

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