

spores and glands, (IV) ergot, (V) woods, (VI) stems, (VII) leaves, (VIII) flowers, (IX) barks, (X) seeds, (XI) fruits, (XII) rhizomes, (XIII) roots, (XIV) adulterants of powdered foods and drugs, (XV) general scheme for the examination of powders.

The author thus has the student proceed from the simple to the complex. Careful consideration has evidently been given to the selection of the substances to be examined, so that the student would become familiar with varying methods and varying structural characteristics useful in the examination of drugs and foods. Instead of discussing in detail the characteristics of many products, the author limits the discussion to structural types of drugs, spices, foods and several technical products. Throughout the text, and in the appendices A and B, following Section XV, reagents are given and statements are made which are helpful in the microscopical examination of various products.

The numerous illustrations throughout the text are helpful guides and make the book doubly valuable.

It is hoped that economical conditions at the time of issuing a fourth edition will have improved, in order to permit of elaboration.

In the way of suggestion for this fourth edition, the reviewer should like to see included a larger number of references to standard works, such as that of Reichert on starches, Dekker on tannins, Tunmann and Molisch on plant microchemistry. It also appears desirable to give reference to the latest, rather than the earlier editions of such works as Wiesner on plant products (3d ed. 1914-1921), Wm. Herzberg on paper testing (4th ed. 1915), etc. Some of the work of Tunmann, Mayrhofer, Rosenthaler, Nestler, and others, on microsublimation of drugs and foods, might also be included with advantage.

Recent work on the nature of crystals in pepper proves the presence of magnesium oxalate and not calcium oxalate, as stated. The author discusses saffron and its adulteration with *Calendula* flowers. We have not observed this adulterant within recent years, but find saffron frequently weighted with various salts and glycerin, or even entirely substituted by other flowers which are artificially dyed and weighted. Examples of recent adulterations, such as the one mentioned above, might well be included, as this would forcibly call attention to the significance of microscopical examination.

The book covers a large field, and covers it well. It deserves consideration by American students.

A. V.

Practical Physiological Chemistry. By Philip B. Hawk, M.S., Ph.D. 8th Edition. 666 pages and index. P. Blakiston's Son & Co., Philadelphia. Price \$5.00.

The popularity of Dr. Hawk's Chemistry is indicated by the fact that since its initial appearance in 1907, it has passed through eight editions. The present volume has increased somewhat in size over its predecessors, rendered necessary by the inclusion of important new material.

The arrangement of this edition is essentially the same as in the former ones: A discussion of enzymes and of carbohydrates being followed by a consideration of salivary digestion. The composition and chemical peculiarities of the proteins leads up to a consideration of gastric digestion and a quite complete review of the clinical methods for gastric analysis. As preliminary to studying pancreatic digestion, the chemistry of the fats is taken up; then follows a discussion of intestinal digestion; the production and composition of bile; putrefactive processes and the composition of the feces. As would be expected, the chapters on the blood and blood analysis are quite comprehensive; and this applies likewise to the succeeding chapter on "Respiration and Acidosis." A chapter on milk then follows; the chemistry of the epithelial, muscular, and nervous tissues is taken up; and then a very full discussion of urine, with a consideration of its composition and a number of clinical tests. In the next chapter, under the term "Metabolism," the reader is introduced to those fascinating discoveries that have been made in comparatively recent times regarding the importance of certain dietetic factors formerly considered of little moment.

The universal approval with which the preceding editions of "Practical Physiological Chemistry" have been greeted is sufficient evidence of their high worth; as regards the present edition, it can be added that it really constitutes a revision. Dr. Hawk has quite admirably combined clear, succinct, theoretical discussion with practical methods; methods which serve not only to illustrate points which he desires to bring out, but also those which are of value from the standpoint of clinical application. If any adverse criticism could be advanced, it might be against the detailed presentation of certain methods which are

generally considered somewhat inferior to more recent ones which are barely mentioned; though even here, the foot note references enable the reader to consult the original papers bearing on these more recent methods.

The make-up of the book is excellent. The paper is good; printing clear; typographical errors apparently absent; and the illustrations leave nothing to be desired.

C. C. HASKELL.

The well known firm of Ferdinand Enke in Stuttgart, publishers of pharmaceutical, chemical and technical works, favored us with the following books for reviews:

Das Apothekenwesen. Seine Entstehung und Geschichtliche Entwicklung bis zum XX. Jahrhundert. Von Prof. Dr. J. Berendes. Lex. Octavo, 366 pp. \$2.40.

Julius Berendes from Goslar (see The Journal, 1922, p. 757) is one of the celebrated trio of German pharmaceutical historians, the others being Hermann Peters and Hermann Schelenz. Owing to his scientific achievements the German government in 1902 bestowed upon him the title "Professor" without a professorship, a unique example and distinction in the realm of pharmacy.

The work is principally intended to show the historical development of pharmacy (Apothekenwesen) in Germany and other countries are not considered. However, at the beginning the history of pharmacy from antiquity up to the middle ages is also discussed. The following abstract from the table of contents shows the scope of the work.

1. Egyptians, Phoenicians, Babylonians, Israelites, Persians, Indians, Chinese and Japanese.

2. Greeks: Origin of Therapeutics, Natural Philosophy, Rhizotomes, Pharmakopoles and Physicians, Hippocrates, Alexandrians, Separation of Pharmacy from Medicine.

3. Romans: Famous Encyclopedists, Merchandising, Rome, Christianity.

4. Middle Ages: Arabians, Apothecary Shops.

5. Germans: History, Medicine of the Monks.

6. Ninth and Tenth Century: Universities, Edict of Emperor Frederic II.

7. Thirteenth Century: Privilegiums, First German Apothecary Shops, Monastery Pharmacies, Court Pharmacies.

8. Fourteenth Century: Alchemy, Pharmacopœias.

9. Fifteenth Century: Dispensatories, Regulations, Appentecker zu Ulm Gesetz und Ayd.

10. Sixteenth Century: Natural Sciences, Botany, Medizinaltaxe, Apotheker, Pests.

11. Seventeenth Century: Natural Sciences, Botany.

12. Eighteenth Century: Natural Sciences, Botany.

13. Nineteenth Century: Natural Sciences, Celebrated Apothecaries, Chemists, Botanists and Pharmacognosists, Associations, Pharmacopœias, Pharmaceutical Education, Traffic in Medicines and Poisons, Nostrums, Druggists.

14. Military Pharmacy from Ancient to Present Times.

Berendes gives a bibliography of history of pharmacy comprising five pages, an excellent addition to the work. The author's index fills five pages of three columns each and the subject index eleven pages of two columns each. Why Berendes, the same as many others, corrupts Antoine Baumé, the inventor of the hydrometer scale named after him, into Beaumé the referee cannot understand, especially as attention has been called to this common error on numerous occasions.

The book is a masterwork which in a concise manner treats the history of pharmacy. Through the study of this subject the student will be inspired with more love for his chosen profession and even the mature pharmacist will become acquainted with the ups and downs of his calling.

Surely Berendes Apothekenwesen should become better known on this side of the Atlantic.

Kurzes Lehrbuch der Anorganischen Chemie. Von Dr. A. Stavenhagen, Prof. und Leiter der Chem. Laboratoriums der Bergabteilung des Techn. Hochschule in Berlin, Geheimer Bergrat. 2. Auflage mit 170 Holzschnitten. Lex. Octavo, 543 pp. \$2.40.

As the title indicates the subject of inorganic chemistry is treated in a concise manner, in 543 pages. The author has solved this problem in an excellent way. He has also added something new in a book of this kind, namely the physiological action. The one of sodium sulphate on p. 312 is new but plausible and should be studied, especially by physiological chemists. We can highly recommend this book to pharmacists and pharmaceutical students.

OTTO RAUBENHEIMER, PH.M.