

chestnut the reverse appears to be true, the leaves from the lower branches having the larger amount of nitrogen, phosphoric acid and potash, with some exceptions, than those removed from the upper branches.

5. The estimated theoretical cash value of a ton of leaves calculated upon a 20% moisture basis varies from \$3.00 to \$6.50, depending upon the kind of leaves and upon what portion of the tree they were grown.

6. The cost of collecting and handling would probably be greater than the value of the leaves, thus making it inadvisable in most cases for farmers to spend their time in this way.

This investigation was undertaken at the suggestion of Dr. Ernest Anderson, and the author desires to express his thanks to Dr. Anderson for advice and encouragement during the work.

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NEW BOOKS.

A German-English Dictionary for Chemists. By AUSTIN M. PATTERSON, Ph.D., formerly Editor of "Chemical Abstracts." New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Limited, 1917. Pp. xvi + 316. Price, \$2.00.

In the preface we read, "This book is not solely a dictionary of chemical terms. It includes words from related fields of science and, what is perhaps a novelty in a technical dictionary, a *general* vocabulary." This will appeal to most chemical students, whose knowledge of literary German is not apt to be large; they will appreciate not being obliged to use two dictionaries, one for technical terms and another for non-technical. By the aid of the excellent introduction they will be able to make their way, even though their knowledge of the language be meager.

No one is better equipped for preparing such a work than Dr. Patterson, with his wide experience in dealing with chemical literature, and it is sufficient to say that his work has been most thoroughly and skilfully done. The title is too modest, for while a glance at any page shows the chemical aim of the book, yet the student of physics, or mineralogy, or even of medicine, will find his needs well provided for.

Perhaps the most surprising feature is the completeness of the vocabulary of technical chemistry. After some little study the reviewer has failed to find a missing term. The book will thus be of especial value to the technical chemist, for unless his knowledge of German is exceptionally broad, he will only too frequently find in modern German technical literature an abundance of words, whose exact significance is unknown to him.

The convenient size (large pocket), clear type, good paper and flexible leather binding, further enhance the value of the book, which will be a useful addition to the library of every chemist. JAS. LEWIS HOWE.

A Brief Account of Radioactivity. By FRANCIS P. VENABLE, Ph.D., D.Sc., LL.D., Professor of Chemistry, University of North Carolina. 54 pp. Publishers, D. C. Heath & Company. Price, 50 cents.

Dr. Venable, feeling that the text-books of general chemistry are too condensed in their treatment of the subject of radioactivity has put in book form the lectures he has hitherto given his classes in general chemistry. The reviewer is in full accord with the prefatory words, that the course in general chemistry "dealing with the composition and structure of matter is left unfinished and in the air, as it were, unless the marvelous facts and deductions from the study of radioactivity are presented and discussed." The subject matter is grouped under six chapters headings—Discovery of Radioactivity, Properties of the Radiations, Changes in Radioactive Bodies, Nature of the Alpha Particle, The Structure of the Atom, Radioactivity and Chemical Theory. The book contains seven figures and a table of Soddy's arrangement of the radio-elements in periodic system.

The sections of the book have inserted headings. The book gives a precise, well-organized and up-to-date account of the important discoveries in radioactivity in non-mathematical form and it points out the advances in sciences that may be regarded as the offspring of the new knowledge. The theory of atomic disintegration, constitution of the atoms, atomic numbers and Moseley's work on X-ray spectra, isotopic elements, and the different atomic weights for lead obtained, respectively, from uranium and thorium minerals, are among the topics that the average freshman and sophomore student in chemistry, as well as the busy men in other lines of science, will find interesting and instructive reading.

HERMAN SCHLUNDT.

La Chimie Raisonnée. PAR M. LEMARCHANDS, Chef de Travaux pratiques à la Faculté des Sciences de Lyon. Paris: Gauthier-Villars & Cie.; Grenoble: Jules Rey, 1914. Pp. 174. Prix, 5 francs.

This volume in the *Bibliothèque de l'Élève Ingénieur* series bears on its title page as a sub-title, "La chimie n'est pas une science de mémoire comment on doit l'apprendre." The author practically passes by all descriptive chemistry and systematizes a few of the more important processes and rules of chemistry, but we fear the student with no previous knowledge of chemistry would be as badly off after studying this work as he would be after memorizing an ordinary descriptive chemistry. One with considerable chemical knowledge, however, will find in the book some suggestive ideas.

JAS. LEWIS HOWE.

Fats and Fatty Degeneration. A Physicochemical Study of Emulsion and the Normal and Abnormal Distribution of Fat in Protoplasm. By DR. MARTIN H. FISCHER AND DR. MARIAN O. HOOKER. University of Cincinnati. 146 pp. John Wiley & Sons. Price, \$2.00.

Sixteen pages on "The Argument" describe the contents of the subse-

quent pages, and form a good readable abstract which tempts the reader to study the whole book without deceiving him as to what he may find.

Briefly, the modern work on colloids is applied to living cells and tissues. From the colloidal phenomena of soap and cottonseed oil and water emulsions, analogies are drawn with brains and nerves. This is interesting, suggestive and instructive. In the extreme case, softening of the brain becomes a precipitation of the emulsion. The production of milk in mammary glands is simple in this light, and artificial cow's milk is described as made by using, for example, egg albumin for the protein agent or hydrophylic colloid and oleomargarin for the fat. There is no good reason for confining ourselves to cow's milk except the low cost. Any mystery in milk is quite removed by the experiments described.

Every reader of biological experimental work has been impressed with the frequent occurrence of apparently simple physical or chemical processes which seemed to be counterparts of mysterious processes of living matter. Perhaps the simplest cases of this kind are the mercury heart, the Brownian movement, and the floating camphor on clean water. The authors study such mimicry as mucous secretion, which they find in such cases as a mixture of powdered gum acacia in oil when this is brought into contact with water, the hydration here occurring after the secretion.

There are many biological conclusions which are drawn clearly from simple laboratory experiments on synthetic colloids, and possibly the biologist may want the conclusions drawn less generally, but in any case all of them are suggestive, and therefore useful. A typical case is the following: "Much of the normal viscosity or rigidity of the tissues is due to their emulsion character. The 'softening' of the organs as observed in various pathological states is due to a breaking of this emulsion." The biologist may want a life net thrown around or through such a conclusion, but the reviewer is glad to see this publication and he hopes that others will follow. No more important or difficult field exists in unexplored (or at least incompletely developed) chemistry to-day than the colloid reactions of living matter.

The book is well illustrated, simple, and clear. It is essentially original and refreshing.

W. R. WHITNEY.