

Van Slyke method. It is believed, however, that in such concentrates as contain but little cellulose, a fair interpretation of the protein molecule can be secured when analyzed by the new method of Eckstein and Grindley. These results are submitted with a view of indicating what the Van Slyke method shows when applied directly to forage crops high in cellulose.

MOSCOW, IDAHO.

NEW BOOKS.

Zur Feier der Entdeckung der Röntgenstrahlen vor fünfundzwanzig Jahren (The Twenty-fifth Anniversary of the Discovery of Roentgen Rays), Die Naturwissenschaften, No. 50, Vol. 8. Julius Springer, Berlin, 1920. 30 pp., 1 plate, 17 figures. 19.5 × 27 cm. Price, M. 3.

The whole number of Die Naturwissenschaften for the 10th of December, 1920, is devoted to a symposium commemorating the 25th anniversary of the discovery of Roentgen rays. The separate articles have been written by many of the foremost German scientists who have contributed to progress in this field. They are as follows.

The discovery of Roentgen rays twenty-five years ago; by W. Wien.

Roentgen rays and therapy; by Max-Leve Dorn.

The history of the development of Roentgen tubes; by Paul Knipping.

In what way are we justified in speaking of a microscopic delineation of minute structure by means of Roentgen rays? by M. v. Lane.

Roentgen rays and crystallography; by Friedrich Rinne.

The fundamentals of Roentgen ray spectroscopy; by Ernest Wagner.

On the significance of Roentgen rays in the study of atomic structure; by W. Kossel.

The gain to chemistry from the physical study of Roentgen rays; by Paul Pfeiffer.

It is really astonishing to consider how much this capital discovery of Roentgen has meant to our intellectual development. It, along with the discovery of radium, has revolutionized our whole concept of matter, and has opened vast regions to still more daring flights of the human intellect.

ARTHUR B. LAMB.

Eminent Chemists of Our Time. BENJAMIN HARROW, Ph.D., Associate in Physiological Chemistry, Columbia University, New York. D. Van Nostrand Company, 8 Warren Street, New York, 1920. xvi + 248 pp. 13.5 × 21.5 cm. Price, \$2.50 net.

There are eleven of these charming scientific biographies in this attractive volume. It has been truly said by some distinguished writer, whose name I cannot now recall, that the only true history is biography. Prof. Harrow's book lends much support to this theory. The history of chemistry told in tales of chemists is not only attractive, but it is alive; there is no dead wood in it. The present volume is indeed a part of a large volume in which it was intended to put a description of the work as well as the life of the chemists selected for this purpose. The work part is promised for another volume.

Prof. Harrow decided upon the magic number of eleven immortals, some of whom are still mortals, to be the subject matter of the book. This raises the question as to what are chemists of our time, as well as who are the eminent chemists of our time? There are doubtless many differences of opinion on these points, but as no one was writing the book but Prof. Harrow, we should not question his selection either as to date or eminence. In fact, he tells in his preface that one of the eleven died in 1897 by suicide; three of the eleven died in 1907; one in 1911; one in 1916; one in 1919, and there are only four who are still alive. I have said that we should not question the selections. We might, however, suggest that he could have added two more to the list and taken them both from our own country, *viz.*, Wolcott Gibbs and Eugene W. Hilgard. This, however, would have brought the number up to the fatal one of thirteen, but would have given our American chemists a more numerous and deserved representation. I do not see, however, how any reasonable man can find fault with the selections even if he is of the opinion that insofar as times are concerned he solved the problem *vi et armis*. It is true that the great discovery made in 1856 could hardly be said to belong to our times, but Perkin belongs to all times and so comes within the fold. Perkin was forced to become an applied or technical chemist in order to make his discovery practical. This done he turned again to his first love, research. I had the great privilege of attending the dinner given him in New York in 1906, the year before his death. This was a function memorable in the history of chemistry in America. Prof. Harrow tells of Perkin the man, the chemist and the discoverer, in a manner wholly acceptable and satisfactory.

Mendeléeff, the typical Slav, undoubtedly earned his right to head the second chapter. This is not saying anything to the discredit of Newlands who, at least, was co-discoverer, if not prior discoverer of the periodic law. He comes even nearer than Perkin to not belonging in our times, being four years older than the English discoverer. The number of children in the family of which he was a member appears to be variable like the family of elements, for it ranges in his family history from eleven to seventeen. At least there were sufficient of them to make each one do the best possible to help himself as well as father and mother. But be that as it may, Dmitri was the only one that attained to world-wide fame. There are also as many different ways of spelling his name as the numbers of his brothers and sisters, but Prof. Harrow has chosen one which is easy. The name translated, means a horse trader and would probably be spelled "Davidharem" in America. To a noble and self-sacrificing mother young Mendeléeff owed his opportunity of an education. His perception of the periodic idea was preceded three years by the discovery of Newlands, but Newlands' announcement was received by

his fellow chemists with a shout of derision. That discovery, however, is the chief cause of Mendeléeff's fame and in justice to Mendeléeff it must be said that he could not possibly have had any idea of Newlands' discovery. Newlands' paper was refused publication.

In spite of the fact that a distinguished woman is included in Harrow's list, Mendeléeff regarded women as of inferior intelligence, notwithstanding his veneration for his mother. He died before he could have appreciated to the full the magnitude of Marie Sklodowska's discovery. This would doubtless have caused him to change his mind.

For lack of space I cannot discuss the whole eleven chapters of this most readable book. It is so easily obtainable that there is no necessity of going into details.

The seven other foreigners are really of our own times and many readers of this review knew them personally. They have nearly all been in our country, except Madam Curie, and she is about to visit us. I judge by the newspaper accounts of her forthcoming visit that she is to be a social rather than a scientific star when she comes.

Madam Curie has performed a miracle. She has led us into the hall of nature's great mystery, barred so many ages from the profanation of human view. Not Dickens, nor yet Victor Hugo, could ever have projected radium into fiction. Even they could not create a new element endowed with such subtle character and animated by such an unimaginable soul. Even Carroll with all his brilliant imagination, as expressed by the experiences of Alice in Wonderland, could have created nothing so wonderful. The writers of fiction only gather up the *disjecta membra* and string them together into an attractive, yet ungainly form. Before this creative genius the novelist, the poet, the juggler, the contortionist, the prestidigitator, Mother Eddy and Napoleon stand in reverence with bowed heads. One Latin poet foreshadowed this great feat and at the same time intimated that woman, not man, stands nearest the Source when he wrote: "Dux foemina facti."

Sir William Ramsay, Jacobus Henricus van't Hoff, Svante Arrhenius, Henry Moissan, Victor Meyer and Emil Fischer are known personally to hundreds of American chemists. For this reason the chapters devoted to these great foreigners are full of interest.

The two Americans who have a place in this volume are quite fit for the company they keep. Richards and Remsen represent the fruit of the best American chemistry. Harrow has told the story of their lives and their works well. Biography, as I have said, is the true history, but there is always some risk in biographing the living. The only certain note that can be sounded is taps.

Prof. Harrow has almost made a Movie out of his stories. To read these stories is more interesting than any modern fiction and far more

informing. One can scarcely lay aside the book even when midnight calls for the cessation of activities.

Some of the older medical schools in the country such as Bellevue, Jefferson and Miami may resent the comment made by Dr. Remsen on his medical Alma Mater. "The school was then (1867) perhaps a little better than the worst of its type, but very far from acceptable." There were brave men before Agamemnon and beautiful women before Helen. There may have been universities before Johns Hopkins.

Dr. Remsen's great achievements in chemistry are more than equalled by his unparalleled success as a teacher. His students are found everywhere and their training and efficiency constantly proclaim the great teacher. Through his pupils he has done his greatest work for chemistry.

The story of the great fame which Dr. Richards has already achieved, although still a young man, is inspiring. A volume might well be written about it without exhausting the subject. It is a lesson which our young chemists should study particularly. It shows the way to success. Not mere ability nor opportunity can lead to success. There must be a divine spark, not so much perhaps genius as vigorous and continued effort. The ability, of course, must be present to formulate the problem and then the industry and persistence which carry one to its safe solution. Although Richards is the youngest of the eleven immortals he is by no means the least. Dr. Harrow has most creditably shown us the story of his work.

The volume is singularly free from typographical errors. The one most strikingly apropos is found on page 210. When Chicago failed in its efforts to get Remsen to leave Johns Hopkins he said in an address to his students, "This is my birth for life."

The author has not been so happy in his ingression into the field of jurisprudence. It is unwise to open the closet that holds the skeleton of Benzoate of Soda. That is one feature of Dr. Remsen's brilliant career over which the mantle of charity should eternally rest. Even so happy an author as Harrow cannot galvanize a skeleton, which even in its biological habiliments was far from comely, into renewed attractiveness. In spite of the approval given to this *corpus delicti* it is as dead as a door nail. Self-respecting food manufacturers abhor it; informed food consumers refuse to eat it.

Attention is called to the fact that the decision of the Bureau of Chemistry to eliminate this preservative from our foods created lively opposition. The author forgot to tell us who the opponents were. They were the food adulterators, the dealers in debased drugs, the embalmers of cod-fish, the rectifiers (Heaven save the name) of whiskey and the patent medicine syndicate. All of these were enthusiastic protagonists of the

Remsen Board. On the other hand, the medical profession, the best food manufacturers, the best drug dealers, the great army of consumers, the press and finally the Federal Courts, were against it.

Dr. Remsen was naturally annoyed by the overwhelming public opinion which was so generally expressed in favor of upholding the original decisions of the Bureau of Chemistry. I can no better voice this annoyance than by quoting his own words when testifying before the Committee of Congress investigating the activities of his Board. He said, "So far as I know the newspapers are almost without exception opposed to the Remsen Board. * * * * Sometimes friends of mine come up to me with long faces and say, 'Remsen, it is too bad about this matter.' I say, 'What is the matter?' They say, 'Haven't you seen that article about your Board?' I say, 'Oh, no, and don't you show it to me, I have seen enough.'"

In simple justice to Dr. Remsen I will say that he was very averse to serving on this Board and consented only at the urgent request of the President of the United States.

Lately there has been a singular recrudescence of activity in the use of benzoate of soda. The Prohibition Commissioner has ruled that it is legal to make any quantities of sweet cider and based on the decision of the Remsen Board, to preserve it from fermentation by the use of benzoate of soda. The experiments which were made with cider preserved by benzoate of soda by Dr. D. L. Lucas showed that it invariably produced marked illness in young men who drank the cider. Apparently the Prohibition Commissioner has fallen into the Scylla of benzoate of soda in endeavoring to avoid the Charybdis of hard cider.

HARVEY W. WILEY.

Die Reaktionen des freien Stickstoffs (The Reactions of Free Nitrogen). By PROF. DR. ING. WILHELM MOLDENHAUER, Privatdozent, Darmstadt, Technische Hochschule. Gebrüder Borntraeger, Berlin, 1920. 178 pp., 3 figures. 16.5 × 25 cm. Price, M. 26.

In this book the author has attempted to collect all of the significant information contained in the periodical literature of chemistry relative to the reactions of free nitrogen. The book, however, is not a mere compilation but is a critical presentation of all the evidence.

The author first discusses the fixation of nitrogen in Nature and in the laboratory, the classification of nitrides, and the affinity of nitride formation. He then discusses singly and in detail the reactions of the rare earths and of forty-four other chemical elements with nitrogen, and the simultaneous reaction of carbon and hydrogen, and carbon and the alkalis with nitrogen.

This book fills an important gap in chemical literature, for while a num-

ber of books have been written on the compounds of nitrogen and on the technical processes for the fixation of nitrogen, there is no comprehensive treatment of the reactions of the free element. The author has presented the subject simply and clearly, and the critical discussion appears well considered. The book will certainly be of much interest and great convenience to chemists occupied with researches in this field.

ARTHUR B. LAMB.

Introduction to General Chemistry—An Exposition of the Principles of Modern Chemistry. By H. COPAUX, Professor of Mineral Chemistry at the School of Industrial Physics and Chemistry of the City of Paris, translated by HENRY LEFFMANN, A.M., M.D., Member of the American Chemical Society and of the (British) Society of Public Analysts. P. Blakiston's Son and Company, Philadelphia, Pa., 1920. x + 195 pp., 30 figures. 12 × 18.5 cm.

The scope and characteristics of Copaux's admirable little volume have already been considered in THIS JOURNAL (Nov. 1919). Dr. Leffmann has rendered a genuine service to English-speaking students by making it more accessible to them. The translation is very satisfactory with the exception of a few rather obvious misprints. The two short appendices, however, lack the clarity of the original book. In the second table on page 109 the heading should be grams, not gram-molecules, of hydroxyl ion.

G. S. FORBES.

Laboratory Experiments in Organic Chemistry. By E. P. COOK, A.M., Associate Professor of Chemistry in Smith College. Second edition. P. Blakiston's Son and Co., Philadelphia. ix + 83 pp., 8 figs. 12 × 19 cm. \$1.00 net.

This is a small book for the elementary course in organic chemistry, but more comprehensive than one would expect from its size. In these days of high prices a book which contains just about the amount of material needed for an elementary course should be welcomed, provided the selection of experiments suits the individual instructor. The selection, in the present case, appears excellent to the reviewer.

The book follows the example of several recent books in including, with a certain number of preparations, many tests illustrating the behavior of typical compounds. The directions, while not always in the best of English, are clear and are expressed in the fewest words consistent with clearness. The author is evidently familiar with the mistakes usually made by beginners in the subject.

There is no discussion nor explanation of reactions, but there are references to the text which the book is intended to accompany and questions to indicate what the student should look up. More such questions might be desirable. Cross references to experiments which should be compared attracted the reviewer's attention.

ROGER F. BRUNEL.

Vocational Chemistry, for Students of Agriculture and Home Economics. By JOHN J. WILLAMAN, PH.D., Assistant Professor of Agricultural Biochemistry, School of Agriculture, University of Minnesota. Farm Life Text Series, Edited by K. C. Davis, Ph.D. J. B. Lippincott Company, Philadelphia and London. vii + 294 pp., 70 figures. 14 × 21.5 cm.

The above book, written primarily for use in vocational high schools in connection with work in agriculture and home economics, seems to be well adapted to the purpose. A careful reading of the text has brought out very few points to criticize, so that, in general, the reviewer wishes only to commend it. It is in no sense a fundamental text on chemistry, but, as its name signifies, is written for the purpose of giving students in agriculture and home economics a general knowledge of chemistry as it applies to these subjects. In the first 146 pages, dealing with pure chemistry the treatment is general, but accurate and well connected, so that a student may gain a clear understanding of many facts which are related to the practical problems in his work. The latter part of the book takes up the more purely agricultural topics of the soil, fertilizers, plants and animals. The material given in the text is well selected and is presented in a clear and interesting way. The subjects selected, while no doubt differing from those which would be chosen by some one else, are nevertheless closely related to each other and to the larger problems of agriculture and home economics. The book is well printed and has in it numerous attractive illustrations, which though not always strictly chemical in character are illustrative and suggestive. At the end of each chapter there are questions and laboratory experiments, both of which will be valuable to teachers who use the text.

A few typographical errors are present; there is a confusion of the compounds benzine and benzene; and an over emphasis is given to the fact that bases are hydrate compounds and acids hydrogen compounds. The statement on page 229, that alkaloids are not found in animals, depends of course, upon the definition of alkaloids. The statement on page 219 that cocaine is obtained from the cocoa tree is an error that may be simply typographical. These are very minor criticisms, and the reviewer feels that the book is in every way commendable as having been carefully prepared, the material well selected, and the text as a whole adapted to the use for which it is intended. It will doubtless find wide application in vocational schools.

JOSEPH S. CHAMBERLAIN.

Bureau of Chemistry Aids Research Chemists.

Received February 17, 1921.

In former years American chemists were always able to import scientific apparatus and chemicals of a highly satisfactory grade at a price that was admittedly cheaper than American manufacturers could hope successfully to duplicate, in spite of a high protective tariff. Under the stimulus of war necessity, American manufacturers soon demonstrated their ability to produce any kind of apparatus or chemical that had hitherto been made only in Europe, thus confirming the faith of most American chemists in the resourcefulness of their country.

Our Government has not as yet rendered assistance to the growth of chemical activities by subsidies and other guaranties, as has been the practice in some European countries, particularly in Germany, and this has greatly increased the difficulty of the present situation and at the same time has put an added responsibility on American chemists.

The need for rare chemicals by research workers is still acute, and with this in mind, the Bureau of Chemistry has undertaken to act as a national clearing house for the benefit of chemical investigators throughout the country. To the Laboratory of Analytical Reagent Investigation of this Bureau has been assigned the duty of collecting as much information as possible as to the whereabouts of unusual chemicals, in addition to the classification of the large collection that has accumulated within the Bureau itself.

Already numerous requests have been received from Government workers, and to some extent from outsiders, for information on special kinds of apparatus and chemicals not usually carried in stock. In nearly every case the Bureau has been able to advise the applicant concerning the availability of the desired article. The Bureau has made a rule not to furnish chemicals that are obtainable in the open market; on the other hand it is ready to provide reasonable amounts of rare chemicals from its own collection on request, or, if necessary to prepare the same in its laboratories, such chemicals being loaned or exchanged according to circumstances.

American chemists are, therefore, invited to cooperate with the Bureau of Chemistry in this phase of establishing the "chemical independence of America," and to avail themselves of the opportunity to acquire samples of rare chemicals for seeding, crystal measurements, mixed-melting-point determinations and other comparative tests with new or uncertain compounds.

G. C. SPENCER

BUREAU OF CHEMISTRY,
WASHINGTON, D. C.