

easy to a beginner; that, in fact, there are no real difficulties which must be fairly faced by every student. We are surprised to find that this opinion can be held by any sound and successful teacher. Our own experience has always been dead against it. Dr. Lodge says of the elementary works of Thomson and Tait, Clerk-Maxwell, and Clifford, that they are "far too difficult for beginners." We do not think that his process of dilution makes the matter a whit less difficult. It has rather a tendency to conceal from the reader the place where the real difficulty lies, and a necessary difficulty *avoided* is certainly not *overcome*. Second, the avoidance of difficulties is managed by loose and sometimes even metaphysical language (see, for instance, pp. 83-5); evidently embodying some of the speculations in which the author has indulged while excogitating his work.

As an instance of loose writing take this (p. 16)

"5. The effects of force on matter are :

- A. Change of motion, which is called *acceleration*.
- B. Change of size or shape, which is called *strain* or deformation.

If only one force acts on a body, it must produce the effect A. If two or more forces act in different directions on a body, they must produce B, and they may produce A also." Now, at first sight, this looks well enough, and certainly Dr. Lodge knows the facts thoroughly. But how is *change of motion* called *acceleration*? Acceleration is correctly defined (p. 19) as *Rate of change of velocity*. But (p. 18) velocity is defined as "the rate of motion of a body." Put these extracts along with A above, and we find "change of that whose rate is called velocity is rate of change of velocity;" a very remarkable proposition, indeed one of high metaphysical interest. Again, if only one force act on a body, it *must* produce B unless the body be perfectly rigid. And two or more forces do *not* necessarily produce B, even on the most plastic body. Take the case of two different sets of parallel forces, for instance, each proportional to the mass of the element on which it acts.

In conclusion we may say that for the facts of elementary mechanics, for excellent examples of application of the formulæ, and such like matters, the student may use this work with profit:—but he ought to be warned that where the text appears most simple it is generally loose, often metaphysical, and here and there unintelligible.

Le conchiglie Pompeiane. Descritte dal Dott. Nicola Tiberi. 4to, 12 pp. (Napoli, 1879.)

THIS remarkable and well written memoir was published before the recent celebration at Pompeii of the eighteenth centenary of its destruction by a volcanic eruption of Vesuvius. It is the work of an excellent naturalist, who lives at Resina, close to the site of the ruined city, and who is especially conversant with the shells of the Mediterranean. The point of view to which he directs our attention is very different from that which has been taken by the geologist, antiquary, artist, or architect. He treats of the shells found in the ruins, and which had served for food, or been used by the Pompeians for ornament and other purposes. Indeed we know from Athenæus and other ancient authors that mollusca were then relished quite as much as they are at present by the inhabitants of Italy. I have been unable to discover in the loose and incorrect twaddle of the younger Pliny, who lost his life in the eruption, any mention of shells having been collected by his countrymen for the study of natural history. It is a pursuit or amusement of comparatively modern times. Dr. Tiberi gives a list of all the shells which he has noticed as Pompeian, belonging to no less than 44 species, with particulars of their relative abundance at Pompeii, as well as of their distribution and economy. Some were of eatable kinds, as the common oyster and mussel, *Pecten jacobæus*, *Venus chione*, *Tapes*

decussatus, and several species of *Helix*. Others adorned fountains, as *Haliothis tuberculata*, *Murex trunculus*, and *M. brandaris*. The oriental pearl-shell (*Meleagrina margaritifera*) was represented only by a single valve. But the ladies of Pompeii seem to have attached considerable value to the *Cypræa* or Cowry, as amulets or charms to prevent sterility; and among these shells were some of species from the Red Sea and Persian Gulf. A single specimen of another exotic shell (*Conus textilis*) must have been kept for its great beauty as an object of curiosity. All the shells used in the ornamentation of fountains, five in the city and one in the suburbs, are of species which still are common in the Gulf of Naples; these shells are separately distinguished and named.

The memoir forms a short but interesting chapter of Roman history, and it tells us more than is generally known about the habits of the former masters of the world.

J. GWYN JEFFREYS

Banka und Biliton. Von Dr. E. Reyer. (Vienna, 1879).

IN this pamphlet, originally published as an article in the *Oesterreichischen Zeitschrift für Berg- und Hüttenwesen*, the author has brought together a vast amount of useful information on these two important tin-yielding localities. At the present time, when the trade in this important but sparingly-distributed metal has been almost entirely diverted from its ancient centres in Cornwall and Saxony by the development of the sources of supply in the East Indies and Australia, the valuable details contained in this pamphlet cannot fail to be read with much interest. By far the largest and most reliable part of the information on these districts is inaccessible to most readers, from the fact of its being written in the Dutch language, and Dr. Reyer has done good service in bringing together so much material in a compendious and available form. The geological structure of the districts, the distribution of the ore in them, the methods of working, and the mineral statistics of the two areas, are very fully described, and the monograph concludes with an interesting sketch of the life of the Chinese immigrants who are engaged in working these tin ores in the Malay Archipelago.

J. W. J.

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. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

Greenwich Meteorological Observations

MR. BUCHAN (*NATURE*, vol. xx, p. 602) now admits that fundamental mean temperatures are to be found in Table 77. But his original unqualified remark (p. 526) was that mean temperatures for Greenwich "remain still to be calculated"; he even endeavoured to infer the mean annual temperature from the observations of the earth-thermometers, as though Table 77 (containing a value of this element with which no hitherto determined value for Greenwich can compete) had no existence. All this was likely to convey to an uninformed reader a very erroneous impression.

Table 52 contains simply a collection of the mean monthly results given in the twelve tables (38 to 49) referring to diurnal inequality, and as these numbers appeared to sufficiently well represent the varying temperatures of individual months, no account was taken of omitted days. But we can without difficulty determine their influence, usually small, in the months affected, and, in consequence of the now expressed want, shall probably take an opportunity of doing so. The question was of much greater importance as regards the fundamental values of Table 77, in forming which, as before mentioned, and as is