

ENERGETICS AND MODERN PROBLEMS.

Die Forderung des Tages. By Wilhelm Ostwald. Pp. vi+603. (Leipzig: Akademische Verlagsgesellschaft m. b. H., 1910.)

IN Goethe's "Maximen und Reflexionen" there occurs the passage: "Versuche deine Pflicht zu tun, und du weisst sogleich was an dir ist. Was aber ist deine Pflicht? Die Forderung des Tages." The author of the present volume tells us that this passage expresses the spirit in which he has from time to time, particularly during the last few years, attempted the solution of problems quite outside the sphere of his original scientific activity. These problems cropped up in the course of the day's work, and, so far as the author was personally concerned, imperatively demanded a solution. The numerous articles and speeches here collected represent Prof. Ostwald's views on the most varied questions, such as personality, immortality, the relation of art and science, the theory of happiness, science and technology, duelling, international languages, and educational reform. These and many other topics are discussed in a highly stimulating manner, the originality of the author's argument being equalled only by the charm of his style and the wealth of illustration which he has at his disposal. If one accepts the definition of a professor as given by "Fliegende Blätter"—"der Professor ist ein Mann welcher anderer Meinung ist"—it may readily be granted that the author, with his refreshing novelty of view, has fully earned the title.

The point of view from which all problems are regarded is the one natural to the apostle of energetics, whose attitude towards the more general questions of philosophy and psychology has already been outlined in these columns (*NATURE*, 1902, vol. lxx., p. 265). As the years have passed, however, Prof. Ostwald has been led to study the bearing of energetics on questions which touch more closely the life of the modern community, and are certainly of greater interest to the ordinary student of science and scientific method.

If, with the author, we measure culture by the extent to which the various sources of energy are economically utilised for human purposes, then it is natural to test the claims of every custom, every social organisation, and every educational system by the inquiry, How far does it contribute to the economical utilisation of energy? It might be supposed that the mental attitude of one who applies this test to all human endeavour is hopelessly utilitarian. But this is not true of Prof. Ostwald, who is concerned to find a place in his scheme of things for the higher and less immediately practical forms of man's activity. In this connection the question of the utility of works of art is of great interest. Prof. Ostwald, it appears, makes a hobby of painting, and we may be sure that he would at once forbid himself this activity if he considered it to involve a waste of energy. What, then, is a work of art, say a great painting, from the point of view of energetics? According to the present volume, the social value of such a work of art depends on its catalytic action, on its effect in making us better and happier beings, and so contributing to the more efficient transformation

of energy in our daily tasks. This point of view is greatly in advance of the ultra-materialistic one from which a great painting is merely so much canvas, so much oil, and so much pigment, but it is doubtful whether the comparison with catalysis is anything more than a mere analogy.

The prominence still given to the study of languages in schools is condemned in no measured terms, and the time devoted to Latin and Greek is described as a sacrifice to a superstition. It is quite truly pointed out that the learning of even a modern language, with its innumerable exceptions to rules, tends to destroy the child's natural sense of logic and to unfit it for any future scientific work. From this position it is but a step to the advocacy of an artificial international language, which shall be "synthesised" on a thoroughly logical plan, and shall obviate the necessity of learning foreign languages. It is the economy of energy to be secured in this way that has led Prof. Ostwald to take a prominent part in urging the adoption of Ido, a simplified form of Esperanto.

"*Die Forderung des Tages*" is pervaded by a genial optimism, based on the belief that the future of the race is in the hands of science alone: The optimism is welcome, although one might be inclined to argue about the grounds for it. It may be noted only in passing that Prof. Ostwald's belief leads him to the curious conclusion that the chauffeur belongs to a distinctly higher order of being than the "cabby."

Throughout the book there are scattered many delightful reminiscences of the author's experiences at home and abroad. These only add to the interest and charm of a volume which is well worth reading whatever one may think of energetics.

J. C. P.

THE INDUSTRIAL REVOLUTION.

Industrial England in the Middle of the Eighteenth Century. By Sir H. Trueman Wood. Pp. xii+197. (London: J. Murray, 1910.) Price 5s. net.

WE have in the volume before us an extremely interesting sketch, expanded from an address by the author given at a meeting of the Society of Arts, of the condition of British industries in the eighteenth century. Perhaps no two periods in the history of social evolution, which followed one another closely, present greater contrast than the beginning of the eighteenth and the beginning of the nineteenth centuries. Indeed, so enormous was the change involved that Sir Henry Wood considers it rather as an "industrial revolution" than a stage in a process of evolution.

The invention of machinery, then the discovery of power to work that machinery, entirely altered the character of the industries of this country, and thus so modified the lives of its inhabitants that it is no wonder that social equilibrium is still far from being attained. Before entering into a very able discussion of the state of the various branches of industry up to the middle of the century, Sir Henry gives us a vivid description of the social conditions then prevailing with regard to the means of intercommunication, and the knowledge of scientific applications for doing the work of the industrial world.