

was aware of the apparent exceptions signalized by Mr. Dall, and could add extinct forms referred to the Pteriidae or Aviculidae, as well as the Muelleriidae retained among the Dimyaria. The Monomyaria seemed to me, however, to be a natural 'genetic' group, and the Muelleriidae were bimuscloose in youth, and their monomyarian characteristics in the adult appeared to be a peculiar teleological adaptation. I am still disposed to believe that the Monomyaria constitute a natural group, although Mr. Dall has good reasons for thinking that, "in fact, there does not at present seem to be any good basis for ordinal divisions in the Lipocephala." What Mr. Dall designates as 'the remarkable characters of the group of Metarrhptae' seemed to me to furnish as good a basis for an 'order' as any of those that have been used for that purpose: consequently I gave the name as an ordinal designation in 1871.

But the question whether certain groups are of ordinal or minor value is of less moment than the natural subdivision of the class. If the myological peculiarities are not the best criteria, what are?

A view that has had some currency, that the Monomyaria are inferior forms of Acephala, is negatived by both embryological and paleontological evidence. The testimony of both is conclusive that the Monomyaria are derivatives from Dimyaria.

Is it certain that the shell of the Polyplacophora (Chitons) is the exact homologue of the shells of the typical Gastropods? I am acquainted with what has been published of the embryology of the group, but am left in doubt both as to facts and interpretations. At any rate, it is certain that the old views of a close relation between the Polyplacophora and the docoglossate Gastropoda had very little morphological basis.

My gratitude for the excellent article of Professor Lankester impels me to cordially indorse the encomiums of Mr. Dall, while I concur with the critic as to the family arrangement.

Professor Lankester has sometimes been misled, too, by not remembering that the same objects may be called by different names: for instance, he has referred to the 'Rachiglossa (1.1.1, or 1),' a gastropod named 'Pyrrula, Lam. (fig. 38),' but the figure represents a type belonging to the 'Tenioglossa (3. 1. 3),' and repeated thereunder as one of the 'family 4, Doliidae,' under the name 'Ficula.' As my eyes light on neighboring names, I may add that the 'Pediculariidae' and 'Ovulum' do not fulfil the conditions of the 'Siphonochlamyda,'—'shell always spiral:' they do not have true spires. Professor Lankester has been deceived by false guides. Such lapses are, however, of a kind inevitable in a general work; for it is impossible for one man to verify every statement.

THEO. GILL.

#### A fasting pig.

In a recent flood (June 26) that visited this neighborhood, Mr. John Aughenbaugh of West Manchester township had five hogs carried away by the water. On Aug. 7 one of them was found under a large heap of driftwood about a mile from the home of Mr. Aughenbaugh. The animal had been securely imprisoned by the timber, and had not eaten any thing for forty-two days. Although very considerably emaciated when released from its prison, it appeared to have no trouble in emptying a crock of thick milk that was offered it. It has since been doing well, and no doubt will soon recover all it lost in flesh.

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#### A WIDER USE FOR THE LIBRARIES OF SCIENTIFIC SOCIETIES.

To those who are obliged to use the libraries of our smaller colleges, it is often a source of vexation to find that the books one is referred to are wanting. The resources of the colleges are limited, and the amount of money which can be expended for the purchase of new books small, and that small amount often devoted, according to the wishes of the donor, to the class of books least needed. A case in point occurred lately, where a college professor of mathematics was asked to write a short account of the life of Todhunter; and he felt obliged to say that he would be glad to undertake the article, but could not before he had visited the libraries of either New York or Boston, which he hoped to be able to do during his next vacation.

This constant lacking of just the books one needs for his work is most hampering. It is not the *Century*, or the *Harper*, or the latest novel, or the new book of travel, which cannot be had (these find their way into all the odd corners), but it is the specialist's books, a volume of the transactions of some learned society, a scientific journal, or the modern treatises on thermo-dynamics, on electricity, or on biology, which are needed, and which can be found only in a very few of our libraries in the necessary profusion.

A few such libraries have now been collected by our older scientific societies and our larger colleges. The books of the college libraries are for a specific purpose, and find abundant use at the hands of the students and professors. With the societies the matter stands differently. It cannot be denied that one of the original objects of the establishment of these societies was, that, by the publication of their own 'proceedings,' they might, by exchange, gather a collection of books which could not, in the then comparatively poor state of the country, be gathered in any other way, and which were to be for the use of the members, and such favored friends as they might designate.

It has so happened that these societies were established by the small knots of scientific

men gathered about our larger colleges. These colleges have developed, and their libraries have grown more and more valuable; so that the professors no longer find it necessary to go to their academy for books. At the same time the machinery of their long-established organization has grown more effective; and, while many of the members no longer need their society collection of books, the number and value of those added to the shelves each year are constantly increasing. The result is, that in some of our larger cities there are accumulating very considerable libraries of special works which are scarcely used, as they are duplicated at some neighboring college about which those employing such books live.

It is, of course, with regret that one enters such a library, if library it may be called, and sees the new books which are not called for by the former clientele of the collection, but which would eagerly be asked for if the circle of favored outsiders were widened so as to include all properly vouched-for persons who might live within one, two, or three hundred miles, or even more, and who would be willing to pay a small annual fee to defray the expense of sending books to them by mail or express, and for the extra wear, and danger of loss. It is true that such books as could not be readily replaced in case of loss would necessarily be retained from such a wide-spread circulation; but these would be only the older volumes of the various series, and such books as are very generally kept from such extra risks.

The expense of mailing would be considerable; it would average, on volumes of the size of a bound volume of the *American journal of science*, about sixteen cents each way. To this must be added the cost of handling, and some slight charge for the privilege of use. Altogether, the expense of taking out, say, forty books of this class in the course of the year would be in the neighborhood of ten to fifteen dollars,—a charge which could be reduced very materially by sending for the books a number at a time, so that they might be forwarded to advantage by express; the

amount named above being the maximum if each book were mailed separately.

That the expense of using a library through the mails would mount up very rapidly is evident; but the facts remain, that there are large libraries of books solely on matters of interest to scientific men, and of vital interest to such men, and that these libraries exist in communities where by duplication they no longer have their former use. It is highly desirable that the books should be put to use; and their owners would probably be glad to arrange some plan by which the scheme of extending the circulation through the mails could be made practicable. It would be of great advantage in perfecting plans, if those who might be benefited would come forward and state their position.

#### THE COLOR-SENSE IN FISHES.

In his recent volume on 'Mental evolution in animals,'<sup>1</sup> Mr. Romanes remarks, "As further proof that a well-developed sense of color occurs in fish, I may remark, that the elaborate care with which anglers dress their flies, and select this and that combination of tints for this and that locality, time of day, etc., shows that those who are practically acquainted with the habits of trout, salmon, and other fresh-water fish, regard the presence of a color-sense in them as axiomatic." As one 'practically acquainted' with some sixty species of fresh-water fishes, representing a dozen or more distinct groups, I am reminded, by the above quotation, of many occurrences witnessed during my rambles about the Delaware River, or its tributary creeks, that have a bearing upon the subject. Besides recognizing the differences in insects by their colors, have fishes any knowledge of the fact that their own colors may or may not be protective? Are they aware that it depends upon themselves, whether these colors shall be a safeguard, or a source of danger? That we are warranted in giving an affirmative reply, is shown, I think, by their habits, and particularly by the fact that to a certain extent they have the color of their bodies under their control.

Relatively speaking, the fishes of the Delaware River and its tributaries may be classified, in regard to their habits, as diurnal and

<sup>1</sup> Mental evolution in animals, by GEORGE J. ROMANES. New York, Appleton, 1884. 411 p. 12<sup>o</sup>.