

OUR BOOK SHELF

Meibauer's Physische Beschaffenheit des Sonnensystems.
(Berlin: Carl Habel.)

THIS is a second and freshly-arranged edition of a comprehensive little treatise on the nature of the solar system. It requires no great acquaintance with the present state of science to vindicate the accuracy of the author's preliminary remark, as to the difficulty that students experience from the wide dispersion of modern observations among heterogeneous memoirs and journals in various languages, and the necessity of a large library and abundance of leisure; and it is impossible not to appreciate his attempt to combine these scattered materials in a condensed and accessible form. Nor can it be doubted that a considerable amount of labour has been devoted to the work, which has been made attractive by perspicuity of treatment and facility of style, as well as by occasional ingenuity in hypothesis. Yet the execution cannot be said to correspond with the excellency of the design; and the deficiency, more apparent perhaps to our own minds than to those of Continental readers, is such as necessarily results from one-sided and imperfect views. The eternity of matter, an idea to many minds especially and utterly abhorrent, should not, to say the least of it, have been assumed; and other less objectionable hypotheses and statements are adopted, which may not be as incontrovertible as unwary readers will be led to suppose. No doubt the author, in employing as part of his motto the words of Darwin, "False facts are highly injurious to the cause of science," was quite unconscious that the result of an inquiry into some of his own facts (or rather assertions) would not be quite satisfactory. But we do not know what to make of such statements as these—that Priestley called his vital air (oxygen) by the name of Phlogiston—that Huggins found in the nuclei of comets the lines of nitrogen, hydrogen, and carbon similar to those given by the Geissler tubes—that there are two bright lines in the spectrum of Sirius, one of which is displaced by the star's movement—that the red, green, and yellow tints of the aurora never lose their relative positions; that the force of gravity at the upper limit of the atmosphere may be considered not materially different from that on the earth's surface, while the centrifugal (tangential) force perceptibly increases. Nothing but an unkind, or bitter, or self-ignorant spirit would refuse to leave a fairly broad margin for inevitable human imperfection; but it must be a very large paper copy indeed that would find room for statements such as these. Nor is it easy to understand why Lockyer's just claim should have been ignored to an equal share with Janssen in the grand discovery of prominences round the un eclipsed sun; or why discredit should have been thrown upon the connection of the solar-spot maximum with Sabine's magnetic period, or the planetary one established by the Kew observers. Other omissions might be pointed out, and the work would have been greatly improved by a discussion of the effects of temperature and pressure in modifying elementary spectra—a branch of inquiry to which allusion has barely been made, but which is of essential importance in spectrum analysis, and the fuller development of which alone, perhaps, promises a more satisfactory solution of many cosmical phenomena. But while it appeared a matter of duty to mention these deficiencies, we must add, in all fairness, and with greater pleasure, that some of his theories are very interesting and well handled; such as that in which he would account for the eruption of the protuberances by the unstable condition of gaseous matter on the confines of fluidity, discovered by Andrews and Thomson; or that of the unlimited extension through space of the planetary atmospheres in extreme tenuity; and there is much ingenuity, at any rate, in the idea of accounting for the variations of atmospheric pressure and electricity between the tropics by the resistance, however infinitesimal, which our globe

sustains in its rapid passage through a space to which neither Newton nor Laplace ascribed absolute vacuity. The curious inconsistency with which, as a denier of the equivocal generation, he calls in the germs of terrestrial vegetation from external space, where they have been educated under certain conditions of temperature, pressure, and time, is but a specimen of the difficulties to which every hypothesis is subject, that ignores the existence of an omnipotent will; but there are some who will look with amusement, and some few with a warmer feeling, at his vigorous onslaught on the idea of a luminiferous æther; concluding with the keen remark, that to prove the existence of such an æther, recourse is had in turn to the very phenomena which it was invented to explain.

T. W. W.

Knapsack Manual for Sportsmen on the Field. By
Edwin Ward. (Bradbury and Evans, 1872.)

ONE who has come so much in contact with sportsmen as Mr. Ward must have done surely know that men do not go out with knapsacks when intent on killing big game. The title "Knapsack Manual" is most unfortunate. Moreover, if the book is intended for sportsmen on the field, why should a considerable portion of it be given up to the mode of setting up a tiger, which a sportsman is very unlikely to do for himself, and certainly would not attempt in the field? Mr. Ward, though he seems to have considerable regard for artistic treatment and compatibility in the setting up of skins, would yet appear to put lichens with his stuffed birds in the conventional style. What a relief to the eye it would be to see a case of stuffed birds without a particle of dead wood or lichens in it! The directions given for skinning and preserving specimens are not full enough; there are better works on the subject in existence. The lists of game to be found in various parts of the world, at the commencement, form the most useful part of the book. The account of a Museum of Natural History of the Earth from man to a granite stone contained in a case 10 ft. long by 7 ft. high, displays a lamentable amount of ignorance. Some of the remarks about the various creatures are very amusing, as, "Gasteropoda proceed by the belly." "Armadillos are very remarkably swift in flight." Altogether this book appears to be of the nature of an advertisement, and we think a not very successful one.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. No notice is taken of anonymous communications.]

The Method of Least Squares

IN the number of NATURE for June 6, Prof. Asaph Hall, of Washington Observatory, called attention to what he regards as a singular oversight in the history of this subject, viz., that in 1770-1773 Lagrange published an elaborate memoir at Turin under the title "Mémoire sur l'utilité de la Méthode de prendre le Milieu entre les résultats de plusieurs Observations, &c." Prof. Hall remarks that the only notice of this memoir he has seen is contained in the *Berliner Jahrbuch* for 1853, and that in the abstract of a memoir of mine on the subject in the notices of the Royal Astronomical Society for April 1872, the name of Lagrange does not appear.

As regards myself, I need only state that Lagrange's memoir, as well as Simpson's, is referred to in my paper; although, as no examination is made of it there, the name is omitted in the Abstract, where reference is only made to the authors of investigations in which an attempt is made to prove either the law of facility or the method of least squares, and which were therefore referred to with more or less detail in the paper itself.

Further, I should not regard it as an omission if in the history of Least Squares no mention was made of Lagrange; in fact,