Lyle, Director of this laboratory, Dr. Mortimer Warren, Pathologist of Roosevelt Hospital, and the different members of the House Staff of the hospital, for obtaining the specimens used in this investigation. Thanks are due Dr. I. Greenwald of this laboratory for helping to prepare the results of this investigation for publication.

Summary.

The lipolytic activity of human duodenal contents was tested in a number of cases under varying conditions.

Two lipases were present in the duodenal contents. One of these, found as a rule after ingestion of food, was, under certain definite experimental conditions, more active toward triacetin than toward ethyl butyrate; the other, present when no food had been taken, was more active toward ethyl butyrate than toward triacetin. The importance of these two lipases in diagnostic work was pointed out.

Lipases, showing similar differences in their actions on the two esters, have been shown to be present in castor beans, and also by Loevenhart in extracts of the pancreas and liver of various animals.

The effect of a number of neutral salts and alcohols in different concentrations on the activity of the duodenal contents on the two esters was studied.

CORRECTION.

In referring to Mr. A. F. McLeod's paper as abstracted in the *Chemical Abstracts* in my paper on "Some Organic Preparations" (THIS JOURNAL, **36**, 532), I find that I have not interpreted correctly the statement "calcium or sodium hydroxide solution of 0.1 %." This percentage, I find, refers to an aqueous solution; whereas my percentages were referred to the aldehyde used. It follows, therefore, that the experimental conditions in each case were different. I take this opportunity of correcting my statement in my paper alluded to above, and expressing my regrets to Mr. McLeod.

L. P. KYRIAKIDES.

NEW BOOKS.

The Scientific Work of Morris Loeb, edited by THEODORE W. RICHARDS, Professor of Chemistry and Director of the Wolcott Gibbs Memorial Laboratory at Harvard University. pp. 360, Cambridge, Mass. Harvard University Press. Price, $2.00.

This volume contains, first, as frontispiece, a pleasing and characteristic portrait of Morris Loeb; second, a brief but excellent account of his life and character, by the editor; third, a collection of lectures and addresses by Loeb on scientific subjects, some of which have not been published before; and finally, a complete collection of Loeb's experimental researches. The book is very well done. The material has evidently been

collected and printed with scrupulous care; even the original pagination of previously printed articles has been recorded. The printing, paper and binding are uncommonly good.

After reading this volume I have been impressed anew with Loeb's intellectual enthusiasm; with his love for the truth, and with his active altruism. These qualities are evident in the Introductory Lecture on Physical Chemistry, which, as a young man fresh from his studies in Germany, he delivered at Clark University in 1889. They are still to be felt, undiminished after a quarter of a century, in his address at the Chemists' Club, and in the benefactions to humanity and science provided for in his will.

The publishers and the editor are to be thanked for having made more accessible, "the thoughtful and suggestive writings of one of America's pioneers in the new physical chemistry." ARTHUR B. LAMB.

Rays of Positive Electricity and Their Application to Chemical Analysis. By SIR J. J. THOMSON, O.M., F.R.S., Pp.vii + 132 + 5 plates. Longmans Green and Company. London and New York. Price 5 S., net.

A book written by Sir J. J. Thomson describing his researches is always in demand, and chemists and physicists generally will welcome this account of his latest triumph. The book deals with "the experiments on positive rays which have been made at the Cavendish Laboratory during the last seven years," and includes, in addition, short accounts of Gehrcke and Reichenheim's experiments on anode rays, also the researches of Stark and others on the Doppler effect in positive rays, amplifying and interpreting these by means of his own work on positive rays. Short chapters are included on spectra produced by bombardment with, and the disintegration of metals under the action of, positive rays. It concludes with an extended chapter on the use of positive rays for chemical analysis, giving, as illustrations of the method, accounts of his own researches on the "element of atomic weight 22," on the nature of X_3 the substance giving the "3" line, and on the evolution of helium and neon.

It should be noted that the choice of words is characteristic of the author. The name "positive rays" is used in preference to "canal rays" as originally applied by Goldstein. The heavy carriers are designated as "particles" instead of "ions," and the word "corpuscle" is retained for what is generally termed an electron.

The opening chapter includes a brief statement of the theory that obtains for the magnetic and electrostatic deflections of a carrier. This is followed by a detailed description of the author's experiments made in 1906. A number of improvements, in both design and manipulation soon suggested themselves, and in 1910 the author began the use of the photographic plate placed inside of the exhausted vessel for obtaining a permanent record of the deflection of the rays. Under the simultaneous

action, at right angles to each other, of the electrostatic and magnetic fields, the trace on the photographic plate becomes a parabola. By increasing the strength of the fields the parabolas may be given any position on the plate desired; if, however, the fields are kept constant the positions of the parabolas depend directly on the masses of the carriers, and, since the mass bears a simple relation to the atomic weight, the nature of the particles can be identified.

Numerous photographs are reproduced. These are accompanied by detailed discussions. During the course of the investigation it was found that these carriers may, in the case of many substances, hold more than one charge. This introduces difficulties of measurement and of interpretation, that, but for the wonderful experimental skill and scientific imagination of the author, coupled with mathematical insight, might lead to wrong conclusions. As an example, in explaining why certain lines were of exceptional brightness on the photographic plate, the author says, "the view which seems to accord best with the observations is that the negatively electrified atoms are atoms which were positively electrified when in the discharge tube, that they got neutralized after passing through the cathode by combining with a corpuscle, and in this neutral condition exerted so strong an attraction upon a corpuscle that they were able to capture it though moving past it with an exceedingly high velocity."

Though the photographic plate furnishes an excellent means of detecting the existence of positively charged particles of different kinds it is not suitable for comparing the number of these particles present in a bundle of positive rays. The effect upon the photographic plate is determined largely by the depth to which the particles penetrate into the film. The light hydrogen atoms having a velocity of about fourteen times that of the heavy mercury atoms penetrate the film farther and therefore produce a greater photographic effect. Hence the intensity of the parabolic line is by no means proportional to the amount of the element present producing it. As an example the hydrogen line is always very intense, yet there may be relatively very little hydrogen present. To show this to be the case the author used an ingenious device which enabled the total charge carried by the particles forming the parabola to be collected on an electrometer, and thus the number of charged particles was estimated.

Next follows a chapter on the information afforded by the positive rays as to the constitution of a gas, the nature and properties of the molecules, and the process of ionization in a discharge tube. Short chapters are given to a consideration of retrograde and anode rays, followed by Stark's observations on the Doppler effect and amplified by the author's own researches.

The chapter on the use of positive rays for chemical analysis is very

suggestive. The method is a new departure in chemical analysis and is very powerful. (*a*) Only a small quantity of gas is required—less than 0.01 cc. at atmospheric pressure will give well defined parabolas. (*b*) A new gas in the tube is indicated by a corresponding new parabola, and from its position on the plate its atomic weight may be determined. The method is more sensitive than that of spectrum analysis. The author's claim that "the technique is not difficult if appliances for producing high vacua are available" may be challenged by some attempting this method of chemical analysis. To produce and maintain for hours at a time a vacuum of 0.001 mm. mercury in a discharge vessel the construction of which of necessity requires the use of numerous waxed joints, in itself requires superior skill. To this add the manipulative skill attending the various details of operation such as proportioning the strength of the deflecting fields, giving the proper time of exposure, and finally determining the constants of the apparatus, gives a fair idea of the technique required for the successful use of the method. The success of the method at the Cavendish laboratory is a compliment to the wonderful experimental skill of the author and those assisting him. The method marks a great advance in modern chemical analysis.

As an application of the method he gives Mr. Aston's interesting investigation of neon. A number of photographs taken with the lighter constituents show lines corresponding to helium, to neon, to argon, and an additional line corresponding to an element with an atomic weight 22. The atomic weight of neon is 20.2. The evidence brought out by this method seems to point to a new element of atomic weight 22.

The book concludes with a consideration of the continuous evolution of helium and neon when various substances are bombarded by cathode rays. The gases were examined by the positive ray method. The author does not draw any very definite conclusions from his experiments. He says, "The view that helium can be got from other chemical elements raises questions of such fundamental character that few will be prepared to accept it until every other explanation has been found to be untenable," and adds that further "experiments are being made with this object but there are very considerable difficulties to be overcome."

CHAS. T. KNIPP.

Physikalische Chemie der homogenen und heterogenen Gasreaktionen unter besonder Berücksichtigung der Strahlungs- und Quanten-lehre sowie des Nernstschen Theorems. DR. KARL JELLINEK, Privatdozent an der Kgl. Technischen Hochschule, Danzig. S. Hirzel, Leipsig, 1913. 814 pp. 221 figures and 104 tables. Price, 32 marks.

For the reader, inclined perhaps to expect in this volume merely a more extended treatment of the themes usually comprised under the statics and kinetics of gas reactions, there awaits a complete surprise.

As the author states in his introduction, he would date the beginning of a new period in the development of physical chemistry from the announcement of Planck's quantum theory (1900) and of Nernst's heat theorem (1906). These two principles in conjunction with the laws of electronics and of energy radiation, he believes are destined to direct the future advancement of some of the most important branches of physical chemistry. It is for this reason that he has sought to incorporate these principles into the science as fundamental in the correct interpretation of the phenomena of gas reactions.

The task which the author has set himself, to review an old and much investigated field from entirely new theoretical standpoints, and to attempt, at this initial period, to weld the theories and the experimental results into a consequential whole, constitutes an ambitious program. One can but admire the skill the author has shown in attacking his problem and the success that he has met, for the most part, in its solution. If portions of the subject here and there appear incomplete or not entirely definite, the charge should be laid against the present undeveloped status of some of the subjects touched on, rather than the author's treatment. That his plan as outlined has been faithfully adhered to, is evidenced in the fact that little more than one-third of the text is given up to chemical statics and dynamics in the ordinary sense, the rest being devoted, either to the development of the necessary physical theories, or to their application to the phenomena of gas reactions. If the author has succeeded in one thing more than another, it should be in impressing on the reader the ever increasing necessity of the physical chemist following closely the physicist into many of his newest realms of investigation, or sometimes taking the lead, as has been illustrated by Nernst's development of his heat theorem.

The statics of gas reactions is subdivided in the first 700 pp. into theoretical and experimental parts, under the former of which are treated: the two laws of thermodynamics; the application of reversible cycles to homogeneous and heterogeneous equilibria; the statics of gas reactions treated by the aid of the conception of entropy, and the related concepts of free energy and thermodynamic potential, in which connection, the relation of Nernst's theorem to entropy, and entropy from the static-kinetic standpoint are developed at length. Further as belonging to statics, the laws of heat radiation are dealt with under sections on: (*a*) Fundamentals of the theory of heat radiation; (1) phenomena at the interior of a radiating medium, (2) phenomena dependent on the surface properties of the radiator; (*b*) Kirchoff's law; (*c*) radiation pressure; (*d*) Stefan-Boltzmann law of radiation; (*e*) Wien's law of displacement; (*f*) entropy and temperature of a uniform bundle of rays of definite frequency; (*h*) Planck's radiation formula, including the development of the quantum

theory. The final section of the theoretical discussion of gas kinetics is particularly instructive and worthy of commendation for its exposition of the relation between the theory of heat radiation and specific heat, heat of reaction, temperature and Nernst's heat theorem.

To the *experimental* part of gas statics about 200 pp. are devoted, the same general order of subject matter being followed as in the foregoing sections on theory. The subjects treated are: I. Experiments in heat radiation; II. Determination of molecular vibration frequencies with the aid of radiation methods; III. Measurement of temperature; IV. Measurement of specific heat and heat of reaction, dealing especially with the recent work of Nernst and his school; V. Determination of gas equilibria experimentally.

The kinetics of gas reactions receive a somewhat meagre treatment, comprised in about 35 pp. which may be perhaps understood, in view of the author's standpoint and the fact that this field has not hitherto lent itself so readily to interpretation in the light of the new theories as has that of gas statics. But in a text devoting itself to the physical chemistry of gas reactions, this brevity must appear, from the standpoint of Guldberg and Waage's law, difficult to justify; on the other hand, one should welcome the fact that the space thus saved has been utilized in the consideration of other less well appreciated themes.

In the two final sections of about 50 pp. each, the author deals with the electrochemistry and the photochemistry of gas reactions. Under the former are described some interesting experiments in the production of chemical action by various forms of radiant energy capable of producing ionization in the gases acted on, and some very suggestive viewpoints are presented as to the electrical nature of these gas reactions. The reviewer has already had occasion to call attention in this connection to the neglect of the *radioactive* agencies (*Z. physik. Chem.*, **84**, 759).

Finally one finds much pleasure in the full references to the literature and the splendid indexes. A feature well worthy of mention is, that besides a complete *subject index*, the subjects are also repeated together with the page reference in the *authors' index*, which proves a very time saving device for the reader, and one highly to be recommended.

S. C. LIND.

Molécules, Atomes et Notations Chimiques. Memoirs of Gay-Lussac, Avogadro, Ampère, Dumas, Gaudin and Gerhardt. Vol. IV of Les Classiques de la Science. One plate, pp. 116. Librairie Armand Colin, Paris, 1913. Price, 1 fr. 20.

This volume contains the memoirs of Gay-Lussac on the combination of gases; of Avogadro on the relative masses of the molecules; of Ampère on combining proportions; of Dumas on the atomic theory and on chemical notation; of Gaudin on the structure of inorganic substances; and of Gerhardt on chemical formulas.

The memoirs are arranged to show the gradual development of our ideas of the atom and the molecule. To this end H. Le Chatelier, the editor of this volume, has added the modern equivalents wherever an obsolete or mistaken nomenclature has been used by the author, and has also inserted a number of explanatory notes showing the historical or logical sequence of the separate contributions.

The contents of this volume show in striking fashion the predominant position of France in the scientific world of the first half of the nineteenth century, and at least make us charitable toward the famous pronouncement of Wurtz in 1868 that "Chemistry is a French science." Nevertheless, it is unfortunate that to-day, in a collection such as this, there could not have been a fuller recognition of the contributions toward the solution of these fundamental problems which have been made outside of France. ARTHUR B. LAMB.

L'Air, L'Acide Carbonique et L'Eau. Memoirs of Dumas, Stas and Boussingault. Vol. I, of Les Classiques de la Science. 4 plates and an engraving. pp. 104. Librairie Armand Colin, Paris, 1913. Price, 1 fr. 30.

This volume contains the classic memoirs of Dumas and Boussingault on the composition of atmospheric air; those of Dumas and Stas, and of Stas, on the atomic weight of carbon; and that of Dumas on the composition of water. There are also biographical notes by H. Le Chatelier on Dumas, and by H. Gautier on Boussingault and Stas.

This volume and the others of the series appear to be carefully prepared. They will be welcomed, not only by the specialist in the history of chemistry, but by a wider circle of readers who find enjoyment and inspiration in observing the skill, acumen and preseverance with which these early investigators attacked their fundamental problems. The biographical notes of Gautier and of Le Chatelier are, of course, good. They are especially useful in giving the French, in contradistinction to the more familiar, German point of view. ARTHUR B. LAMB.

Die Atome. VON JEAN PERRIN, Professor an der Sorbonne, Paris. Mit Autorization des Verfassers deutsch herausgegeben, von DR. A. LOTTERMOSER, A. O. Professor an der Königlich Technischen Hochschule, Dresden. Mit dreizehn Abbildungen im Text. pp. XV. + 196. Theodor Steinkopff. Dresden and Leipzig. 1914. Price, M. 5, paper; M. 6, cloth.

The extent and nature of the field covered in this monograph is shown by the following list of chapter headings.

I. Atom theory and chemistry: molecules; atoms; the hypothesis of Avogadro; structure of molecules; solutions; the upper limit of molecular magnitudes.

II. Molecular motion: molecular velocity; molecular rotation and vibration; mean free path.

III. The Brownian movement: emulsions; history and general characteristics; statistical equilibrium in emulsions.

IV. The laws of the Brownian movement: Einstein's theory; the results of experiment.

V. Fluctuations: Smoluchowski's theory.

VI. Radiant energy and quanta: the black body; extension of the quantum theory.

VII. The atom of electricity: ionization of gases; the atomistic structure of electricity.

VIII. The genesis and destruction of atoms: transmutation; counting the atoms.

The subject is treated in the exceedingly lucid and attractive style which characterizes all of the author's writings and which has been well preserved by the translator. On most of the topics discussed the author is an acknowledged authority, but in a few instances (as in the section in solutions, Chapter I) he is evidently not entirely at home and the subject is presented in a conventional manner and from a rather antiquated point of view, which contrasts strongly with the rest of the book. The ingenious speculations indulged in, in many instances, are nearly always interesting and highly suggestive, although in some cases (as in section 96) many readers will find it difficult to agree with the author's point of view. On the whole the book, is for the average reader, the most complete and best written treatment of modern atomistics which has yet been produced and is one which every teacher of any branch of chemistry ought to read.

E. W. WASHBURN.

Progressive Chemistry; Practical Experiments for Secondary Schools. By the Teachers of Chemistry in the High Schools of Minneapolis. MISS KATE MACDERMID, 2703 Bloomington Avenue, Minneapolis, Minn. Price, 35 cents.

This collection contains about 60 well selected and well arranged laboratory experiments, each one upon a perforated page. The authors have evidently had two objects in view: to select experiments which require only the simpler forms of apparatus; and to draw from common experience in such a way as to arouse interest in the chemistry of daily life. It is to be regretted that the "spoonful" is used as a measure of quantity and that there is not a more systematic treatment of the tests for the metals. As a whole, however, the collection is admirably suited to its purpose.

B. S. HOPKINS.

Notions fondamentales de Chimie organique. Par CHARLES MOUREAU, Membre de l'Institut et de l'Académie de Médecine, Professeur à l'École supérieure de Pharmacie de l'Université de Paris. Quartrième edition. Paris: Gauthier-Villars, 1913. 9 Fr. 383 pp.

Previous editions of this book have been reviewed in THIS JOURNAL.[1]

[1] **32**, 1362.

The present edition, which is the fourth, contains the more important of the recently discovered facts which should be considered in a book of small size. The order of arrangement of the several classes of compounds is the same as that used in earlier editions; it is severely logical according to the symbols of the elements present. This method often leads to unfortunate results if the student using the book is to be considered. For example, in the chapter on hydrocarbons, the first class of compounds described, the structure of naphthalene is deduced from the transformation of phenylisocrotonic acid into α-naphthol. Under alcohols, borneol and menthol are described, and their graphic formulas given without any statements as to the reasons for their structure or their relation to other compounds. The alphabetical arrangement leads to other curious results. In the chapter on amines, those containing one, two, and more nitrogen atoms are described. This leads to the consecutive treatment of putrescine, cadaverine, and rosaniline. The appearance of the fourth edition is evidence, however, that the book has found a place. It could be used profitably by a student, familiar with organic chemistry, in preparing for an examination, when it is desired to have many facts given in as brief space as possible. JAMES F. NORRIS.

The Application of Physico-Chemical Theory to Technical Processes and Manufacturing Methods. R. KREMANN. Translated from the German by H. E. POTTS and edited by ALBERT MOND. D. Van Nostrand Co., New York. 1913. 212 pp. Price, $3.00.

The author's preface says:

"Physical chemistry used to be considered a somewhat theoretical branch of study, but it has recently developed in such a way as to explain many of the empirical observations of technology and to prove extremely suggestive of many new methods. Such a tendency may be considered one of the highest aims of scientific research.

"The young chemist frequently feels this in his first few terms, and I have found that of all the problems of physical chemistry the beginner shows most interest in those which have a bearing on technical questions. On this account, for some years now I have devoted a special section of my main course on physical chemistry to 'the application of physico-chemical theories to technical problems.'"

The opening chapter discusses the laws of thermo-dynamics and derives the general equation for the free energy of reactions between gases, and discusses its application to several cases: gas engines, the production of producer gas and water gas and the Deacon process. The second and third chapters deal with reaction velocity, catalysis and chemical equilibrium and discuss numerous illustrations among which may be mentioned; the drying of linseed oil, devitrification, the chamber process and the contact process for sulfuric acid and the preparation by caustic soda from

sodium carbonate. The last four chapters discuss about a score of industrial processes of a very varied nature from the standpoint of the phase rule, *e. g.*, the reactions in the iron blast furnaces, the alloys of iron and carbon, the ammonia-soda process, the setting of Portland cement, the manufacture of soap and many others.

Although colloidal solutions receive their share of attention the properties of true solutions are ignored. In the reviewer's opinion the book would be strengthened by a discussion of fractional distillation, of the multiple effect vacuum evaporator, and of the great technical significance of the latent heat of vaporization of water. Electrochemical processes and photochemical processes are omitted entirely.

Students who have had courses in both physical chemistry and industrial chemistry will be aided in making the connection between these branches of chemistry by a study of the book. The book deserves a place on the reference shelves of our college libraries. GRINNELL JONES.

Die Methoden der Massanalyse. VON DR. H. BECKURTS. Unter Mitwirkung von DR. O. LÜNING. pp. 843–1122. 1913. Braunschweig: F. Vieweg & Son. Price, 8 Marks.

This is the third part, comprising the precipitation methods, of the 8th edition of F. Mohr's Lehrbuch. The first edition of this classic of German chemistry was issued in 1855–56; the fourth edition in 1874 covered 774 pages. In the present edition we not only have an account of the methods added since the last edition appeared but also a dissertation on the theory of precipitation analysis, a brief history of precipitation analysis and, in an appendix, a history of volumetric analysis. From this last it appears that the earliest volumetric analysis is described by Dr. F. Home in a book printed in Edinburgh in 1756 which was translated into French in 1762. The German translation which was published at Leipzig in 1762 was entitled "Versuche im Bleichen." The method consisted in adding dilute nitric acid to a weighed amount of pearlash until effervescence ceased. The volume consumed gave a measure of the goodness of the ash.

EDWARD HART.

Practical Methods of Organic Chemistry. By LUDWIG GATTERMANN. Third English edition translated from the eleventh German edition by WILLIAM B. SCHOBER and VAHAN S. BABASINIAN. Macmillan & Co. New York. 1914. XVII—401 pp. Price, $1.75.

More chemists have received their early organic laboratory training from Gattermann's laboratory manual than from any other similar book. This, together with the fact that the manual has lived through eleven German editions is ample evidence that there is something very vital about it. The well chosen, carefully tested directions for laboratory procedure, and the good theoretical discussions won the book a place

in its early editions, and this place it has held up to the present. There is nothing which attests to the vital nature of the parent German book more than the use in many American schools of the imperfect English translation. The English book now enters upon its third edition from the eleventh German edition. Any teacher in intimate daily contact with students in the laboratory is familiar with the ambiguities of the text of the second edition. In spite of this, those of us who have called the attention of class after class to its uncertainties and errors have continued to use the book with the hope that a new edition would soon relieve us of the burden of explanation. The new edition has now come and it is more than a disappointment, it is a real shock to find that it is practically a reprint of the second edition with the new parts of the recent German editions added. Those of us who have grown up with Gattermann, have suffered with the imperfections of the English rendition, have issued typewritten sheets to supplement it, and yet with all this have continued to use it, had hoped for better treatment. Here was an opportunity for a translator and for a publisher to reward their old friends, and win new adherents by issuing a carefully prepared, completely revised and modernized English edition. As it is there is certainly good reason to doubt the power of the new edition to much longer hold the admirers of the old Gattermann. It would be a decided loss to organic chemistry in America to have this book fall behind and become valuable for historical reasons only, yet there is evidence that such will be the case unless there is a change in policy on the part of those in control of the book.

Not all the fault lies with the English edition. The recent German editions are marked by a conservatism not in harmony with the development of the last fifteen years. For example, what effective worker would prepare melting point tubes and take melting points as Gattermann directs? What modern laboratory would allow elementary students to distil ether over a water bath heated by a gas flame protected by a wire gauze, or would compel them to heat water, turn out their flames and then use the hot water? Electricity and steam as safe sources of heat are too common not to find mention in a modern book. In the matter of preparations ultra-conservatism is shown in retaining the old and omitting the new. Opinions may differ widely as to what preparations should be omitted, but there can be no question that some new ones should be added. For example, hydrogenization under the influence of metallic nickel, colloidal platinum or palladium has been so simplified that examples of it have been included in recently published manuals (Noyes, Henle, Dupont, Freundler and Marquis) but the reaction is not found in Gattermann. The same is true of the use of finely divided metallic copper as a catalyst in a host of reactions suitable for elementary students. There is not a single preparation in Gattermann involving the use of the electric

current even in so well known a reaction as the reduction of nitro compounds (cf. Ullmann, Noyes, Henle, Sudborough and James). The preparation of triphenylchloromethane and its conversion into triphenylmethyl and its peroxide are so simple that they have found a place in the newer laboratory manuals (Noyes and Henle), but not in Gattermann. The introduction into the new English edition of a few changes of the type just mentioned would have made the book much more satisfactory. Failing in this, it might at least have been freed from those ambiguities which so disfigured the old edition. For example, "a solution of 10 g. of aniline in 50 g. of water is previously prepared according to the directions already given, and exactly the theoretical amount of hydrochloric acid, after it has been well cooled with ice water, is added to the diazo solution, with stirring" page, 262. "On account of the splendid phenomena, steam should be passed into the oxidation liquid...." page 224. "The melted mass is then poured on a strong copper plate the edges of which have been turned up and of sufficient size so...." page 294. Many more such examples could be quoted.

In spite of all this many of us will continue to use Gattermann in our classes, especially the German edition in so far as our students are able to read it. We will increase the number of supplementary directions given, and will continue to hope that the next English edition will be more clearly written and will include a more progressive list of preparations.

This third English edition is an attempt to reproduce the eleventh German edition. The German edition has been in print for two years and is familiar to most teachers of organic chemistry. It is essentially the same book as the tenth edition which differed from the ninth edition only by the addition of a description of Dennstedt's rapid method of combustion. Two examples of the Barbier-Grignard reaction which have been in the German since the sixth edition, issued in 1903, and a theoretical discussion of steam distillation, extraction, etc., which have been in the German since 1905 appear now for the first time in the English translation.

L. H. CONE.