

OUR BOOK SHELF

Elementary Mechanics. By O. J. Lodge. (London and Edinburgh: Chambers, 1885.)

THIS is a revised edition of Prof. Lodge's Text-Book:—not much altered, so far as we can see even by the help of the rapid yet searching stereoscopic squinting, from the former edition. Why a writer, who begins by acknowledging his indebtedness to the really scientific works of Thomson and Tait, Clerk-Maxwell, and Clifford, should make frequent references to the merely "popular" and singularly loose *brochures* of Deschanel and Ganot, is a question more easily asked than answered. But it is totally unintelligible to us that, having begun with classical works, he should proceed to "recommend real students to read one or other" of these poor compilations. Was it not Horace Smith who said:—

"Is there such scanty store of standard works,
That students must be fed on foreign trash?"

But Prof. Lodge's own standard is far above that of the books to which he, unfortunately and unaccountably, refers his "real students." His work is a curious one. There is scarcely a trace of the dogmatism which is asserted to be so natural to the *genus* Professor! The author seems to place himself on the same level with his reader, and anxiously to seek for confirmation of his own statements in the assent of his pupils. This is, to say the least, unusual; but we cannot at once either commend, or find fault with, it. It is a new departure, and its value and usefulness must be judged by its success.

There are a few elementary, but important, points in Dynamics, by his treatment of which every author on the subject shows at once whether he is "sound in the faith" or not. On the whole, Prof. Lodge passes these tests with credit; and the rest of his book is of a much higher order than the run of elementary treatises.

There are, however, here and there some singular slips, which should be corrected in future editions. We note only one or two, but even these are destructive of the character for definiteness and accuracy which should be the leading feature of every scientific book. Thus, in §5 (where, unfortunately, a "statical" definition of force is introduced as well as a "kinetic" one) we are told that *change of motion* "is called" *Acceleration*; though in later sections the true meaning:—i.e. *Rate of Change of Velocity*:—is assigned to *Acceleration*. To the mere popular reader this may appear hypercriticism; but science is most careful to distinguish not only between *Change* and *Rate of Change*, but also between *Motion* and *Velocity*. Again, in §16, serious confusion is introduced by the statement that the velocity of a point at unit distance from an axis "is called" the angular velocity of the rotating body. Prof. Lodge knows perfectly well that it is not so, and that none but unscientific people could confound a quantity of dimensions $[T^{-1}]$ with another of dimensions $[LT^{-1}]$; even when, as in the present case, their *numerical* values happen to be equal. We are tempted to seek an explanation of, and thus to find an excuse for, these and other similar slips, in his inexcusable partiality for the works of Deschanel and Ganot.

P. G. T.

The Ocean, &c. By W. L. Jordan. Second Edition. (London: Longmans, 1885.)

OF this elaborate work it is enough to say that it is based on "*The New Principles of Natural Philosophy.*" These principles we sketched (June 21, 1883) in an article which, as his mode of acknowledgment showed, was by no means satisfactory to our Author. That *Vis Inertiae* was entirely misunderstood by Newton, and that *unresisted* motion ultimately comes to rest, are among the chief foundations of this work! That a terrestrial globe whose frame is carried round through a portion of a curve, and then suddenly stopped, will rotate in conse-

quence, is conceivable: but we should try to explain the fact by bad centering, or some such cause; certainly not by the assumption that, during the curvilinear motion, one part of the equator had necessarily a greater *linear* velocity than the opposite part. Our Author does not seem to be acquainted with the most elementary properties of the kind of motion called Translation! But this is merely, on his part, the most recent revival of Jelinger Symonsism:—for it assumes the fundamental tenet of that peculiar heresy; viz. that a body, which revolves round a centre, is not rotating if it turn always the same side to the centre. It is needless to say more on this melancholy waste of time, trouble, and ready money (the latter especially); on the part of an author who has been complimented by a reviewer of one of his other works as having "a familiar acquaintance with questions of finance." See *Advertisement* appended to the present volume. P. G. T.

Spectrum Analysis. By Dr. H. Schellen. Translated from the Third German Edition by Jane and Caroline Lassell. Edited, with Notes, by Capt. Abney, R.E., F.R.S. (London: Longmans, 1885.)

THIS is the second edition of a well known book: in its general arrangement there is little departure from the first, which appeared in 1872. While the German edition from which it has been translated was being prepared, the author unfortunately died; it is not to be wondered at therefore that the present reprint does not reflect the present state of our knowledge so accurately as did the former one; indeed there is evidence that the German editor has been compelled by the sad circumstances under which this task devolved upon him to take what was readiest to his hand.

Some of the material however is very valuable: thus, for instance, we have a complete and well illustrated account of Vogel and Huggins' work on the spectra of stars, much interesting information concerning Prof. Rowland's new concave gratings; while the English editor has added a full account of Abney, Festing, and Langley's work on infra-red spectra, and Abney and Schuster's discussion on the photographs taken during the eclipse of 1882. With these exceptions the English, French, or Italian work accomplished during the last ten years is but imperfectly referred to. The names of Thollon and Tacchini, to say nothing of Crookes and Hartley, not even being in the index. To the student therefore the book is worse than useless, it is misleading. The popular reader, however, who does not care too much for completeness will find much information conveyed in a pleasant form. The main branches of the science, both in its terrestrial and celestial applications, are dealt with, and the methods of work are given. Great interest also attaches to the various forms of instruments used in the new science; many of these are described, from a new form of pocket spectroscope—which we learn from the index was devised by Capt. Abney—to the more complex apparatus designed by Vogel, von Konkoly, and others.

The theoretical parts are perhaps most to be avoided. The chapter on the plurality of spectra, for instance, will help the reader very little in coming to a conclusion upon a subject of fundamental importance. Such a statement, too, as that on p. 268, "That Kirchhoff's theory has received full confirmation from the observations of solar total eclipses" is not so true as the writer evidently thought it to be.

Again, on the question of the change of refrangibility of light due to the motion of a light source towards or from the eye. The complete statement made by Fizeau in 1848 appears to be unknown to the author, who attributes the solution of the problem to Mach, of Prague, in the year 1860.

The translators have done their work throughout in a