

OUR BOOK SHELF

Marvels of Pond-Life: or a Year's Microscopic Recreations among the Polyyps, Infusoria, Rotifers, Water-Bears, and Polyzoa. By Henry J. Slack, F.G.S., &c. Second Edition. (London: Groombridge and Sons.)

THIS little volume is already so well and favourably known to microscopists that any formal notice or commendation is scarcely necessary. Professing only to be a first book on "Pond-Life," it does not attempt more than to guide the young student in searching after, collecting, and examining the various animal organisms which inhabit fresh water. The division into months indicates that it is also popular rather than abstruse, and the number of species mentioned or figured is very limited. There appears to be no good reason why the present edition should not have made an advance beyond its predecessor, and given us an additional chapter or two on the construction and management of small aquaria at home, adapted especially and entirely to minute pond-life, by means of which metropolitan students might continue the study when unable to go to the ponds; and also on those artificial ponds for the evolution of Infusoria, so much alluded to of late, infusions of organic substances. Keeping in view the simple pretensions and elementary character of this volume, it fully answers the design of its author, and we are glad to announce the appearance of a second edition.

Physikalisches Repetitorium, &c., &c. Von Dr. Ferdinand Bothe. Second Edition, revised and enlarged. (Brunswick: Vieweg, 1871.)

A BRIEF enumeration of the more prominent facts and formulæ of physics; carefully divided into subjects, and with occasional dates and names of inventors or discoverers. We conceive that to make an excellent work of this kind (if such a thing be at all desirable), all that is necessary, is to take a really good treatise on natural philosophy and construct something between an Index to, and an Abstract of, its contents. It seems probable that some such process has been employed by Dr. Bothe; but either he cannot have used a trustworthy book for analysis, or his analysis is not a faithful one. In fact, if we look on it seriously, a more painful volume we have not often met with; nor a more amusing one, if we could fancy its blunders intended to amuse. We simply open its pages at hazard, and make a few pickings:—

"64. The density and resilience (*Spannkraft*) increase in proportion to the pressure, the volume is inversely as the pressure, and *vice versa*—Boyle's or Mariotte's Law, 1679." James Bernoulli was a contemporary of these men, and says in his work, "De Gravitate Aetheris," "Veritas utriusque hujus regulæ manifesta fit duobus curiosis experimentis ab Illustr. Dn. Boylio hanc in rem factis, quæ videtis [*sic*] in Tractatu ejus contra Linum." The date of this tract of Boyle's is 1662, and it is to be observed that Bernoulli does not mention Mariotte at all. We notice, in passing, that Young's name is not mentioned under Capillarity, and we arrive at the following curiosity:—"140. Unit of momentum or of work (*Arbeit*) is the force (*Kraft*) which can in one second communicate to unit of weight a velocity of unit of length. (Its metrical measure is the kilogramme-mètre; in Prussia, England, &c., the foot-pound." But we beg Dr. Bothe's pardon. We had no right to render *Arbeit* by "work," which is its usual equivalent in scientific books; for looking back we find:—"129. The product of the weight of a body into its velocity is called Momentum, and also *Arbeit*!" It is scarcely possible to conceive a more hopeless jumble of essentially different things than these sentences exhibit. The Heliotrope is (468) ascribed to Gauss, 1830 (?). Did not Drummond use it in 1826? 471 gives Bunsen and Kirchhoff the credit of the spectro-scope, with its collimator, &c. What of Swan? As to the

equality of absorption and radiation, Angström is given without date, Stokes and Balfour Stewart not mentioned. "472. The planets and comets (!) send back only the rays which the sun has sent to them." 484. In the enumeration of the earliest attempts to produce photographic impressions, there is no mention of Wedgwood, &c. 558. No mention is made of Northmore, whose long priority in the liquefaction of gases was insisted on by Faraday. 592. The old story of Mayer and the dynamical theory of heat. His date is given as 1842; Davy and Rumford (who did all that is referred to in the text more than forty years before) are not mentioned. Joule is coupled with Clausius, and the date 1853 is assigned to them! Of Carnot, Colding, Rankine, Thomson, &c., not a word. 598-600. The experimental laws of heat of combination are very imperfectly given, and, without any mention of Andrews and Hess, handed to Thomsen and Favre and Silbermann, with the date 1853! 666. The similarity of the order of bodies considered separately as conductors of heat and electricity is given to Wiedemann and Franz in the same prolific year. Surely Forbes pointed it out twenty years earlier! So far as we have seen, Sir W. Thomson, Clerk-Maxwell, &c., are not even named in the book.

If the reader remember that these are merely the things which have caught our eye in turning over the pages at random, he will not blame us for absolutely declining to examine the work more closely. A series of working tables is appended, but without very close examination we should hesitate to trust them, after what we have seen of the character of the book. That we have noticed it at all is due to the circumstance that some consolation is to be derived from the mere fact of its existence. We are all (in consequence, perhaps, of recent events) more or less imbued with the notion that Germany (Prussia especially) is rapidly taking the lead in matters of scientific education and investigation; and no doubt there is some truth in this. But the game is not lost, we are not yet passed in the race, and our old supremacy is quite within our reach even now, provided we make speedy and sufficient exertions to regain and maintain it. It will not drop into our mouths for a mere wish; but is it reasonable to wonder at the state of science in this country, where so few statesmen pay the least attention to it, when we find that even in enlightened Prussia, such a book as the above can be written by a recognised teacher, and published in a second edition by one of the highest firms in the world?

LETTERS TO THE EDITOR

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

Proof of Napier's Rules.

I AM greatly obliged to "J. J. W." for pointing out the objection of a want of generality in the construction of the figure contained in my former letter (in NATURE, No. 106), for the proof of Napier's Rules; which the more general construction now described by "J. J. W." most simply and most effectually removes. To illustrate his more perfect general construction with a figure—D is the centre, and B12B' a part of the circumference of a circular piece of cardboard, upon which the arcs B1, 12 are taken equal to the sides of the right-angled spherical triangle which it is required to represent. If we join DB, D1, D2, and draw BC, CA perpendicular to D1, D2, the latter perpendicular prolonged meeting the circle of the circumference in B', and join DB'; and on AB' as diameter describe the semicircle AC'B'; and with the centre A, and radius AC, another circle, meeting the semicircle in C', so that the straight line AC' is equal to AC; and join B'C'. Then it is easily shown that if AC CB are the two sides, AB' is the hypothenuse of a right-angled triangle, which, when the four triangles are closed together so as to form a solid figure, will coincide with the triangle AC'B'. As BC (or B'C') will then be perpendicular both to CD and to CA (or C'A), it will be perpendicular to the plane DCA; and the