

purity of the ocean-air while crossing the Atlantic. He had previously prepared capsules of sterilized gelatine. One, which was exposed in a state-room on the main deck of the steamer, developed five hundred points of infection in eighteen hours; one exposed in the cabin on the main deck developed only five or six points in ten days; a third, hung over the bow of the ship for ten days, remained uncontaminated.

— A parrot is reported to have died of diphtheria contracted from children sick with that disease in the same house.

— A new and complete edition of the writings of Galileo, in twenty volumes, is to be published at Florence under the authorization of the Italian minister of public instruction, who has nominated a committee of scholars to edit the work.

— We have received a communication from Professor MacGregor in reply to Dr. Hall's last letter on inertia-force, but we consider the subject to have been sufficiently discussed for the present.

LETTERS TO THE EDITOR.

**.*The attention of scientific men is called to the advantages of the correspondence columns of SCIENCE for placing promptly on record brief preliminary notices of their investigations. Twenty copies of the number containing his communication will be furnished free to any correspondent on request.*

The editor will be glad to publish any queries consonant with the character of the journal.

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

Elementary instruction in zoölogy.

I was much interested in the letters of 'L. H.' and Mr. Shufeldt in regard to the teaching of zoölogy, and I am inclined to agree, almost without qualification, with the latter.

It is unnecessary to make any distinction between a high school and a college course; for at the present time they are practically identical, inasmuch as few college students have had any zoölogical training in their preparatory course. Is, then, the course indicated by 'L. H.' a wise course for the general student? My experience leads me to believe that he is almost as far from the *best* course as the old style of teachers whose work was undeniably superficial.

The theory of studying one animal thoroughly, then taking up nearly related forms, and gradually extending the study to the whole animal kingdom, is very plausible; but has 'L. H.' tried it with an ordinary college class, and in the time allotted to zoölogy in the ordinary college course? He indicates a course that would require several years of continuous work, while most colleges give from one to three terms, and allow for only a limited amount of laboratory work.

Now, while zoölogy is a science worthy of being taught *for itself* and for the discipline it affords, it

has a bearing on other sciences, and this second element must not be lost sight of. For example: to understand geology, the student must know the principles of classification of animals; but the method of 'L. H.' would never bring the average student to knowledge of classification. He would know about crustaceans perhaps, but might in reality know very little of zoölogy.

I find I get the best results by following a method which is essentially like that outlined by Mr. Shufeldt. First my students dissect, in a somewhat superficial manner of course, a series of types. For this work I find that even a manual like Colton's tells too much: for I wish to have students, first of all, learn to use their own eyes, and not simply to verify some one else's description. For this stage of the study the less of text-book and the fewer works of reference, the better. In order that material may not be wasted, I furnish my students a little pamphlet of elementary instruction, which tells them what to do, but not what they will find.

This work forms a basis for teaching classification, which I do largely by lectures, or rather talks.

This elementary work gives the student a fair general idea of the animal kingdom. That his knowledge is superficial, I acknowledge, but I consider it none the less valuable. Now the student is prepared to make a thorough study of some higher animal. We use the cat, and from the cat teach the comparative anatomy of vertebrates. More advanced students take up histology and embryology.

I do not think that in this course we have reached the ideal; we may make great changes in it: but it seems to us the best according to our present knowledge.

I am inclined to think that the compound microscope is used too freely with elementary classes; that it would be better if all of their work for the first term or two were on macroscopic anatomy, and that the microscope should be brought in only when the student actually feels the need of it to pursue his investigations further. This is the method of nature, and it seems to me more profitable. C. D. M.

Ripon, Wis., March 30.

Lepidoptera at sea.

On the evening of March 5, 1870, it was my fortune to be on board ship, bound from Callao for London, and at that time a little more than a thousand miles from Cape Frio, the nearest portion of the coast of Brazil. We were in latitude 25° south, longitude 24° west, just south of the border of the south-east trade-winds. Late in the afternoon we encountered several light squalls of wind and rain, during one of which two butterflies were driven past. The weather continued squally all night and for part of the next day, the wind coming from the westward. The following morning it was found that quite a number of Lepidoptera had been blown on board, and ensconced themselves in various places sheltered from the wind. They were mostly, if not wholly, nocturnal species of small size, although one large hawk-moth was among them. About twelve or fifteen specimens, representing nearly as many species, were captured, and others seen; so that not less than twenty or thirty individuals must have reached our ship.

It would appear from this abundance that the total number swept out to sea must have been ex-