*e.g.*, its nature and genesis. In this way, the author approaches the subject of delusion, which really, in its widest sense, may be said to constitute the essence of insanity; this problem is twofold: 1. What is the primary *mental* deviation? 2. On what bodily disturbance does this depend? The intellectual is shown to be convertible into and dependent upon emotional disturbance; and it is well demonstrated how much our state of feeling—whether temporary as mood, or permanent as character—influences not only the imagination, but even perception. A delusion may be regarded as a picture formed to suit a certain frame of mind. In showing how incorrect figures arise from morbid feelings, the author is less explicit; he adopts the sensationalist or association theory, but a clearer notion might probably be afforded by a more Platonic or idealistic theory of cognition, of which there even is some suggestion once or twice. Although the author adopts the emotional source of delusion as a rule, yet he makes—rightly or not—exception in certain examples of hallucination, *e.g.*, those arising in connection with epilepsy, some toxic conditions, and in childhood—which he assigns to primary derangement of the sensory centres. Owing to the defective state of general pathology, as before stated, the mode of dependence of feeling on corporeal condition is far from being satisfactory. Next follow long chapters on the causation and prevention of insanity, treated first on the psychical, then on the physical, aspect; in both, much stress is laid on heredity as a factor: the former contains the most interesting and original parts of the work. The rest of the volume is of more special and technical character, being given to a tolerably full and accurate description of the disease, which is regarded as fundamentally the same in all cases, though wearing some variety of aspects, thus affording matter for classification; that here adopted is the same as in previous editions: the description commences with a chapter on the insanity of early life, and concludes with one upon treatment, on which the author holds rather sceptical opinions concerning the efficacy of drugs, especially narcotics.

In conclusion we may remark that, although the author may be considered to have attained success in his chief aim—the setting forth of the pathology of mind—yet no more than a mere outline has been accomplished, and much of this appears to have been derived from borrowed rather than purely original ideas, the chief originality of the author lying in their present application; and it is to be regretted that it is so lacking in thoroughness, for this may suffice to prevent an otherwise highly-readable and well-designed book from acquiring extensive adoption as a text-book and permanence as a work of reference.

## LUBBOCK'S SCIENTIFIC LECTURES

*Scientific Lectures.* By Sir John Lubbock, Bart., M.P., D.C.L., LL.D., &c. (London: Macmillan and Co., 1879.)

THE six lectures of which this volume consists treat of the relations of insects and plants, the habits of ants, and prehistoric archæology. They are well illustrated by numerous woodcuts, and are written in the clear and pleasing style which characterises all Sir John Lubbock's works.

The first lecture—On Flowers and Insects—gives an excellent account of some of the more interesting cases of the special adaptation of flowers for insect fertilisation, but contains nothing that will be new to the readers of NATURE. The next—On Plants and Insects—introduces us to a variety of interesting and less generally known relations between the insect and vegetable worlds, which serve to confirm in a striking manner the general axiom, that the minutest details in the structure of living things, are or have been of use to them. We learn now how much of what gives a special character to many plants—their hairy or woolly stems, their spines, their glutinosity, the hairy rings inside their flowers, their drooping habit or glossy surfaces—are all of use in various ways to keep off insects which would rob them of their honey or pollen without effecting fertilisation. Another relation here dwelt upon is that of the colouring of caterpillars in accordance with the plants they feed upon, and it is particularly instructive as showing how impossible it is to decide whether a creature is protected by its colour unless it is observed in its native haunts. Few objects are more beautiful, or more varied in colour and markings, than the caterpillars of our different species of hawk-moths. They are often adorned with the most exquisite violet, blue, or white markings on a green ground, and sometimes also with ocellated spots of brilliant colours, yet in most cases these are so arranged and balanced as to harmonise with the general tints of the foliage and flowers of the food plant and thus render the insect quite inconspicuous at a little distance. In addition to the excellent woodcuts of caterpillars which illustrate this part of the work there is a coloured frontispiece which appears to have been added as an afterthought, for not only is there no reference to it in the text, but not even the names of the insects are given on the plate itself.

The next two lectures—On the Habits of Ants—give an excellent summary of those interesting researches by which Sir John Lubbock has added so much to our knowledge of these insects. Especially curious are the illustrations of the stupidity of some ants. One species is such a confirmed slave-owner that it dies of hunger if not fed by its slaves—a fact recorded by Huber and confirmed by our modern observer. Even more striking as an example of want of intellect is the experiment recorded at p. 81, where some ants went round a distance of ten feet to get at honey rather than jump down about one-third of an inch; and although they tried to reach this small height, from a little heap of earth to the glass on which the honey was placed, and could even touch it with their antennæ, yet they had not sense enough to pile up the earth a little higher but gave it up in despair and went round by the paper bridge ten feet in length!

Numerous experiments show that some sense analogous to smell, rather than vision, guides ants to their food, and thus no actual power of communication from one ant to another is needed to account for the numbers that follow when one has found out a store. Some very ingenious experiments prove, however, that an actual communication does exist when larvæ are concerned, and that one ant is able to tell its fellows whether there are few or many larvæ to be attended to. The experiments as to the effects of coloured light on ants are interesting, showing

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. (Tokei. 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*, 2e 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-