SCIENTIFIC BOOKS

A Monograph of the Molluscan Fauna of the Orthaulax Pugnax Zone of the Oligocene of Tampa, Florida. By William Healey Dall, U. S. Nat. Mus., Bull. No. 90. Pp. xv, 173; Pl. 1–26. Jan. 21, 1915.

Collectors of curios and fossils alike have long known of the beautifully preserved specimens in the Tampa "silex beds" of Florida. But their chief interest, as the author of this monograph aptly remarks, "is not limited to their esthetic beauty, nor their position as characteristic of one horizon in the series illustrating the evolution of life on the globe, but is of extreme importance as furnishing a key to the little-understood succession of the Tertiary beds which fringe the islands of the West Indies and the encircling continental shores of Mexico, Central America and northern South America. The Tertiary column of the coastal plain of the Gulf states being fairly well elucidated, the relative position of the deposits to the south can be determined if any one of them can be satisfactorily connected with a given horizon in the North American series. Such a connection is afforded by the fauna of the silex beds of Tampa."

This problem confronting the paleontologists of the New World is strictly analogous to that presented Mesozoic and Cenozoic workers in the Old, viz., correlating northern temperate faunas with widely differing ones of a more southern, tropical character. There, much progress is being made of late in the older Tertiaries by the use of organisms other than molluscan, especially Foraminifera, and a similar tendency will doubtless soon be shown in this country. Yet there, such forms as *Velates Schmiedelianus* have served well as indices of horizons in both the southern and northern provinces of Europe, and such characteristic types as *Orthaulax pugnax* are equally serviceable here, from the Panama Canal to Georgia. Incidentally we may note the author's attempt to designate other horizons by characteristic species, as, for example, in the upper Oligocene:

Zone of—	*Former designation—*
Scapharca dodona	Alum Bluff beds
Cardium cestum	Chipola marl
Orbitolites floridanus	Tampa limestone
Orthaulax pugnax	*Orthaulax* bed

It is certain that only by the study of such faunal zones we may ever hope to be able to correlate the widely scattered Tertiary deposits of the West Indies and Central America.

As regards the relations of the fauna of the *Orthaulax pugnax* zone Dall says:

Four species go back as far as the Claiborne sands, six are found in the Jackson Eocene, and seven in the Vicksburg. Eight come up from the *Lepidocyclina* zone, four have been recognized in the scanty fauna known from the Nummulitic zone, and one or two from the very imperfectly explored Chattahoochee fauna. Eight are known from the Tertiary of Santo Domingo, several of which are very characteristic of the zone. The two characteristic species of *Orthaulax* occur in the lower Oligocene of the Panama Canal Zone, and at least one of them has been obtained in Santo Domingo, Antigua, and Anguilla.

"Above the *Orthaulax* zone we find 51 of its species surviving in the *Cardium cestum* zone, but only 14 reach the zone of *Scapharca dodona*.

"Fifteen occur in extra-Floridian Miocene beds, but only three in the Floridian Miocene; 11 are found in the Pliocene of south Florida, and five in the Florida Pleistocene, while 23 survive in the recent fauna." Of the 312 molluscan species known from the *Orthaulax pugnax* zone, 90 are described in this monograph as new, while about 120 are refigured from the author's well-known Wagner Institute papers. More than half the remaining species described by various authors are discussed and re-figured.

Of special interest in this generally marine assemblage of species is the presence of 27 land and fresh-water forms, consisting, among others, of *Helix*-like, Bulimoid, Pupoid and *Planorbis* types. One new genus is described, viz., *Microcerion* "about midway between *Cerion* proper and the small Pupidæ."

No sympathetic regard for generic names

that have been in use for many decades has prevented the author from relegating them to oblivion if some other name seem to him to be the correct one in accordance with the strict rules of biologic nomenclature. For examples, note the following:

Strophia changed to *Cerion, Vermetus* to *Vermicularis, Utriculus* to *Retusa, Pleurotoma* to *Turris, Fulgur* to *Busycon, Eulima* to *Melanella, Astralium* to *Astraea, Crassatella* to *Crassatellites, Cylindrella* to *Urocoptis, Tornatina* to *Acteocina, Bulla* to *Bullaria, Turbinella* to *Xancus, Tritonidea* to *Cantharus, Sigaretus* to *Sinum, Pectunculus* to *Glycymeris, Lucina* to *Phacoides.*

Since the above changes are for the most part mere substitutions of a less well-known name for one in more general use, there can be no doubt that it becomes the most of us with less special training in molluscan nomenclature to follow Dr. Dall's lead in our future publications. However, in some instances the changes suggested are based on Bolten's publication, referred to as "Mus. Boltenianum, 1798," antedating Lamarck in "Prodrome" by one year; yet of that rare edition we have understood Dr. Dall to say that there are but four copies in existence, though recently Schorborn's republication (75 copies) renders the work more accessible to workers, at least in the vicinities of large libraries. To what extent the old masters were excusable for not possessing one out of perhaps a half dozen copies of a private work seems to us certainly a legitimate query. Nor does the number 75 strike us as rashly great in this early twentieth-century literature. The only change we sincerely regret is *Pectunculus* to *Glycymeris,* both names having become well established in the literature for very different types from those now proposed. However imperative the inexorable laws of biologic nomenclature may be as regards this matter, Blainville's use in "Man. Malac., Vol. I., p. 540, 1825, of the adjective *Phacoides* can not be regarded as furnishing a sound basis for "Genus PHACOIDES Blainville." However, so far as the undersigned is concerned, such matters are very secondary in importance to the many statements and suggestions regarding matters of correlation and evolution. Note the artificiality of certain generic terms as brought out in Dall's discussion of the species *Vellorita floridana.* He says: "this fossil has the conchological features of the recent species, the *V. cyprinoides* of Asia, but the combination is one which is probably due to dynamic causes operating upon a species of *Cyrena,* and which might occur sporadically anywhere within the distribution of the genus *Cyrena.* The Asiatic or African forms have probably no more intimate connection with the American fossils than that thus indicated, and the same is true of the fossil *Batissa* from the Puget group and its South Sea analogues. The 'genus' *Hinnites* is another form in which it is unlikely that there is any genetic connection between the species occurring in different horizons except what is furnished by the genus *Pecten,* from which *Hinnites* species are probably mere sports."

Extremely valuable as a connecting link between the Jackson and Vicksburg forerunners and the Recent *Busycons* is the new species figured as *B. stellatum* (Pl. 10, Figs. 7, 9). Noteworthy from a lithologic standpoint is the statement that silicification of the calcareous matter of the fossils exposed between tides is now going on. We heartily agree with the author in his dislike of the present usage of the term "formation." We have never understood why the taxonomy of geologic units should be other than that suggested by the International Geol. Congress, '89, *i. e.,* Group, System, Series, Stage, with corresponding time units, Era, Period, Epoch and Age. Finally, as an interesting matter in methods of illustration, we have a chance to see in this monograph in juxtaposition some excellent pen-and-ink drawings by McConnell and the results of modern photographic methods in use by the U. S. Geological Survey. The latter are good, though sometimes showing a lack on the part of the artist of the finer essential features of the shell. This monograph must be regarded as a distinct and valu-

able contribution by America's foremost student of Cenozoic invertebrate paleontology.

G. D. Harris

Paleontological Laboratory,
Cornell University

Text-book of Physiological Chemistry. By Olof Hammarsten. Translation by John A. Mandel. Seventh edition. Wiley and Sons, New York.

Another edition of Hammarsten's "Text-book of Physiological Chemistry" is now available in English (translation by Mandel).

Outside of the material contained in the first two chapters of the last edition which now have been combined into one, the arrangement of the older editions has been retained. Chapter for chapter, almost every subject treated occupies very nearly the same number of pages as before. Nevertheless, this edition is far from being a mere reprint. The newer observations and references are usually to be found—sometimes in place of older observations (and references), but more frequently as additions. In the field of metabolism, a field always somewhat scattered and submerged in "Hammarsten," the new edition will prove disappointing to American students just as the older editions have been. Most of the facts are there, but it takes a brave and diligent student to find them.

The index is very full, but its usefulness to students is not so great as it might be because it still lacks expert systematization. The first subject that the reviewer happened to look up in the index was mucin; sixteen references are given, the first is entirely misleading and the most essential references are tucked away in the middle of the long list.

Index and all, however, American biochemists are always pleased to see one more edition of the book which more than any other is kept within reach for daily consultation.

Otto Folin

NOTES ON ENTOMOLOGY

Two recent parts of Das Tierreich treating of the hymenopterous superfamily Proctotrypoidea[1] are almost monographic in character. Both are by the Abbey J. J. Kieffer and treat of almost 1,800 species in over 130 genera. An illustration is given of nearly every genus, and there is an introductory portion treating of the external morphology. Many of the species are from our country.

India is sufficiently distant from both Europe and America and its fauna has been sufficiently unknown to have been selected as the probable place of origin of many types of animals. Its insect fauna, however, is now becoming better known through numerous books; three have come to hand recently. One by T. B. Fletcher[2] deals with the insects of southern India. There is an introductory account of insects, and life histories of many species representing most of the families. A second large work is by E. P. Stebbing[3] and is devoted to accounts of the life history of and the damage wrought by the forest beetles of India. Unfortunately it contains the descriptions of various new species. The third work is purely economic and treats of the pests of various crops.[4] It consists of 84 leaflets with plates, mostly colored, of insect and fungous enemies of field crops.

Several microlepidopterists had shown that certain Tineid larvæ are of different shape and habit at different stages of development. Trågärdh[5] has investigated these forms and arranges them in two sections, the tissue eaters that bite and eat the parenchyma of the leaf, and the sap-feeders, that take only liquid. The former method is the more primitive, the

[1] Lief. 41, Bethylidæ, 595 pp., 205 figs.; Lief. 42, Serphidæ and Calliceratidæ, 254 pp., 103 figs., 1914.

[2] "Some South Indian Insects," Madras, 1914, 565 pp., 440 figs., 50 pls.

[3] "Indian Forest Insects of Economic Importance—Coleoptera," London, 1914; 648 pp., many pls. and text figures.

[4] "Crop Pest Handbook for Behar and Orissa," Calcutta, 1913. Issued by Dept. of Agric. of these provinces.

[5] "Contributions Towards the Comparative Morphology of the Trophi of the Lepiodopterous Leaf-miners," *Arkiv Zoologi*, VIII., No. 9, 48 pp., 62 figs., 1915.