

*An Introduction to Physiology.* By William Townsend Porter, M.D. Part iv. Physiological Optics. Pp. vii + 96. (Cambridge, Mass.: The University Press, 1902.)

THE complaint is often made that the laboratory courses in practical physiology can be of little value to the student, in view of the very limited range of the experiments regarded as possible for a class, and the consequent restriction of the student's attention to one or two chapters of the science. The work before us represents a further step of the creditable effort now being made by Prof. Porter to remove this slur on the practical teaching of physiology and to show that it is possible to give the ordinary student a knowledge of physiology based on his own experience rather than on the mere statement of his teacher or text-book. In this book, comprising less than 100 pages, the student is taught in the first part to determine by experiment the main laws of the reflection and refraction of light, and the formation of the image by convex and concave mirrors, as well as the properties of lenses. In the second part, the physical knowledge so acquired is applied to the determination of the optical qualities of the eye, including the mechanism of accommodation. The last three sections deal with the use of the ophthalmoscope, and its application to the estimation of errors of refraction and other defects in the dioptric mechanisms of the eye.

It would be difficult to imagine a course of study better adapted for the purpose, viz. to give the student of medicine a knowledge which shall fit him for the investigation and diagnosis of the various morbid conditions of the eye. Too many men at present begin to learn their physiological optics only when they are brought face to face with actual cases of disease—a state of things for which the physiological teacher is partly responsible. It is probable that a course such as that laid down by Dr. Porter and extending over about twelve lessons would, if introduced into the London schools, be found to meet a want and would receive appreciation and support. We shall look forward with interest to the appearance of the other parts of this practical physiology, which are to include the special senses, the central nervous system and the whole of chemical physiology. E. H. S.

*The Potash Salts; their Production, and Application to Agriculture, Industry and Horticulture.* By L. A. Groth. Pp. vi + 291. (London: The Lombard Press, 1902.)

THE Triassic strata yielding potash salts occupy a vast area extending through many of the German States. The potash beds are usually at a considerable depth below the surface. The proving of their occurrence is often a matter of considerable expense and uncertainty, and the establishment of mining operations on a commercial scale may occupy several years. Germany has, however, nearly a monopoly in potash production, and both the production and prices are regulated by a syndicate; the general profitableness of the enterprise is thus guaranteed. The working of a commercial trust is well illustrated by the operations of the Potash Syndicate, one object of which is to supply German consumers with a cheap article while much higher prices are charged to foreigners.

The present book contains a great deal of interesting information as to the potash mines, the mode of working them, the composition of the salts found and the steps taken to prepare various salts for the market. There is also a section of about 100 pages devoted to the use of potash salts for manufacturing purposes, and especially to their use as manures for crops and for garden produce.

The agricultural section is disappointing. No inform-

ation is given as to the large experience gained in Germany on the use of potash manures in various circumstances; the examples of field experiments quoted are all of them from trials in our own country. The examples selected are naturally those in which the application of potash salts has proved a financial success. Potash manures cannot, however, always be used with profit; on many soils they produce no paying result. Every farmer should, therefore, ascertain by actual experiment what is the effect of potash on his own fields and crops before venturing on any considerable purchase of potash manure.

Nothing is said as to the antiseptic effects of potash salts and their hindrance of the decomposition of farm-yard manure. Nothing is also said as to the danger of applying them in spring as a top-dressing to a growing crop, due to the injury caused to the leaves on which the salt falls. The differences in the effects of the various potash salts are also not discussed. Notwithstanding, however, the partial character of the book, it is of real value, as it brings together a great deal of information not easily procured. The use of potash manures in agriculture may doubtless be considerably extended, but, as already stated, the deficiency of the soil in potash should in every case be proved by actual experiment before any use of it is attempted on a large scale.

R. W.

*Advanced Hygiene.* By A. E. Ikin, B.Sc., L.C.P., and R. A. Lyster, M.B., B.Sc., D.P.H. Pp. 300. (London: W. B. Clive, 1902.) Price 3s. 6d.

THIS work, though styled "Advanced Hygiene," is only written to provide a second year's course of study of hygiene and public health for those who have mastered the contents of a similar small book by one of the authors, entitled "First Stage Hygiene."

Though the matter dealt with is of a very elementary nature, its treatment often leaves much to be desired. It is in some places incorrect and in others misleading. To give an illustration, the wash-down water-closet is said to differ from the short hopper in that "the basin and trap are in one piece," which remark embraces the whole description of a wash-down water-closet.

Many of the illustrations are concerned with sanitary apparatus and arrangements in and about houses, and most of these are badly drawn and otherwise faulty. (Two of them are actually upside-down.) Jennings's plug water-closet is described as a valve water-closet, and Buchan's trap as Buchanan's. The only water filter for domestic use which is illustrated is the Berkefeld, and of this there are no less than six illustrations—all taken from a trade catalogue.

On occasions, different views are expressed in different parts of the same work. It is stated, for instance, on p. 67, that "it seems to be proved that scarlet fever may be directly transmitted from the cow," while on p. 271 it is said that "there is a possibility that cows may suffer from a disease akin to scarlet fever." Further, on p. 140, one reads that "the soil may contain a number of micro-organisms," while on p. 220 it is (correctly) stated that "the surface soil to the depth of 3 or 4 feet swarms with bacteria."

The analytical notes are of little value, and in many respects they are faulty. In a statement of the particulars to be obtained in a quantitative chemical analysis of water, no mention is made of the estimation of chlorine (p. 243).

*Material of Machines.* By Albert W. Smith. Pp. v + 103. (New York: John Wiley and Sons; London: Chapman and Hall, Ltd., 1902.) Price 4s. 6d.

As the life of a machine tool very largely depends upon the nature and quality of the material used in its construction, it is evident that a treatise on this important