SCIENCE.

FRIDAY, OCTOBER 3, 1884.

COMMENT AND CRITICISM.

THE reports of agricultural experiment-stations, experimental farms, and similar institutions, form a class of literature which is rapidly increasing in volume, and which, while it contains very much that is (at least from a scientific stand-point) simply trash, also contains much that is of scientific value. In calling attention to a very prevalent fault of such publications, we would not be understood as calling in question their usefulness for the purposes for which they are intended, and still less as lacking in appreciation of the valuable scientific results which many of them contain — usually, it must be confessed, rather sparingly. The fault to which we refer is not one of matter, but of form. It is the lack of any intelligent discussion of the results of experiments; and it makes itself felt most severely, precisely in the cases in which those results are most important scientifically.

What would be thought of an astronomer, who, after observing an eclipse, or a transit of Venus, should present as his report, simply a memorandum of the observations taken, without reducing or discussing them? Yet substantially this is what we find in very many agricultural reports. The experiments have been planned with more or less intelligence and care, and executed with more or less of painstaking accuracy, according to circumstances; but there the experimenter has stopped, apparently forgetting or ignoring that his work is only half done. The experiment planned and executed, there still remains the task of combining and testing the results, so as to detect their fallacies, and bring out what they really teach; in other words, the task of discussion.

That the task of discussion is so often neglected may be due to several causes. Often it is apparent from the tone of the report, that the author has feared the reproach of being a 'theorist,' and has rather ostentatiously confined himself to a bare statement of facts observed. Vague and undisciplined theorizing, and hasty generalizations, are, of course, to be avoided; but these are something very different from sober study and discussion. Facts are good, especially when they teach principles; but he who will have nothing but facts confines himself to the husks of investigation. In other cases one can scarcely avoid the impression that the writer has been too indolent to discuss his results; and in some instances the suspicion is even suggested that he has been overcome by their complexity or unexpectedness.

But, from whatever cause originating, the prevailing fashion of presenting experimental work is to be reprobated. An author has no right to require that his readers make that critical comparison of results which he is too indolent or too incompetent to undertake himself; nor to thrust upon the unscientific public, to whom such reports as we are speaking of are mainly addressed, crude and superficial conclusions as the results of scientific investigations. Indeed, it is to this latter class that the practice is likely to prove most pernicious. The trained scientific man can readily detect the absence of critical discussion, even though he may not feel called upon to supply the lack; but the unscientific reader, who has had no training of this sort, is very likely to accept whatever conclusions his author draws, however inadequate, as expressing the sum of truth upon that subject, or to stand bewildered before a mass of details, with no clear idea of what they prove.

We submit that in neither case is the experimenter fulfilling his duty to his constituents.

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 observe 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 Acephala (otherwise Conchifera, or Lipocephala) the Dimyaria, Heteromyaria, and Monomyaria, but under mental protest. I