have not space for a full statement of the case.

It should be said, that only examples of groups in classification as high as families appear in the work. Of about two hundred and seventy-five families of mollusks recognized by malacologists of later date than Bronn, about seventy only are referred to; and the genera assigned to some of these are not at present considered to be properly so placed. This, however, is a mere incident, which greater research into the present state of the science, outside the ranks of professional embryologists, will make it easy to rectify.

The Streptoneura comprise a large part of the ordinary marine gastropods bearing shells, but to them are added the heteropods. On the other hand, the Euthyneura comprise the nudibranchs, pulmonates, and opisthobranchs, — a not unnatural assemblage, but which should hardly be kept out where Pyramidella, Entoconcha, and Phyllirhoë are let in. We do not find any indication of the place of Siphonaria or Gadinia.

The Solenoconcha stand alone. That the Pteropoda should do so, rather than have been consolidated with the Cephalopoda, many will be disposed to believe, as Lankester admits that the development of the embryo 'presents no points of contact' between them.

In the Lipocephala, unfortunately, we have nothing new; and the old and now defunct orders based on the number of adductor muscles are retained.

The remarkable characters of the group of Metarrhiptae are not alluded to; and Tridacna, the type, is actually included in one family with Dimya, Isocardia, Cyrena, and Cyprina. In fact, the families of Lipocephala adopted are, in the light of modern investigations, too archaic for serious criticism.

We have noticed, in passing, some errors, and some features wherein we differ from our author in judgment on the facts presented. But we should do him grave injustice if we did not, before closing this review, give our testimony to the great value of his work.

In this paper is brought together the best summary of the results of recent anatomical and embryological research on the Mollusca. It is fully (though rather rudely) illustrated with fresh and well-selected figures. Several of the diagrammatic series given are extremely clear, satisfactory, and instructive. The article is a mine of information as to anatomy and development, digested and put in rational sequence. It is, however, a sketch, in broad outlines, of the developmental history of the Mollusca, rather than a general treatise on the group. We hope that it, or an enlarged and improved treatise following on the same lines, may soon be accessible in better form for the student, whom it cannot fail to stimulate and instruct.

W. H. Dall.

ABORIGINAL LITERATURE OF AMERICA.

Aboriginal American authors and their productions, especially those in the native languages. By Daniel G. Brinton. Philadelphia, *Brinton*, 1883. 63 p. 8°.

The Güegüence: a comedy ballet in the Nahuatl-Spanish dialect of Nicaragua. Edited by D. G. Brinton. Philadelphia, *Brinton*, 1883. 52+94 p. 8°.

The first of these papers is an essay which grew out of a communication which Dr. Brinton made, in 1883, to the Copenhagen session of the *Congrès des Américanistes*. It is a bit of literary history, which groups, according to form of expression, — whether narrative, didactic, oratorical, poetic, or dramatic, — the various productions of the aborigines of America. It includes the writings in the native tongues of the Maya and Nahua races in the south. It embraces, also, the hot-bed literature of those tongues which have received their power of expression, in type, from the contact with the whites; as in the case, for instance, of the Cherokees. Nor are the efforts forgotten, of the training of those of Indian blood who have given expression both in the Latin, which was the common scholarly medium of the time of the Spanish conquest, and in the vernaculars which were acquired from the schools of the Spanish, French, and English settlers. This last phase extends the range pretty far beyond the scope of the linguistic interests attaching to the subject: but Dr. Brinton does not make it an essential part of his plan; and from his enumerations it clearly appears how much more receptive the nations which the Spaniards encountered were than the peoples of the north, brought to subjection by the French and English. The review which Dr. Brinton makes of the literary activity — if we may so call it — of all the American peoples, from the Eskimo southward, though but cursory, is a reasonably complete one, and opens a subject of great interest.

The second title is the third in a series of aboriginal American literature, which Dr. Brinton is giving opportunely to the students of the ethnological development of our indigenous races. In the present instance the

production is not purely Indian; for it is of comparatively recent origin, and represents the corruptions of both the Spanish and Aztec tongues, combined in a vulgar way. It is interesting, however, psychologically, and shows what humor and spirit can spring from the union of the races, which its jargon typifies. The text of the original is accompanied by a rendering into English; and in an introduction and notes, Dr. Brinton takes occasion, fortunately, to make record of a large amount of his curious and apposite learning.

M'ALPINE'S ZOÖLOGICAL ATLAS.

Zoölogical atlas (including comparative anatomy), with practical directions and explanatory text for the use of students. By D. M'ALPINE. 2 vols. New York, *The Century co.*, 1883. 16; 24 pl. f°.

THIS is a handsomely bound and finished work in two parts, dealing respectively with the invertebrates and vertebrates. It is intended as a guide to the student in the dissection of representative forms. The number of plates devoted to the different types is, however, hardly proportioned to their importance, much less to the commonness of their occurrence. Thus, four plates are assigned to Protozoa, and, of these, one and a half to the Monera. Perhaps so much space is given to these because the author knows that most students will never have the opportunity of studying the living forms. Yet this is hardly a sufficient excuse for crowding out altogether the Porifera and Coelenterata. Of these, not a single figure or diagram is given; although they are of universal occurrence, and far more important objects of study to the student than mere figures of Monera. The figures of Vermes are limited to those of the liver-fluke, tapeworm, and leech, all on one plate, while annelids are entirely neglected. At least one molluscoid, either a polyzoan or ascidian, might well have been added.

In his selection of vertebrates, the author has been far more fortunate; and he is to be especially commended for giving the anatomy of the salamander in place of that of the common, but unfortunately in many respects so abnormal, frog.

The drawings, unfortunately, leave the student in entire ignorance of the relative size of the different objects. Different organs and organic systems of the same animal are often drawn on a very different scale, and the student left to imagine that they are all alike, life-size, except that in marked cases the word 'enlarged' is added. The Protozoa are prodigious, but whether magnified five hundred or five thousand diameters we are not informed. All this might very easily have been obviated by the use of a few figures or a simple scale.

Some mistakes in drawing or anatomy occur in each part. Thus the stone-canal of the starfish (plate v., diagram 1) is represented as connected directly with the top of one of the Polian vesicles. If any one will compare the other figures on this plate, especially Nos. 3 and 4, with the corresponding figures in Professor Brooks's 'Manual,' he will see immediately how the finer points of anatomy, especially of the haemal system, have been neglected. Fig. 3 is particularly unfortunate.

So, too, in plate xiii., figs. 4 and 5, the nervous system differs in the two drawings; and in fig. 5 the single parieto-splanchnic ganglion seems to be represented nearly midway between the anterior and posterior adductor muscles, but without name, and its name given to two siphonal (?) ganglia represented on the posterior adductor. One or two similar instances occur in the part devoted to vertebrates. Both in figures and notes, the author supports the theory of the development of an ovary and 'seminal capsule,' and the production of ova, in Paramoecium. This is certainly a bold position, in the face of such observations as those of Professor Bütschli on the conjugation of several species of the same genus, and described and supported by Professor Claus. But with few exceptions, and these, perhaps, more the fault of engraver than author, the anatomy seems generally correct.

The plates of the part on vertebrates are very fair and distinct; but in the figures of many of the smaller invertebrates the masses of color are far more noticeable than the correctness or clearness of the details. The internal anatomy of the crabs in plate viii. is so indefinite as to be of little assistance to a student. The figures in plate ix. are much clearer. All through both volumes, finer drawing and engraving, and a more judicious use of color, would have made a vast improvement. The engraving, particularly, is not so good as the price of the work would warrant; by no means so clear as in many text-books on zoölogy and comparative anatomy. The notes are usually good, though sometimes rather more literary than scientific. The description of the individual or species does not always emphasize the most important characteristics of the class which it illustrates, of the order or family to which it belongs.

The book would be a great help to any one wishing to take up a practical course of dissec-