

## REVIEWS

**Prism and Lens Making: A Text-Book for Optical Glass Workers.** By F. Twynman. (Adam Hilger, Ltd., London), 1942. Pp. 178. Figs. 63. Price 15 sh. (postage 5d. extra).

Optical manufacture is a highly specialised industry, the success of which depends on the combination of a thorough knowledge of optical principles and the development of carefully worked out processes for the selection of raw materials and for the grinding, polishing, figuring and testing of the desired products. No authoritative book exists so far giving working details of the industry, as the few optical firms who hold the world monopoly, carefully guard their methods as 'trade secrets'. The publication of the book under review by the Managing Director of the reputed optical manufacturers of Great Britain, should, therefore, be considered as a blessing by instrument technologists and students of optics alike. The book is divided into eleven chapters. After a brief historical introduction in chapter I, the author deals with the elements of single lens grinding in Chapter II. Chapter III gives a suggestive summary of the physical nature of grinding and polishing. The working details of trueing tools, measuring instruments, abrasives, and polishers are given in Chapter IV. The technique and machinery connected with the mass production of lenses and prisms are described in Chapter V. Chapters VI and VII deal with the finishing and balsaming of lenses and prisms singly and in batches, and Chapter VIII gives the essential details of equipment and the methods employed for testing of the finished products. The last two chapters touch upon the manufacture of microscope objectives and the testing of optical glass respectively. In four appendices, much useful information is collected together on light sources, reflecting surfaces, physical properties of glass, pitch, etc., and technical terms used in manufacture. The book is well-illustrated by diagrams and photographs.

The success in the production of optical instruments depends solely on the skill of the individual workman and it is a matter of deep gratification to notice that the author has given unreservedly the minutest details of the prevailing practices in the Hilger Optical Workshop. Difficulties in working, which are several, are specially mentioned in appropriate places and the remedies are suggested. The claim put forward by the author in the Preface that 'these methods and machines will enable even an unskilled workman, after a short period of training under competent supervision, to produce work of first quality' is none too exaggerated.

The volume would, however, have a wider appeal if it includes a few more chapters on the production of (1) optical flats and plane parallel plates, e.g., Lummer plates, (2) telescope lenses and mirrors, and (3) prisms and lenses with materials other than glass or quartz, e.g., calcite, rocksalt and fluorite.

The book will be received with special interest in India. Some preliminary attempts have already been made for the manufacture of optical instruments by Dr. H. Parameswaran and his co-workers. The publication of the present book by Prof. Twyman should give further stimulus to the advancement of optical industry in India.

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**Radio Receiver Design—Part I. Radio Frequency Amplification and Detection.** By K. R. Sturley. (Chapman and Hall, Ltd., London), 1943. Pp. 435. Price 28 sh. net.

THE present work by Dr. Sturley of the Marconi School of Wireless Communication contributes an important volume to the fairly wide list of text-books on Radio Engineering. However it confines itself exclusively to the detailed considerations of the principles involved in the field of modern receiver design which are rather cursorily dealt with in general texts. As such, a lot of new material has been brought together on the subject for which previously recourse had to be taken to various wireless journals.

The volume under review forms Part I of the projected two parts and is divided into eight chapters. The order of treatment is reverse of that found in the usual books on Radio Engineering. This has been rather inevitable due to the choice of the subject-matter where the treatment is made to follow step by step the design procedure of receivers. Thus the first two chapters on general considerations and valves are followed by detailed chapters on receiving aerials and aerial coupling circuits, radio-frequency amplification, frequency conversion, oscillators for superheterodyne reception, intermediate frequency amplification and detection in the order mentioned. "Part II will deal with audio-frequency amplification, power supplies, receiver measurements, television and frequency modulated receiver design, etc." Possible criticism against the adoption of such a method of treatment may be advanced from purely pedagogical point of view; for instance, considerations on LC circuits and coupled circuits are given piecemeal in their applications in three separate chapters instead of a unified treatment of the same at one place. Nevertheless it can be said that it has served here to bring out the essential differences in the design features in each case.

Besides the descriptions of various types of receiving aerials such as the Vertical, Inverted L-type, T-aerial, the Dipole and the Frame aerial, and their terminal impedances, Chapter 3 gives generalized formulæ for transfer voltage, selectivity and mistune ratios and capacitance correction over the tuning range. Chapter 4 on r.f. amplification includes discussion on design principles for shortwave and ultra-shortwave amplification. About sixty pages of the text, comprising Chapter 5, are devoted to frequency changing where a