THE ART OF THE OPTICIAN

Optical Workshop Principles

Being a translation of "Le travail des Verres d'optique de Precision", by Col. Charles Deve. Translated by Thomas L. Tippell. Pp. xiv+306. (London: Adam Hilger, Ltd., 1943.) 20*s*. net.

IT may at first sight seem surprising that a second book on the grinding and polishing of lenses should have been published by Hilger's so soon after their publication of "Prism and Lens Making" by Mr. Twyman. But there are at least two reasons which justify such a course. In the first place, lens-making is a craft, and each craftsman's account of his experience has something of value to every other craftsman. In the second place, the author is a Frenchman, and it is much to be desired that information about the techniques employed in one country should be made available in other countries. It is a novel experience to find the names of pioneers turn out to be names of Frenchmen rather than Britons, while the sources of specially suitable material or apparatus are quoted as French rather than English.

The book is based on the instruction given at the Institute of Theoretical and Applied Optics, Paris, to students of optical glass-working, and Part I is specifically addressed to working opticians. Part II is of a somewhat more advanced character and is intended primarily for works managers and senior workmen engaged in the supervision and direction of high-grade optical work. There is a great deal of useful information in the various sections, from recipes for cements and details about abrasives and polishers to methods of testing by interference and otherwise and to processes of etching, silvering and so forth. But by far the most important part of the book is concerned with the mechanical problems involved in producing a surface of given shape and curvature.

It is no easy matter to evaluate the relative effects of the different motions, rotational and translational, of either the tool or the work on the shape of the surface being ground, yet without some knowledge of the underlying principles, the average workman may easily go astray when he is put to a novel or unaccustomed task. The chapters dealing with the production of spherical and cylindrical surfaces, the effect of the size of tool, the pressure to be exerted, the surfacing of lenses of deep curvature, retouching, thermal deformations, working of metallic mirrors and so on, which include several theorems regarding the distribution of wear under various conditions, are a valuable contribution to the art of lens-making. An unusual, though not unwelcome, feature in a book of this type is the inclusion of a number of exercises to demonstrate the application of the principles which have been described.

It is somewhat surprising to find that the author has not dealt to any serious extent with the nature of the action of the abrasive on the surface of the glass during grinding and polishing. Even if the actions of the workman cannot be adjusted to modify the character of a ground or polished surface, it would have been interesting and instructive to learn whether the author considers, for example, that the polish on a surface arises from thermal flow or from extremely fine abrasion.

The translator is to be congratulated on his English rendering of the text, and on the useful vocabulary of French technical terms with their English equivalents. The footnote which he has added as a correction on p. 224 is itself in error; but in general the book would seem to be commendably free from mistakes.

As the translator remarks in his foreword, it was unfortunate that owing to the War the author and translator were not able to exchange ideas, as this might have allowed for the omission, or amending, of one or two passages which to an English reader may well seem too simple and naïve; this would apply, in particular, to the opening paragraphs of Chapter 1. But without the author's authority any such amendment would obviously be unwarranted.

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WATER PURIFICATION

The Purification of Water Supplies

By George Bransby Williams. Pp. 95. (London: Chapman and Hall, Ltd., 1944.) 7*s*. 6*d*. net.

THE appearance of a book on the purification of water supplies is most opportune at the present time when it is generally realized that all is not well with the water supply of Great Britain, especially the supply in rural districts, and when it is recognized what an important part water will have to play in the reconstruction problems with which the country is faced.

The author has attempted too much in too short a space. He has, in less than twenty pages, attempted to give a review of the principles of chemical science as evolved from the time of the Egyptians thousands of years ago, through Grecian, Roman and Arabian knowledge to the work of the Curies and of J. J. Thomson and Rutherford on the electronic structure of the atom. Such an attempt might well have proved disastrous; but not so in this case, and a readable chapter has resulted.

The book is arranged in eight chapters, each dealing with one or more aspects of the material considerations which arise in order to render a natural water fit for human consumption. These various aspects are enumerated rather than explained, and the experience of American and Indian practice is drawn upon very largely, while the accumulation of knowledge acquired by British practice is drawn upon to a less extent.

The chapter dealing with colloidal matter in water can only be described as sketchy, and in the chapter dealing with chemical precipitation the theories of coagulation and flocculation are inadequately explained.

The book serves a useful purpose in directing attention to the various points which must be considered when subjecting water to purification processes, and in stressing the fact that efficient scientific control of all operations connected with purification of water supplies is essential. Water purification is not a matter for the amateur, but is a subject which deserves far more co-operative attention from the engineer, the chemist and the biologist than it has received in the past.

A more careful proof-reading would perhaps have added to the value of the book. For example, Fig. 4 on p. 52 should have referred to the "accelator" type of water softener and not to the "accelerator" type; sodium bisulphide (p. 76) is not used for dechlorination, but sodium bisulphite has been so used. It would have been possible to make a better selection for the eleven illustrations in the text.

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