

that they have a great dislike to violet light however obscure, and a preference for dark green and red; but we can hardly tell whether this effect depends on any visual perception, or on a general sense of discomfort in the one case and pleasure in the other analogous to the effects of heat and cold upon ourselves.

The last two lectures give a clear and condensed summary of the present state of our knowledge as to prehistoric man, and are well worthy of study by those who may be inclined to doubt the value of the conclusions arrived at by the new science of Prehistoric Archæology. There is here of course nothing but what is well known to all who have paid attention to the subject. It is, however, interesting to note how sharp and striking the contrast between the Palæolithic and Neolithic ages appears, when their characteristic features are briefly summed up side by side as we here find them. Whether we consider the tools, weapons, and other works of art, the character of the contemporary animals, the physical geography of the country, or the distribution of man himself, we cannot but be impressed with the profound chasm, which in Europe at least, separated the Palæolithic from the Neolithic man. And as, since the glacial epoch passed away we have no evidence of any physical changes calculated to produce such a chasm, it seems natural to suppose that it was the result of the cold period itself, and that, as many geologists now maintain, Palæolithic man lived before the glacial epoch and during interglacial mild periods, while Neolithic man made his first appearance only when the ice-age had finally passed away. On any other theory we have no adequate cause adduced for a discontinuity so vast in its proportions and extending over so wide an area.

A. R. W.

OUR BOOK SHELF

Dairy Farming; or, The Theory, Practice, and Methods of Dairying. By J. P. Sheldon, assisted by leading authorities in various countries. Part I. (London: Cassell, Petter, and Galpin, 1879.)

THE prospectus of this work promises us a thorough treatment of all parts of the important subject of dairy farming. The selection, breeding, and feeding of dairy cows; the production, treatment, and disposal of butter and cheese; the plants or crops used in feeding animals; dairy buildings, and soils adapted for dairy farms; such are some of the subjects embraced in the scheme of Mr. Sheldon's serial work, the publication of which, in monthly parts, has recently commenced. The first number, being chiefly occupied with general introductory remarks, hardly affords a fair sample of what the bulk of the book is likely to be. These prefatory pages do, however, contain a good deal of interesting matter—matter important to many persons besides dairy farmers. Some of the statistics of milk- and cheese-production here given are very striking. For instance, we are told (p. 9) that about 500,000 tons of ripe cheese could be made from the milk annually produced in the United Kingdom, when the quantity of milk required for rearing and fattening calves has been deducted. But, in point of fact, much milk is consumed as such in food, while from that which is submitted to further dairy operations a good deal of butter is made. The approximate estimates, therefore, for the amounts of milk and milk-products in question will stand somewhat as follows for the United Kingdom:—Milk annually consumed as such, 525,000,000 gallons; 126,000 tons ripe cheese from 350,000,000 gallons; 89,295 tons of butter from 550,000,000 gallons.

When the cheese, butter, and condensed milk imported from abroad are added to the home production, some notion of the vastness of the amount of dairy products consumed by the population of the British Isles may be gained. Thus, 98,000 tons of cheese are annually brought into this country from the Continent, the United States, and Canada; while the yearly import of butter approaches 90,000 tons. The value of our imports of butter and cheese together is just 15,000,000*l.* sterling.

It seems somewhat ungracious to say one word in disparagement of any part of an undertaking which promises so well as does Mr. Sheldon's "Dairy Farming." But we feel bound to hint that more care should be taken in securing the accuracy of any physiological and chemical explanations that it may be thought expedient to introduce into the volume. The figures and statements on pp. vi. and vii. of the "Introduction" require revision. We give an instance. We are told (p. vi.) that 1 lb. of milk contains .65 ounce of flesh-formers and 1.51 ounce of heat-givers. Now the latter figure has been reached by adding together the fat and sugar of the milk without the previous conversion of the former into its starch-equivalent. It is needless after this to say how idle are all the subsequent comparisons of milk with other foods, vegetable and animal.

Marcus Ward's Arithmetic. J. W. Marshall, M.A., Assistant-Master at Charterhouse School. (London: Ward and Co., 1879. 232 pp.)

THIS is a neatly got up arithmetic; it contains a great number of exercises, covering the usual ground occupied by such treatises, has a modicum of explanatory matter, and calls for no further comment. There are no answers at the end, but they can be got in a separate form.

A Collection of Problems on Plane Geometrical Drawing, including Problems on a few of the Higher Plane Curves, &c. By E. F. Mondy, A.R.S.M. 2 vols. Text and Plates. (Tokel. 127 and ix. pp.)

A COLLECTION of problems arranged for the use of the students in the Imperial College of Engineering, by the First Whitworth Scholar (1871), and Professor of Drawing in the College. The author's aim has been to arrange the earlier problems so as to render it of service to students to work these while reading Wilson's Geometry, the text-book used in the Mathematical Class. The treatment is mainly founded upon the recognised English text-books, but a novel feature, perhaps, is the extent of space devoted to the conic sections and the higher plane curves, "especially as regards the use of equations to these curves and to the various geometrical elements connected with them."

Thus constructions are given for the tangents and radii of curvature, and problems in areas are worked out.

The book is, under the circumstances, very fairly got up as regards the printers' work, and the matter is deserving of commendation for its arrangement.

Our own experience of Japanese students is that they take very kindly to this branch of mathematical instruction, and the productions of some we could name rank among the neatest we have seen. The plates are in a separate work from the text, a convenience in some respects for the student.

Essai sur les Principes fondamentaux de la Géométrie et de la Mécanique. Par M. de Tilly. (Paris: 1878. 190 pp.)

THIS valuable treatise forms the first *cahier* of the third volume of the *Mémoires de la Société des Sciences physiques et naturelles de Bordeaux*, 2^e série. The first chapter—General Geometry—discusses the elementary notions and axioms of the subject in a way that will satisfy an anti-Euclidian, but we fear the nerves of Euclidian adherents would suffer a shock at the bare-