

cesses receive each a passing notice of one page as is the case with the Freiberg method of leaching roasted silver-bearing copper matte, while the author's interesting modification of the last process is treated with considerable detail in 19 pages. Cyanidation, covering 41 pages, is represented mainly by a full abstract of the excellent paper of T. H. Oxnam<sup>1</sup> on the treatment of auriferous silver ores at Palmarejo, Mexico. Electrodeposition of precious metal from cyanide solutions, especially important in silver-metallurgy, is not touched upon.

To take up a few special features. The first 152 pages deal with chloridizing roasting. After a brief general statement of principles and of behavior of the leading minerals, there is given an important chapter on the fine crushing of ore and how it has to be governed by the character of the component minerals with regard to subsequent chloridation and success in leaching. The discussion of the amount of salt required and the time of addition brings out many points as to chloridation and volatilization which are not generally known, in fact, will be new to most readers.

In the chapter on furnaces, the leading ones that have been proposed and used are assigned their proper places; the mode of operating is treated in its different aspects with the results to be expected and the results that have been obtained. The author's designs for dust-chambers with a special discussion of the correct manner of handling argentiferous zinc-lead ores and calcareous ores closes this chapter which stands forth preeminently as the most important one of the book. Tank-lixiviation with precipitation and working up of precipitate is taken up with working drawings of apparatus which give a clear conception of modern practice.

In studying the chapter on trough-lixiviation, the reader obtains the impression that this method, invented by the author, is an accepted improvement on tank-lixiviation, which it is not. The description ought to be read in connection with Stetefeldt's review of the method.

The critical remarks upon the Russell and Kiss processes, while brief, are a relief in view of the many laudatory papers that have been written about them.

While the Patera process has seen its best days on account of the encroachment of smelting upon leaching and of the growing importance of cyanidation, it will retain some of its former importance for a considerable time. The metallurgical profession is therefore under much obligation to the author for having brought together in book form some of the leading features of his wide experience.

H. O. HOFMAN.

**BOTANY AND PHARMACOGNOSY.** BY HENRY KRAEMER, Ph. B., Ph. D. Second revised and enlarged edition. J. B. Lippincott Company, Philadelphia.

The new edition is twice the size of the old one, the number of illus-

<sup>1</sup> Tran. Am. Inst. of Min. Eng., 1906, 36, 234-87.

trations has been more than doubled, and in many other respects generally improved. This has been done without changing the arrangement of the subject matter. The work is divided into three parts. The first treats of botany, the second of pharmacognosy and the third of reagents and microscopic technique. Under botany the first 90 pages are devoted to the structure and general characteristics of the different groups of plants, beginning with the lower forms of plant life, the algae, and ascending to the higher forms, the spermiophytes, or seed plants. The next 65 pages treat of the "Outer Morphology of Angiosperms" in the order of root, stem, leaf, flower, fruit and seed. The following 67 pages treat of the "Inner Morphology of the Higher Plants," taking up the plant cell, its contents and forms; then follows the structure of different parts of plants. The next 180 pages are devoted to the "Classification of Angiosperms Yielding Vegetable Drugs." The habitat with a short description of each plant is given, and also the active constituents. The last 14 pages of part one are given to the "Cultivation of Medicinal Plants."

The part devoted to Pharmacognosy is divided into two chapters. The first 278 pages are given to the study of "Crude Drugs," giving source, description and constituents. The following 94 are given to a systematic, microscopical study of "Powdered Drugs and Foods."

Only the last eight pages are devoted to "Reagents and Microscopical Technique."

The entire work is beautifully illustrated with 321 plates and about 1500 figures. These are distributed throughout the text, which is a decided improvement over the former edition, where the illustrations were given in a separate part of the work. The present arrangement permits of the ready comparison of the illustrations with the subject matter. Most of the illustrations are from fine pen drawings, while others are half-tone reproductions, some of which are very good, while others are inferior, lacking in detail, due doubtless to improper exposure.

In general the technique of the work is fine, and the author and publishers are to be congratulated upon the results of their efforts. The book is one that should be in the hands of every one interested in the study of botany and pharmacognosy.

A. B. STEVENS.

A HANDY BOOK FOR BREWERS. BY HERBERT EDWARDS WRIGHT. Third edition, 562 pages, New York : D. Van Nostrand Company.

The principal aim of the author has been to give the conclusions of modern research in so far as they bear upon the practice of brewing, in such a form that a novice of fair intelligence may understand them. The trained chemist or physiologist however, will also be benefited by the study of this book. In fact between these branches of pure science and the brewing industry a very fertile reciprocal action has always been