

When the public funds are to be expended in scientific investigation, the public has a right to demand that the work be put into the hands of those who are not only industrious experimenters, but who are able and willing to test critically the results of their own experiments, and present to the public only results which have endured such testing.

WHEN the president of the geographical section of the British association declared that the Portuguese 'lost colony,' as described by Mr. Haliburton, 'was something quite new to geographers,' he doubtless failed to recall that in 1881 Bettencourt (*Descobrimentos . . . do Portugueses*, pp. 132-135) printed the grant to Fagundes of March 13, 1521, which is also contained in Do Canto's *Memoria historica*, p. 90. The whole subject of the discoveries of Fagundes is taken up by those authors, and also by Henry Harrisse in his *Cabots*, pp. 275-277 (Paris, 1882), and in his *Corte-Real*, p. 144 and 171 (Paris, 1883). General Lefroy also failed to remember that Ernesto do Canto, the learned antiquary of S. Miguel, one of the Azores — to whom Harrisse acknowledges his indebtedness — discovered among the manuscripts of the Torre do Tombo a *carta* of the 4th May, 1567, relating to the second lost Portuguese colony mentioned by Mr. Haliburton. This document is in Do Canto's *Memoria historica* entitled *Os Corte-Reaes*, p. 161 (S. Miguel, 1883); and also in the appendix to Harrisse's *Corte-Real*, p. 235, where it is stated that it was communicated by Mr. Do Canto. These three books, and others which we have no space to mention at this time, contain documents going to show that those expeditions actually sailed, and also contain the commissions and confirmations granted the Corte-Reals, their contemporaries and successors, at various times.

THE occurrence of two light but wide-spread earthquakes within two months in our usually quiet eastern states awakens attention to the absence of any organized attempt to ob-

serve them. The chief difficulty in such an attempt would doubtless be the discouragement of waiting through a considerable time without shocks to observe; but this time is not so long as many would suppose, as may be seen by looking over Rockwood's earthquake lists. The only systematic work now undertaken consists in the collection of accidental records by Professor Rockwood and some few other students of the question, and the reporting of ordinary non-instrumental observations from the signal-service stations. This small beginning could be greatly improved if the U. S. geological survey could lend a hand by providing simple seismometers for a moderate number of stations; and would be still further advanced if observers and students of this branch of physical geography would resolve themselves into an earthquake-club, unembarrassed by formal regulations, chiefly with the object of becoming known to one another, and thus insuring the proper collection and collation of their observations. We should be glad to have correspondence on this subject.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

Classification of the Mollusca.

IN the instructive comments on the 'classification of the Mollusca' by Messrs. Dall and Lankester, *apropos* of Professor Ray Lankester's article 'Mollusca' in the 'Encyclopædia Britannica,' several points are raised concerning which I should be pleased to be better informed.

In the original review by Mr. Dall (*Science*, iii. 730), it is remarked that 'no single instance of a calcified jaw among recent Mollusca occurs;' and in his reply that gentleman adds, that he "should be grateful to Professor Lankester for the name of any recent mollusk having a shelly or even partially 'calcified' jaw" (*Science*, iv. 143). I have long been under the impression that the Nautilidae furnished such an instance. Woodward expressed the belief of malacologists in his statement, that, "in the recent *Nautilus*, the mandibles are horny, but calcified to a considerable extent;" and Professor Lankester (*op. cit.* p. 667) says that in the cephalopods ('Siphonopoda') "the jaws have the form of a pair of powerful beaks, either horny or calcified (*Nautilus*). Is there any reason to doubt or dispute the correctness of such and similar statements?"

In my 'Arrangement of the families of mollusks' (1871), I admitted as orders of Acepala (otherwise Conchifera, or Lipocephala) the Dimyaria, Heteromyaria, and Monomyaria, but under mental protest. I

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 negated 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