

mind when accompanied by a weathering of the rock, to be regarded as a secondary effect.

All that Professor Merrill has to say regarding the processes and products of weathering is timely and important. From the difference in kind of weathering in cold and warm climates, a matter which has been studied by the geologists of India, it is pointed out that the study of the sedimentary rocks may be made to furnish a clue to past climates. It is to be regretted that there is not a chapter on the application of this principle to ancient rocks. The writings of Pumpelly, the work of Willis, Hayes, Campbell and others, together with the published evidence of ancient periods of base-levelling with peneplains and their complementary elastic records, constitute a basis for an interesting and valuable résumé.

As an extension to the treatment of the subject of rock-weathering in standard text-books on geology, this work can well be recommended to the student. For the student of agriculture and soil problems, it will probably give him as much of geology as he needs to know for practical purposes.

The book is well illustrated with diagrams and photographic reproductions. The mechanical execution of the book leaves nothing to be desired. There is a fairly complete index of authors cited and of subjects.

J. B. WOODWORTH.

HARVARD UNIVERSITY.

Bird Life; A Guide to the Study of Our Common Birds. By FRANK M. CHAPMAN. With seventy-five full-page plates and numerous text drawings by ERNEST SETON THOMPSON. New York, D. Appleton & Co. 1897. 12mo., cloth, pp. xii + 269. \$1.75.

Confessedly addressed to the uninitiated rather than to the scientific ornithologist, this little volume nevertheless possesses an attraction for anyone interested in birds. The author apparently aims to present his subject in such a manner as to aid and incite further study and observation, the numerous footnote references in the first part of the book rendering the literature on the various subjects easily available. The whole is pleasantly written, and in language sufficiently untechnical to be easily com-

prehended. The first seventy-three pages treat of birds in general; the rest contain accounts of more than a hundred common Eastern species. The opening chapter briefly outlines the place of birds in nature, first with reference to their taxonomic position and phylogeny; then with reference to their relations to man, as profitable objects for scientific study, as valuable and efficient aids of the agriculturalist and as beings that appeal strongly to the æsthetic emotions. Under another caption are discussed the 'Factors of Evolution,' this being succeeded by an enumeration of the principal forms, variations and uses of the wing, the tail, the feet and the bill, illustrated by numerous text figures. In a chapter on the 'Colors of Birds' are detailed the changes and differences in colors due to age, season, molt, food, climate, haunts, habit and sex. Migration forms the subject of Chapter IV., and is discussed with regard to extent, manner and origin. This is followed by a short treatise on the 'Voice of Birds,' attention being called to both song and call notes. Under the next heading, 'The Nesting Season,' the value of observations during the breeding season is emphasized, and the time of nesting, mating, the details of nest and eggs and the care of the young, each in turn receive attention. Instructions on 'How to Identify Birds,' with suggestions upon points for observation, are also added, together with a field key to common land birds of the eastern United States, this taken, with additions and alterations, from the author's 'Handbook of Birds of Eastern North America.'

In the remaining portion of the book particular attention is devoted to some 125 species, these little biographies ranging from a few lines to nearly a page and a half, with usually a short account of the family to which each belongs. A number of other birds are incidentally noticed.

The 75 full-page plates with which the volume is adorned figure 99 species. In praise of their artistic finish, fidelity of form and minuteness of detail much might be said, and, though all are not of equal excellence, we are inclined to consider as not extravagant Mr. Chapman's claim that for beauty and accuracy these, as a whole, excel any black and white bird drawings that have ever been published in this country.

Furthermore, we think it not too much to say that the illustrations alone are more than worth the price of the book. Beneath each plate are added essential particulars of the size and colors of the species represented, this being evidently intended to supply, for purposes of identification, what is lacked by the pictures themselves.

In a work of such general excellence we are somewhat surprised to notice certain careless statements, as, for instance, that the number of shore birds known is 100, instead of more than 250; that the species of kingfishers are 108, instead of about 200; and that those of humming birds are 400, whereas above 500 really exist. These slips are, however, too few and of too little consequence to seriously detract from the value and usefulness of the volume. It is without doubt the best guide to the study of birds yet published, in this country at least, and should prove, as surely it will, indispensable to the beginner in ornithology. Furthermore, it can scarcely fail to increase the author's already enviable reputation for the felicitous combination of scientific accuracy with popular description.

HARRY C. OBERHOLSER.

WASHINGTON, D. C.

SCIENTIFIC JOURNALS.

AMERICAN JOURNAL OF SCIENCE.

THE July number opens with a paper by A. de Forest Palmer, Jr., on the pressure coefficient of mercury resistance. The author calls attention to the discrepancy existing between the only determinations of the pressure coefficient previously published, namely, those of Barus, who obtained .00003 for the commercial mercury up to 400 atmospheres, and Lenz, who found .0002 for pure mercury between one and sixty atmospheres. In the experiments here described the mercury was carefully purified and distilled in a vacuum, and the pressures were obtained by means of the 'Screw compressor' of Barus, which is capable of indicating pressures up to something over 2,000 atmospheres. The Carey Foster method of measuring resistance was found most reliable. The results of the experiments are contained in two extended tables, and are further tabulated in a

special chart. Taking β as the increment to unit resistance of one atmosphere increase in pressure, the equation obtained is as follows:

$$\beta = -.0000332 - 5 \times 10^{-9} t$$

where the last term, owing to its extreme smallness, is probably only approximately accurate. This result is very closely that of Barus, and the difference can be accounted for by the slight impurities in the commercial mercury used by him.

C. R. Eastman describes, with a series of figures, some remarkable *Ctenacanthus* spines from the Keokuk Limestone. Theo. Holm gives a fifth paper of his *Studies in the Cyperaceæ*, devoted to *Fuirena squarrosa* Michx. and *F. scirpoidea* Vahl. It is accompanied by two pages of illustrations. S. L. Penfield, of New Haven, and A. Frenzel, of Freiberg, Saxony, have a paper in which they show that the mineral chalcostibite (wolfsbergite) is identical with guejarite; they further give a detailed description of the form of the chalcostibite from Huanchaca, Bolivia.

H. W. Fairbanks has two papers, the first describing a striking case of contact metamorphism on Black Mountain, of the El Paso range, a spur of the Sierra Nevada Mountains, extending easterly into the Mojave desert. This is illustrated by a figure showing the diabase dike, with a slaty zone adjoining, of hard, firm rock, into which the soft tufa has been baked. The second paper describes the tin deposits at Temescal, southern California. The tin deposits here lie nearly in the center of a rudely semicircular area of granite about two miles in diameter and connected on the east with the great body of similar rock extending indefinitely in that direction. The sedimentary rocks along the edge of the granite area consist of quartzite, mica schist and conglomerate of unknown age. A part, at least, of the slates and limestones of the Santa Ana range are Carboniferous. The semicircular area of granite and portions of the adjoining porphyry have been fissured in a general northeast and southwest direction along almost innumerable lines, and a black vein matter deposited. The veins are generally small, varying from one-fourth to a few inches in thickness, but in the case of the main tin-bearing vein an enormous size is reached at Cajalco