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Fundamentals of Optics. Vol. 24 of Handbuch der Physik. Edited by S. Flügge. 656 pp. Springer-Verlag, Berlin, Germany, 1956. DM 132.00; if part of series, DM 105.60. Reviewed by L. Marton, National Bureau of Standards.

The rapid succession of more and more volumes of this truly monumental encyclopedia of physics makes it possible to give a rather general evaluation of the manner in which the aims set by the editor are fulfilled. One can't help but praise many aspects of this undertaking. Volume 24 on the "Fundamentals of Optics" is a very good example of the care with which the individual contributors have been chosen and how wide a scope is covered by the articles.

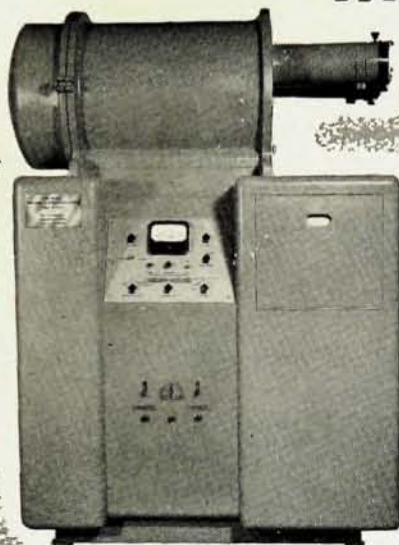
Five chapters constitute the present volume. The first one, written by Erik Bergstrand on the "Determination of the Velocity of Light", is a very concise presentation of the different methods used, a good critical survey of the respective advantages and disadvantages and a really fine discussion of the results. It is very commendable how much information can be condensed into so few pages. The whole review is only 40 pages long with three pages of references.

The next two chapters are written in French, in contrast to the first one which is in English. First comes a masterly chapter on "Optique Géométrique Générale" by André Maréchal, followed by an equally excellent chapter on "Interférence, Diffraction et Polarisation" written by Maurice Françon. Maréchal's chapter takes up 126 pages whereas Françon's chapter is 290 pages. These two chapters are written in the best tradition of the Institut d'Optique of Paris and contain almost everything one would wish to know about these subjects. I use the word almost because it is clearly impossible to cover any subject completely, and for anyone who wishes to criticize it is always easy to find items which would be worth adding to a book of this nature. It should be pointed out, however, that the presentation is not only up-to-date in these papers, but it gives a remarkable feeling to the reader that such a classical subject as geometrical optics or interferences are far from being closed chapters. The application of newly developed methods has transformed some parts of classical optics to a degree where the present chapters hardly resemble any classical book on optics.

The two last chapters having been written by the same author, Hans Wolter, may be grouped together again. One is on the "Optik dünner Schichten" which is written in 94 pages. The last one is on "Schlieren, Phasenkontrast und Lichtschnittverfahren" and treats this subject in another 90 pages. I give the titles of the chapters in their original language to indicate that these are written in German. The optics of thin layers chapter is entirely new, at least I do not remember any earlier text book or handbook of physics in which this subject has been treated to any extent. Almost as new is the last chapter on Schlieren, phase contrast, and related observations which took up only a very small part, if any, of earlier treatises. Both chapters contain much

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useful material, and the author is to be praised for the collection of all that scattered material in two concise chapters.

On the whole the book contains a remarkably fine collection of contributions, and little can be criticized on the technical aspects of it. The main criticism may be directed toward the editorial arrangement. As I see it, there seems to be a slight lack of coordination on the part of the editor. Maybe coordination isn't the right word to use, but in looking over the papers, one gains the impression that the authors haven't had any very clear-cut instructions on how to organize the respective chapters. The most prominent expression of this lack of coordination is apparent when looking over the references. The first chapter has a well organized list of references spread over three pages where papers are organized according to their contents. The second chapter which is much longer has only half a page of references. The longest chapter of Françon gives two pages of references. Wolter's are very amply referenced both in the text and at the end of the paper. For instance, ten pages of bibliography are given at the end of the thin layer contribution in addition to scattered references through the text, and the very last chapter has a four-page bibliography plus the text references. I think it is deplorable that the excellent chapters by the French contributors are not more amply documented. As complete as they may be, it is tantalizing to come up against a remark about something having been done by X or Y and then not to find any way in the book for identifying that contribution.

Another aspect of lack of coordination is shown in the index to the volume. There are two indices, both being subject indices. One is a combined English-German, German-English glossary listing all items of chapters 1, 4, and 5. In addition there is an entirely separate index in French for chapters 2 and 3. I think for the average reader who does not have a too extensive knowledge of all three languages, use of these references may be somewhat of a hardship.

These criticisms do not detract from the excellence of this volume. It has been handsomely printed and it will be a standard work of reference on its subjects for many years to come.

Books Received

ELEMENTARY CRYSTALLOGRAPHY. By M. J. Buerger, 528 pp. John Wiley & Sons, Inc., New York, 1956. \$8.75.

CAMS: Design, Dynamics, and Accuracy. By Harold A. Rothbart. 350 pp. John Wiley & Sons, Inc., New York, 1956. \$9.50.

ELEMENTS OF PULSE CIRCUITS. By F. J. M. Farley. 143 pp. (Methuen, England) John Wiley & Sons, Inc., New York, 1956. \$2.00.

INTEGRAL TRANSFORMS IN MATHEMATICAL PHYSICS (2nd Edition). By C. J. Tranter. 133 pp. (Methuen, England) John Wiley & Sons, Inc., New York, 1956. \$2.00.

APPLIED ELECTRICAL MEASUREMENTS. By Isaac F. Kinnard. 600 pp. John Wiley & Sons, Inc., New York, 1956. \$15.00.