Co. 1906. 8vo. Pp. 496, with over 370 illustrations.

This book is 'intended as an untechnical study of the bird in the abstract' and tells of the structure and characteristics of birds, dwelling especially upon the adaptations of the various organs to their uses, and their bearing on the relationships and past history of birds. It thus covers ground that has been but little worked, for while there are books a many on the anatomy of birds, these, with the exception of Headley's 'Structure and Life of Birds,' are purely descriptive and fail to show the relations of a bird's structure to its surroundings and mode of life. Here we are told why a beak, a foot, a wing, is of a given shape, what rôle it plays in a bird's daily life, or, if its present use is not obvious, what hint it gives of a bird's past history when the part now useless was all-important.

The first chapter, devoted to the ancestors of birds, of necessity recapitulates what is already known—what we do *not* know will fill volumes still to be written. We would, in passing, dissent from the statement that *Archæopteryx* 'frequently walked or ran on all fours,' and if Mr. Beebe will make a figure of the animal in such a position he will doubtless appreciate the difficulties in the way. Next is a long chapter on 'Feathers,' including their origin, structure, development, arrangement and moult, and this is followed by a discussion of 'The Framework of a Bird,' the skull being given a chapter by itself.

Much information as to color and color changes will be found under the caption 'The Body of a Bird,' where some good illustrations are given of the effects of food, light and moisture, one of the most striking being the very dark form of the white-throated sparrow, produced by exposure to moisture-laden air through two moults. So, part by part, the bird is considered in detail, the final chapter treating of 'The Bird in the Egg.' Under 'The Eggs of Birds' we learn of the eggs themselves and of the information that may be gathered from them when studied in connection with the habits of the bird that laid them. For "That which adds the greatest interest to anything is the '*why*' of it, and a vast collection of eggs, beautiful though they are, yet if ignorantly looked at is worse than useless. Why one bird lays twenty eggs and another but two; why one bird's eggs are white, another's of varied colors, we will never learn from blown museum specimens." It has been denied that oology is a science, but whether it is or is not depends on the individual and it is to be hoped that this chapter may afford fruitful suggestions for future work on the part of our younger ornithologists. The chapters on Wings and Beaks and Bills are among the best because Mr. Beebe, who is a keen observer, has here combined the results of his experience in the field, and of the opportunities offered by having many species of birds continually under his observation in the New York Zoological Park. In regard to beaks we are told that "The finding and securing of food being the most important problem birds have to solve for themselves, it is for these purposes, and especially the last mentioned, that we find bills most adapted. This is so universally the case that we may often judge accurately of the kind of food of a certain bird from a glance at its beak."

It is impossible that a book of this nature, where much information is crowded into a small space, should be entirely free from errors, and here and there slips occur. Thus we are told that *Amphioxus* has biconcave vertebrae, after having been correctly informed that the backbone is represented by a mere thread of gristle; that the moa was found in

Madagascar; and that the femur of a bird is short *because* the knee is concealed. There is also an occasional tendency to overestimate the size of birds; for example, it is stated that the South American condor sometimes has a spread of wing of fifteen feet. As a matter of fact this bird is slightly exceeded by the California vulture, whose greatest recorded spread is ten feet six inches, and it is an unusually large condor that measures even nine feet from tip to tip. We *believe* that the albatross sometimes exceeds twelve feet across the wings and *may* reach fourteen, but never measured one greater than ten. However, the above are but minor blemishes, the book abounds in information and represents a large amount of original work.

The illustrations, mostly from photographs taken by the author, are numerous, and, with rare exceptions, good. One of the exceptions is that on page 85, showing the shoulder girdle of a pigeon, and is not only taken from a diseased specimen, but fails to show the parts described. Some particularly good pictures are to be found in 'Heads and Necks' and 'Wings,' the young green heron and his *vis-à-vis*, the great white heron, being most excellent.

All in all, this volume of The American Nature Series is admirable.

F. A. L.

Einleitung in die Chemische Krystallographie.

By P. GROTH. Pp. v + 80, 6 figures, 8vo, cloth, 4 marks. Leipzig, Wilhelm Engelmann. 1904. English translation by HUGH MARSHALL, 12mo, cloth, \$1.25. New York, John Wiley & Son. 1906.

Chemische Krystallographie. By P. GROTH. In four volumes. Vol. I., pp. viii + 634. 389 figures, 8vo, cloth, 20 marks. Leipzig, Wilhelm Engelmann. 1906.

For nearly a score of years Professor Paul von Groth, of the University of Munich, has had in preparation this 'Chemische Krystallographie' which aims to include in systematic order trustworthy data of all crystallized chemical substances.

The introduction to this monumental work appeared as a separate publication under the

title 'Einleitung in die Chemische Krystallographie' in 1904, and has since been translated into English. In the 'Einleitung' the recognized relations existing between the properties of crystals and their chemical constitution are explained in the light of modern ideas of crystal structure. In so doing Professor von Groth assumes a knowledge of physical crystallography and chemistry. In order, such topics as crystal structure and its varieties, polymorphism, morphotropy, isomorphism, and molecular compounds are discussed. In the chapter on morphotropy much attention is given to a full discussion of the 'topical parameters,' first proposed by Muthmann and Becke, by means of which it is possible to compare to better advantage than was hitherto possible the crystal structure of different substances as well as to note the variation caused in their crystallization by changes in chemical composition.

The English translation by Hugh Marshall, of the University of Edinburgh, is in every respect admirable. A copy of this introduction ought to be in the hands of every chemist.

The 'Chemische Krystallographie' proper is to comprise four volumes as follows: Volume I., Elements, inorganic binary compounds, simple and complex haloids, cyanides, nitrites and their alkyl compounds of the metals; Volume II., inorganic oxy- and sulfo-salts and their alkyl compounds; Volumes III. and IV. will contain the organic compounds. Of these only the first volume has been published. The remaining volumes are to appear at intervals of one year.

The arrangement of Volume I., which is also to be followed in the others, is such that substances, which are similar chemically are treated together in separate groups or sections by first discussing our present knowledge of the same. These discussions present a very clear and concise survey of the literature, point out the conclusions to be drawn concerning the crystal structure of the substances under consideration, and in many instances indicate important lines of needed research. The second portion of each section is devoted to a systematic description of the members of that group for which crystallographic data