Rev. Fett.- Harz-Ind. **12**, 125) used acetone to determine fat, water and non-fat in butter and cream. Five grams of cream were put into a glass-stoppered, weighed Erlenmeyer flask containing a few pieces of pumice with 100 cc. of a mixture of 1 volume of acetone and 1.5 volumes of absolute ether and shaken hard for half a minute. The flask was cooled, the stopper washed with the acetone mixture and the contents of the flask heated to beginning boiling with a return-flow condenser. After cooling, the liquid was poured through a weighed filter into a weighed distilling flask (about 300 cc. size) containing a few pieces of pumice. The residue in the Erlenmeyer flask was weighed 3 times with 20 cc. each time of the acetone mixture, with a little warming, finally with absolute ether, pouring the washings through the filter. In the filtrate the fat was determined by evaporation of the solvent and weighing of the residue. The Erlenmeyer flask and the filter were dried to constant weight for the non-fat. One hundred per cent.—(per cent. fat + per cent. non-fat) = per cent. water. With butter 10 grams were used. Bence (*Centr. Physiol.* **19**, 198) gave a new method for determining the volume of the blood corpuscles in small masses of blood. He added to 100 parts of blood a known amount of 0.9 per cent. sodium chloride solution and gave the following equations: $S(R - 1.3328) + K(1.3342 - 1.3328) = S + K(R_x - 1.3328)$ or $S = K(R_x - 1.3342)(R - R_x)$, where S = amount of serum, R = its refractive index, K = amount of sodium chloride solution of refractive index 1.3342 if that of water is 1.3328. The refractive index R_x of the mixture of S and K lies between 1.3342 and R. With R, K and R_x known, S can be calculated. Koeppe (*Pflüger's Arch.* **170**, 187) determined the volume of the blood corpuscles by centrifuging the blood in graduated oil pipettes at 5000 or more revolutions per minute.

A portion of the work for this review was done in the library of the department of chemistry of Cornell University, through the courtesy of Professor L. M. Dennis, for which the writer desires to express his thanks.

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NEW BOOKS.

GESAMMELTE WERKE. By ADOLF VON BAEYER. Vol. I, 990 pp., with an introduction, 132 pp. Vol. II, 1194 pp. Braunschweig: Vieweg und Sohn. 1905. Price, bound, 20 marks.

It is almost with a feeling of reverence that I attempt to give the readers of the Journal a brief outline of the colossal work of one of the greatest chemists of the age, Adolf von Baeyer. I am at a loss even in summarizing these two great volumes, for an

enumeration of his papers alone would occupy more space than could be given to this review. All that I can hope to do is to give the reader a glance at the man himself and to mention a few of his greatest discoveries.

In reading this great work, compiled and published by his students and friends in commemoration of his seventieth birthday, one can not help wishing that the author had given more of his biography, notwithstanding the fact that the volumes are in no way biographical. In his very brief "Erinnerungen," however, one gets a flash-light picture not only of Baeyer the boy, the student, the scientist, the man, but also new perspectives of some of his famous co-workers and pupils. Boyhood, as such, was evidently cut out of his life, for we find him at the age of nine delving into chemical problems worthy of the greatest chemists of the time. He was but nine years old when he made his first chemical discovery in the double salt of copper and sodium carbonate, $CuCO_3.Na_2CO_3+3H_2O$. John Stuart Mills had mastered the principles of logic and calculus at the age of ten. Baeyer had done more than this at the age of nine.

His life work has been almost wholly organic chemistry. The greater part of his work has been on the following subjects:

The Indigo Group and Indigo Synthesis.

The Uric Acid Group.

Pyrrol and the Pyridine Bases.

The Phthaleines.

The Hydro-aromatic Compounds, Mellitic Acid and the Constitution of Benzene.

The Terpenes.

The Peroxides and the Basic Properties of Oxygen.

On these subjects and a few other miscellaneous subjects, 278 papers were written.

A considerable proportion of the first volume is devoted to the indigo group and to the history of indigo synthesis. Baeyer's work on indigo and kindred subjects extended over a number of years and is perhaps the best known on account of its practical nature. As a direct result of his work, artificial indigo has been made commercially since 1891, and it was finally placed on the market at reduced prices in 1897.

His first work on this group began with the study of isatine, which he says was suggested from his work on the uric acid group,

"Meine Arbeiten über das Isatine sind ursprünglich von der Harnsäure Untersuchung ausgegangen." In perhaps none of his other works, unless it was in his study of the constitution of benzene, was there such a determination shown as in his indigo synthesis. He was not satisfied with the isatine and the nitropropiolic acid syntheses, but continued the work with unabated zeal until not only a number of other important synthetic methods were discovered but also the structural formula of indigo.

Several hundred pages are devoted to his work on mellitic acid and to the constitution of benzene. This work, although perhaps not so fruitful as his indigo work, has nevertheless had an important bearing upon the benzene compounds. His identification of mellitic acid obtained from honey stone as benzene hexacarboxylic acid and its final "Abbau" into benzene, ranks in importance with the Wohl hydroxylamine reaction in the sugar group.

His work on the terpenes has likewise been of great significance. His system of naming the terpenes, his "Ortsbestimmung" and his synthesis from methylisopropylsuccinic ester has been of the greatest importance in the study of the terpene compounds.

His last work on the peroxides and the basic properties of oxygen is of the greatest importance. Three papers published in 1901 with Victor Villiger on the basic properties of oxygen following the important work of Collie and Tickle on the salts of dimethylpyrone and the quadrivalence of oxygen, have attracted the attention of chemists everywhere. In these papers, Collie and Tickle's work is expanded so as to cover the ethers, ethylene oxide and its related compounds, the alcohols, the acids, the esters, the aldehydes and the ketones, incidentally proving that the oxonium salts are formed with all carbon compounds containing oxygen except the peroxides.

Considerable space is given in the second volume to his work on dibenzalacetone and triphenylmethane. In these papers he has discussed the color theory, the structure and valence in triphenylmethane.

Baeyer is a great teacher as well as a great investigator. His students seem to catch the spirit of investigation, and scores of men trained in his laboratory are carrying out lines of work begun while studying with him.

He has written no text-books and has given the science little theory as compared with the great amount of research work he has done. When asked for theory he answered with experiment. Theories change but the experimental work found on the pages of these volumes will stand the test of time.

G. B. FRANKFORTER.

A LABORATORY HANDBOOK FOR THE ANALYSIS OF MILK, BUTTER AND CHEESE. By JAMES RITTENHOUSE EVANS, B.S. 1905. 60 pp., 2d ed. Price, $1.40.

The chief merit of the book is its form of presenting methods in distinct steps, an arrangement that is of advantage for one using the methods for the first time. The methods could in many cases have been given with greater fulness to advantage. The method given for estimating casein and albumin is quite out of date. A serious omission is the failure to describe the use of the Quevenne lactometer in determining solids and solids-not-fat in milk. It is doubtful if one could detect skim-milk or watered milk satisfactorily by following the meagre directions given.

L. L. VAN SLYKE.

AMERIKANISCHES HOCHSCHULWESEN: EINDRÜCKE UND BETRACHTUNGEN. VON DR. W. BÖTTGER, Privatdozent an der Universität Leipzig. Leipzig: Wilhelm Engelmann. 1906.

The author of this little brochure spent a year in research work at the Massachusetts Institute of Technology and his impressions of the contrast between American and German universities are based upon careful observation and are extremely interesting and instructive. Their value is increased, especially for German readers, by means of a number of careful, detailed illustrations of the character of the work in American institutions.

W. A. N.

RECENT PUBLICATIONS.

THE LABORATORY BOOK OF MINERAL OIL-TESTING. By J. A. Hicks. London: 1906. 88 pp. 2/6.

GUIDE PRATIQUE DE L'EXPERT-CHIMISTE EN DENREES ALIMENTAIRES. By D. Pellerin. Paris: Berger-Levrault. 1906. 8+682 pp. 11 francs.

CHEMIE UND CHEMISCHE WARENKUNDE F. ZOLLBEAMTE. UNTER BERÜCKSICHT DER ERLÄUTERGN. ZUM ZOLLTARIF F. DAS OSTER-UNGAR. ZOLLGEBIET VOM 13. By Franz Freyer. Wien: Firck. 1907. 8+562 pp. 6 marks.