ascribed to them as food for the deep-sea forms; though not weighted, like the radiolarians, diatoms, &c., with silex, still they might in time fall from the table of the upper waters on, or rather down, to that of the hungry deep-dwelling forms. In the chapter on the relations of the Abysmal zone and the origin of its fauna, the author introduces the new classification of the ocean fauna, "Plankton," "Nekton," and "Benthos," and he is good enough to write that though "it will not be necessary to use these terms very frequently in this little book, it may be advisable for the reader to bear in mind that in any exhaustive treatise on the marine fauna such terms would be used and employed." We, however, only find in the index one reference to them, and that the one we have just quoted; nor in the following chapter, treating of the characters of the deep sea fauna, does the author employ them, though here their use might have assisted the meaning. Perhaps this Greek armour was found too cumbrous.

The last paragraph of this chapter we would have preferred omitted. We cannot see the relevancy of Moseley in comparing the deep sea fauna, even "as a whole," as in any way similar to the flora of the high mountains. If some of the deep-sea forms are dwarfed, this is surely the exception, and giants of almost all the groups are to be found among them; whereas what gigantic representatives of any group are to be found on the mountain tops?

The remaining four chapters treat of the Protozoa, Cœlentera, Echinoderma, Vermes, Mollusca, Arthropoda, and Fish of the deep sea. They open with a regret that "although thousands of species of animals have been described in the volumes that have been devoted to deep-sea work, yet the number of the sub-kingdoms and classes remains the same," and conclude with a hope, in which we join, "that in the future there may be a new stimulus given to deep-sea research, and that the many unsolved problems may be again seriously studied and eventually solved."

A Treatise on Elementary Hydrostatics. By John Greaves, M.A. (Cambridge University Press, 1894.)

A BRIEF examination of this treatise is sufficient to allow us to form a favourable opinion of its contents. Nearly every proposition or description shows that the author is a thorough master of his subject, and, what is also of equal importance, can impart his knowledge to his readers in language both concise and fresh. The treatise is intended for those preparing for the first part of the Mathematical Tripos, and is different from other elementary works on the same subject in the following manner: In this Tripos examination one is now allowed to use the notation of the calculus, which for some students is a great boon, in that problems can be more easily solved, and in less time. We are thus presented in the text of this treatise not only with the usual proofs, but with alternative proofs when the use of the calculus is a distinct advantage. This alteration will be found an improvement. The definition of a fluid, from which are deduced the principles of the subject, is given as "a substance which will yield to any continued shearing stress, however small, or," in other words, "when a fluid is in equilibrium, the stress across any plane in it is entirely normal to that plane."

Among other useful additions to the subject may be mentioned propositions relating to a heterogeneous fluid in equilibrium under any system of forces, and some cases of simple motion, the latter of which may be left for a second reading. In chapter ix. the author deduces several well-known capillary phenomena from the experimental result that the energy of a material system depends to a great extent on the surfaces separating the different substances.

As the book is printed in clear type and contains neat diagrams, it will be sure to find favour with students.

LETTERS TO THE EDITOR.

The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.*]

Sun-spots and Magnetic Disturbances.

The note in NATURE for February 22, 1894 (p. 397) concerning "Sun-spots and Magnetic Disturbances" illustrates most clearly the necessity for the adoption of a proper method in order to arrive at any conclusion respecting the relation between these phenomena. I must continue to insist, as I have done heretofore in the columns of NATURE and elsewhere, that the study of the periodicity of magnetic storms and auroras at intervals of about twenty-seven and one quarter days must precede that of the attendant solar conditions, otherwise no results will be obtained. For example, during the month of August 1893, to which the note above mentioned refers, sun-spots were so numerous that it would be utterly impossible to determine which group, if any, were in a location upon the sun capable of originating terrestrial magnetic effects. The proper way is to begin by disregarding solar conditions entirely, and arrange the magnetic storms or auroras of the period that it is desired to study, in series as they actually occurred at the twenty-seven and one quarter day interval. This being done, it is possible at a glance to determine what particular solar conditions reappear invariably when magnetic perturbations are recorded. In this way, and in this way alone, it becomes evident that whenever these magnetic effects appear, there is always a disturbed portion of the sun at the eastern limb and near the plane of the earth's orbit in that location. If the series of recurrences is sufficiently persistent to last through many solar rotations, it will be found that the disturbed area continues to have its effect in spite of considerable variations in the size of the spots, and that at times these effects may continue even when nothing but groups of faculæ remain, these being however, unusually bright and extensive in such a case. By following the history of such recurrences into the portion of the year in which any given disturbed portion of the sun is at a distance from the plane of the earth's orbit, when at the eastern limb, it is found that outbreaks of violent thunderstorms, which do not produce any disturbance of the magnetic needle, take the place of magnetic storms and auroras in the regular order of recurrence. There have been some phenomenal illustrations of this the past winter. Usually in this part of the United States a thunderstorm in winter is very rare, and, if it occurs, stands forth as a prominent event. Thus the thunderstorms of Christmas-day and night, in which buildings were struck by lightning in this State, were most exceptional, and, falling as they did upon the proper date to form the continuation of the strongest and most persistent series of thunderstorms and auroras that has been current the past year, were most striking. The above method of attacking the question is that which the writer has gradually developed for the purpose of systematic study. The relation having once been established by tracing the history faithfully and in detail, in the manner described, it is no longer absolutely essential to enter into the question of periodicity in order to secure evidence bearing upon the question. As soon as it is known what has to be looked for, it will only be necessary, when any very large increase of thunderstorms occurs, or any notable magnetic perturbations, as the case may be, to look at the proper part of the sun, and see whether it is the seat of disturbance. In this way it will be found that it is not the size of solar disturbances, but their activity at the critical date when they are in the proper location, that determines the terrestrial effects to which reference has been made. Thus it is a question throughout of the adoption of a proper method of investigation.

M. A. VEEDER.

Lyons, N.Y., March 12.

Dredging Expedition at Port Erin.

THE Liverpool Marine Biology Committee organised a dredging expedition from the Port Erin Biological Station at Easter. The party of a dozen naturalists included several members of the committee, Mr. I. C. Thompson, Mr. A. Leicester and Prof. Herdman, Prof. Weiss, Dr. Hurst, Mr.