NEW BOOKS.

Geschichte der Organischen Chemie. By Carl Graebe. Julius Springer, Berlin, 1920. x + 406 pp. 26 × 17.5 cm. Price M 28. Bound M. 41.60.

This comprehensive work quite justifies the high expectations awakened by the author's name. Beginning with the researches of Scheele in 1770, it traces the development of the science as far as the introduction of space-conceptions by Le Bel and van't Hoff a hundred years later. A second volume will continue the narrative to the present day, but the author has thought it prudent to entrust this work to a younger hand, so that the second volume will really be an independent treatise by Professor Hoesch.

Whoever attempts to write a history of Organic Chemistry faces a serious dilemma in the arrangement of his material. If he proceeds chronologically he must frequently interrupt his principal narrative in order to discuss independent investigations which are more or less irrelevant. If, on the other hand, he gives a connected account of the development of the great principles, he must consign the other topics to a "Special Part" which, whatever the importance of its contents, is apt to remain unread. The author has probably been wise in choosing the former alternative. He divides his work into 8 periods of about one decade each, and he avoids the worst evils inherent in his method by a subdivision into numerous brief chapters—64 in all.

It is almost idle to point out special excellences where there is so much to charm the specialist, but every reader is sure to take particular pleasure in the chapters describing the work of Scheele, Gay-Lussac and Chevreul, while Graebe's own participation in the important investigations going on in Baeyer's laboratory during the '60's makes his treatment of these topics particularly authoritative.

The author's style is informal but pleasing, and his (perhaps too sparing) use of personal reminiscence is apt and judicious. He cuts purely biographical material to the most meagre outlines but any other plan would doubtless still more seriously interrupt the narrative. In compensation the reader is supplied with numerous references to commemorative addresses and other sources of biographical information; and it is superfluous to add that everywhere, in its abundant references to the literature, the book follows the best German traditions. Wherever it is practicable the author permits the great investigators to speak in their own words and, if English or French, in their own tongue. He thus pays a subtle compliment to his readers, and gives them the pleasing sensation of drawing directly from original sources. This makes it all the more unfortunate that, on account of incompetent proof-reading, the English quotations abound in verbal errors; but this fault, as well as the lack of a sub-

ject-index—deeply felt in a work so valuable for reference—can well be remedied in a second impression.

They are the only blemishes in a book which every enthusiastic organic chemist will hail with joy, and he must be unusually well-read in the history of the science who does not find in every chapter some new material which he will gladly ponder, and which, if that be his profession, he will long to incorporate in his teaching. F. J. MOORE.

Notes on Chemical Research—An Account of certain conditions which apply to original investigation. 2nd edition. By W. P. DREAPER, O. B. E., F. I. C., P. Blakiston's Son and Co., 1012 Walnut Street, Philadelphia, Pa., 1920. XV+195 pp. 1 plate. 18.5 × 12.5 cm. Price $2.50 net.

The book under review treats the subject of Chemical Research in a philosophical, and at the same time, in a most sane and practical manner, and fills a field which has not before been covered to the knowledge of the reviewer. It is a work which should be carefully read by every one contemplating taking up Chemical Research, and those who are making Chemical Research their life work will find much of interest and value in the author's presentation of the subject. While the book is written from an English point of view, there is very little in it which does not apply to American conditions.

A list of the titles of the chapters will give an idea of the subjects considered by the author. Chapter I is entitled "Nature of Scientific Knowledge;" and this very interesting and amusing quotation from an ancient book entitled "Physica Subterranea" heads the chapter.

"The chymists are a strange class of mortals impelled by an almost insane impulse to seek their pleasure among smoke and vapour, soot and flame, poisons and poverty; yet among all these evils I seem to live so sweetly, that may I die if I would change places with the Persian King".

Some of the sub-headings in this chapter are — "General Knowledge," "Direct and Indirect Knowledge," "Nature of Discovery," "Utility of Scientific Knowledge" "Limit of Experimental Knowledge," "The Unknown," "Nature of Experience," "Science Founded on Definite Procedure." Chapter II is entitled "Historical Review and Nature of Research;" Chapter III, "Observation and Experiment;" Chapter IV, "Preliminary Survey and Selection of Subject Matter;" Chapter V, "Methods of Investigation;" Chapter VI, "Philosophy and Experimental Science," with sub-headings, "Value of Theory," "Value of Results," "Scope and Nature of Application," etc.; Chapter VII, "Chemical Research and Industry," with sub-headings, "Utility of Economic Research," "Connection between Theory and Practice," "Aims of the Practical Investigator," "Experimental Works," etc.; Chapter VIII, "Research in Relation to Analysis;" Chapter IX, "Aims of Practical Science;" Chapter X, "Practical Investigation and the Personal Factor;" Chapter XI, "Laboratory Research and Works Practice;"

Chapter XII, "Works Organization;" Chapter XIII, "Efficiency and Working Conditions;" Chapter XIV, "Large Scale Operations;" Chapter XV, "The Student and His Course of Training."

A. M. COMEY.