

The Optical Rotating Power of Camphor Dissolved in Inorganic Solvents: Phosphorus Trichloride, Sulphur Dioxide, Sulphur Monochloride: HERMAN SCHLUNDT.

Report of Committee on Atomic Weight of Thorium: CHAS. BASKERVILLE.

New Syntheses in the Phenmiazine Group: MARSTON TAYLOR BOGERT.

Some Picryl Derivatives of Phenols: H. W. HILLYER.

Nomenclature of Elements and Radicals: W. G. BROWN.

Hydrochloric Acid as an Electrolytic Solvent: E. C. FRANKLIN.

H. N. STOKES,
Secretary.

SCIENTIFIC BOOKS.

The Development of the Human Body, A Manual of Human Embryology. By J. PLAYFAIR McMURRICH. With two hundred and seventy illustrations. 12mo. Pp. xvi + 527.

The author in his preface describes his book as 'an attempt to present a concise statement of the development of the human body and a foundation for the proper understanding of the facts of anatomy.' This attempt has been so far successful that the volume is certainly the best short treatise on human embryology in English, and is not surpassed by any of the text-books in foreign languages. It has the distinguishing merit of including a number of important results from recent investigations, which have as yet made their way into no other manual.

The work is really shorter and more condensed than might be supposed from the number of pages, for the type used is large and open and the illustrations, owing to their large size, take up much space. Some of the figures, like Fig. 54, are unnecessarily large. They are, on the whole, well printed, although the ink used is too heavy to give the best effect. The selection of figures has been excellent. Except for a series of diagrams,

very few of them are original, by far the majority of the illustrations being copies, not, one is glad to note, from previous text-books, but from the best recent researches.

The author's style is well adapted to his purpose, for it is both concise and clear, revealing, indeed, a marked talent for lucid explanations of the complicated changes which occur in such rapid succession in the embryo, and which render the study of embryology so difficult.

The book would have certainly gained very much had it been less a compilation from well-chosen authorities, and more the outcome of the author's personal study of human embryos. As a compilation it is to be praised warmly, but one misses somehow that vividness of exposition which direct familiarity with preparations, sections and dissections alone can impart to morphological descriptions. One misses also the security of judgment which can be derived from first-hand and intimate acquaintance with the object. To this cause we attribute the author's failure to utilize at all adequately our knowledge of the histogenesis of the nervous system, to consider the relation of the nails to the stratum lucidum, to give any mention of the meninges which offer such striking pictures in sections of embryos, to remember that a mucous membrane always comprises epithelium and mesoderm (cf. p. 79), to describe correctly the degeneration of the glandular epithelium in the pregnant uterus (p. 151, 153), etc.

There are certain errors which mar the work. In the history of germ-cells it is stated positively that the germ-cells produce the spermatozoa, but so far as we know this has not been proved as yet by direct observation to be true of any animal. It is surely no longer correct to speak (p. 122) of the 'branchiomeres' as divisions of the ventral mesoderm, since they arise, so far as yet observed, always from the dorsal segments. It is stated (p. 153) that the decidua serotina 'loses its epithelium very early'—but portions of the epithelium are always persistent. Or again the statement that the processes of the vertebræ and ribs are developed in the intermuscular septa hardly concords with the actual history.

In a new edition, which ought certainly soon to be demanded, two omissions might be advantageously repaired, by adding accounts of the development of the ear bones and of the pulmonary arteries.

The defects, of which some examples have been given, can not any of them be regarded as fundamental. Some such defects are inevitable in a first edition of a text-book dealing with a science, like embryology, in which research is so active that almost every week brings important additions to knowledge of the subject. The only part of the work which seems to the reviewer radically inadequate is that on the formation of the germ-layers.

Professor McMurrich's volume will be eagerly welcomed by students and teachers alike, and its special distinction is the thorough recognition it displays of the morphologically essential aspects of embryology. It ought to exert a wide and helpful influence on the advancement of anatomical science in America.

C. S. MINOT.

Field Astronomy for Engineers. By GEORGE C. COMSTOCK. New York, Wiley & Sons. 1902. Pp. x + 202. Price, \$2.50.

Wiley & Sons have just published an excellent text-book on astronomy written by Professor George C. Comstock, professor of astronomy in the University of Wisconsin, a text-book which undoubtedly will meet with cordial approval from that body of teachers whose duty it is to teach astronomy in technical schools. For many years there existed no concise manual of the subject, the teacher being obliged either to use an elaborate treatise like Chauvenet's, or else employ the unsatisfactory method of presenting the subject entirely by lectures. The present work is the third attempt to supply the deficiency, other similar publications of recent date being those of J. F. Hayford, formerly of Cornell University and now of the U. S. Coast Survey, and of W. W. Campbell, director of the Lick Observatory.

The peculiarity and advantage of the present book are that it omits entirely that portion of the astronomical theory and instrumental niceties beyond the needs of engineering stu-

dents and, on the other hand, lays special stress on the methods by which only sufficient precision is attained to meet engineering requirements. This general plan of the author enables him to discuss, and he does it with much skill, the question of the inter-relation of accuracy of results with instrumental manipulation, and should give the student a clear insight into the proper methods and formulæ to use on any particular occasion. At the same time the author emphasizes the necessity of methodical computation and insists on a habit of checks, so desirable a habit for engineers in all kinds of computations. In some cases it may be necessary to elaborate verbally some of the theory involved, and to explain, as doubtless the author does to his own classes, much of the instrumental manipulation, so that the book is essentially one to be used by an instructor whose own astronomical training includes much not in the book; but as this is always, at least theoretically, the case, it should not stand as a criticism against the book.

The plan of the book includes, after a discussion of the fundamental concepts of co-ordinates and the transformation of one system into another and of the various methods of noting them, methods of observation and computation for the determination of time, latitude and azimuth. Each determination is carried out according to the requirements, either roughly, approximately or accurately, in each case modifying the formulæ and the use of instruments as required. For example, for the rough determination of time, use is made of an engineer's transit to observe on Polaris at any instant, the correction to the meridian being given by the use of tables. For the approximate determination, the method given is that of making a series of altitude observations with a sextant on a known star or on the sun when that body is near the prime vertical. For the accurate determination, the method of double altitudes is explained, and a whole chapter is devoted to discussing the transit instrument with its errors and corrections. In each of these cases, as well as in the similar series for latitude and azimuth, the detail of work, the