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d'Albe, E. E. Fournier. Contemporary Chemistry. A survey of the present state, methods and tendencies of chemical science. 5½ x 8¼. cloth. 188 pp. London, 1913. $1.50

Contents: The Situation, a Retrospect; The Molecule; States of Aggregation; Optical Chemistry; The Theory of Solutions; Osmotic Pressure; Affinity; Valency; Chemistry and Electricity; Chemical Analysis; Crystallization; Carbon Compounds; Chemistry and Life; Chemistry of Metals; Industrial Chemistry; The Atomic Theory; Radioactivity; The Chemistry of the Future.

Armitage, F. P. A History of Chemistry. 5¼ x 7¾. cloth. 286 pp. New York, 1912. $2.75

Contents: From Earliest Times to the Downfall of "Iatro-Chemistry; Boyle to Lavoisier and the Establishment of the Quantitative Method; Lavoisier to the Enunciation of the Atomic Theory by Dalton; Dalton's Atomic Theory and the Work of Davy; Berzelius and the Development of the Atomic System; Fortunes of the Atomic Theory Between the Years 1819 and 1844; Development of Organic Chemistry; Radical Theory and Discovery of Substitution; Constitution of Acids and the Differentiation of the Terms Atom, Molecule, and Equivalent; Gerhardt's Unitary System; Valency, the Chemical Nature of Carbon, and the Constitution of Organic Compounds; The Development of Stereo-Chemistry; Inter-Relationship of Atomic Weights; Cannizzaro's Reform, and the Periodic Law.

Brown, James C. A History of Chemistry, from the Earliest Times Till the Present Day. Portrait. *Second Edition, revised.* 106 illustrations. 6 x 9. cloth. 558 pp. London, 1920. $6.00

Crehore, Albert C. The Mystery of Matter and Energy. Recent progress as to the structure of matter. 5 insert plates, 4 folding plates. 4¼ x 6½. 172 pp. $1.00

Crehore, A. C. The Atom. Illustrated. 5 x 7½. cloth. 177 pp. New York, 1920. $2.00

Duncan, R. K. Some Chemical Problems of Today. Illustrated. 5¾ x 8½. cloth. 260 pp. New York, 1911. $2.25

Contents: The Prizes of Chemistry; The Question of the Atom; The Whitherward of Matter; On the Chemical Interpretation of Life; The Beginning of Things; On the Trend of Chemical Invention. Camphor: An Industry Revolutionized; Bread; Relation Between Chemistry and Manufacture in America; Relation of the University of Wisconsin to the State; Progress in Industrial Fellowships.

Duncan, Robert K. The New Knowledge. A simple exposition of the new physics and the new chemistry in their relation to the new theory of matter. 54 illustrations. 5¾ x 8¼. cloth. 292 pp. New York, 1914. $3.00

Contents: Current Conceptions; The Periodic Law; Gaseous Ions; Natural Radio-activity: a New Property of Matter; Resolution of the Atom; Inorganic Evolution; The New Knowledge and Old Problems.

Gibson, Chas. R. Chemistry and its Mysteries. The story of what things are made of told in simple language. Illustrated. 5 x 7½. cloth. 246 pp. Philadelphia, 1919. $1.50

Hale, Harrison. American Chemistry. Illustrated. 5 x 7½. cloth. *In Press*

Harrow, B. Eminent Chemists of Our Time, Their Lives and Work. Illustrated. 5 x 7½. cloth. about 250 pp. *In Press*

A non-technical, interestingly written account of the more remarkable achievements in the

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Cyanogen and Its Compounds; Phenols, Quinones; Carbohydrates; Glucosides; Proteins; Heterocyclis Compounds.

Cady, H. P. General Chemistry. Illustrated. 5½ x 8. cloth. 522 pp. New York, 1916. $2.75

Collins, A. F. The Amateur Chemist. An extremely simple and thoroughly practical chemistry for the home, office, shop and farm. 77 illustrations. 5 x 7½. cloth. 227 pp. New York, 1919. $1.25

Dreaper, W. P. Notes on Chemical Research. An account of certain conditions which apply to original investigations. 5¼ x 7½. cloth. 78 pp. Philadelphia, 1913. $1.75

Contents: Historical Review and Nature of Research; Preliminary Survey and Selection of Subject Matter; General Procedure and Selection of Methods of Investigation; Chemical and General Scientific Investigation; Application of Chemical Research to Industry; Research in Relation to Analysis; General Conclusions.

Dunstan, A. E., and Thole, F. B. Textbook of Practical Chemistry for Technical Institutes. 52 illustrations. 5 x 7½ cloth. 345 pp. London, 1911. $3.00

Contents: Dry Tests; Reactions of the Ions; Commoner Positive Ions; Commoner Acids and Their Negative Ions; "Rare" Elements; Volumetric and Gravimetric Analysis; Gravimetric Estimation of the Commoner Positive Radicals; Of the Commoner Negative Radicals; Complete Quantitative Analysis of Mixtures and Compounds; Simple Gasometry; Tests for the Elements in Organic Compounds; Quantitative Estimation of the Elements in Organic Compounds; Common Organic Estimations; Common Operations in Organic Chemistry; Identification of Simple Organic Substances; Separation and Identification of Mixtures; Physico-Chemical Determinations.

Emery, F. B. Elementary Chemistry. 191 illustrations. 5 x 7½. cloth. 680 pp. Easton, 1909. $1.50

Findlay, Alexander. Chemistry in the Service of Man. *Second Edition.* 3 portraits, 23 diagrams. 6 x 9. cloth. 288 pp. London, 1919. 2.5c

Contents: Definition and Scope of Chemistry; Combustion and the Production of Fire; Chemistry of Illuminants; Energy, Fuel, and Explosives; Cellulose and Cellulose Products; Velocity of Reactions and Catalysis; Fixation of Atmospheric Nitrogen; Glass, Soda, Soap; Electricity and Chemistry; The Colloidal State; Molecular Structure; Synthetic Chemistry; Fermentation and Enzyme Action.

Getman, Frederick H. Outlines of Theoretical Chemistry. *Second Edition, thoroughly revised and enlarged.* 111 illustrations. 5¼ x 8. cloth. 552 pp. New York, 1918. **net, $3.50**

Contents: Fundamental Principles; Classification of the Elements; The Electron Theory; Radioactivity; Atomic Structure; Gases; Liquids; Solids; Solutions; Dilute Solutions and Osmotic Pressure; Association, Dissociation and Solvation; Colloids; Molecular Reality; Thermochemistry; Homogeneous Equilibrium; Heterogeneous Equilibrium; Chemical Kinetics; Electrical Conductance; Electrolytic Equilibrium and Hydrolysis; Electromotive Force; Electrolysis and Polarization; Photochemistry.

Hale, A. J. Practical Chemistry for Engineering Students. With an introductory note by Professor R. Meldola. 58 illustrations. 5½ x 8. cloth. 212 pp. New York, 1912. $1.30

Contents: Weighing; The Balance; General Practical Methods; Physical Change and Chemical Change; Physical Mixtures and Chemical Compounds; Composition of Air and Water; Oxidation and Reduction; Oxides and Hydroxides; Bases. Acids, and Salts; Determination of Chemical Equivalents; Sulphides; Compounds of the Elements with Sulphur; Chlorine and Its Compounds; Carbon Dioxide, Carbonates, and Carbides; Carbon and Carbonaceous Substances; Sulphites and Sulphates, Nitrates and Nitrites; Chlorates; Compounds of Phosphorus, Arsenic, Silicon, Boron, Chromium, Tungsten, and Manganese; Mineral Substances Used as Pigments; Simple Qualitative Analysis; Volumetric Analysis; Quantitative Analysis for Engineers; Tables of Useful Data.

Hart, Edward. Chemistry for Beginners. In two volumes. *Fourth Edition.* Illustrated. 5 x 7. cloth. Easton, 1911.
Vol. I. Inorganic. 55 illustrations. 222 pp. $1.00
Vol. II. Organic. 11 illustrations. 102 pp. $0.50

Hendrick, Ellwood. Everyman's Chemistry. The chemist's point of view and his recent work told for the layman. 5½ x 8¼. cloth. 374 pp. New York, 1917. **net, $2.00**

Contents: General and Introductory; Inorganic Chemistry; Organic Chemistry.

Hildebrand, Joel H. Principles of Chemistry. Illustrated. 5 x 7½. cloth. 322 pp. New York, 1918. $2.00

Contents: Kinds of Matter; Gas Laws and the Kinetic Theory; Weight Relations in Chemical Reactions; Atomic Theory; Volume of Gases; Molecular Weights; Types of Chemical Compounds; Valence; Writing Equations; Chemical Nomenclature; Quantitative Relations Involving Solutions of Known Concentration; Thermochemistry; Behavior of Substances Dissolved in Water; Ionic Theory; Speed of Chemical Reactions; Chemical Equilibrium; The Effect of Concentration, Properties which may Affect Concentration, The Effect of Pressure and Temperature; Oxidation and Reduction; Periodic System; Constitution of the Atom; Dispersed Systems.

Hopkins, Nevil M. The Outlook for Research and Invention. With an appendix of problems awaiting solution. Illustrated by seven full-page photogravure portraits. 5¼ x 7¾. cloth. 254 pp. New York, 1919. $2.00

Contents: The Spirit of Research; Men of Research and Their Development; Some Indiffer-

ence of the Past; American War Research; The Education for Research; Some Borderline Limits; Research in the Factory; The Making and Protecting of Inventions; Appendix: List of Practical Problems Awaiting Solution.

Lassar-Cohn, Dr. Chemistry in Daily Life. Popular lectures translated by M. M. Pattison Muir. *Fifth Edition, revised and augmented.* 25 illustrations. 6 x 9. cloth. 317 pp. London, 1916. $2.50

Lewes, V. B., and Brame, J. S. S. Service Chemistry. Being a short manual of chemistry and metallurgy and their application in the naval and military services. *Fifth Edition.* 66 illustrations, 6 plates. 5½ x 8½. cloth. 592 pp. London, 1920. $6.75

Contents: Introductry; Theoretical; Hydrogen; Chemistry of the Galvanic Battery; Oxygen; Oxides and Salts; Combustion; Water and its Properties; Impurities in Water; Boiler Incrustations; Carbon and some of its Compounds with Hydrogen; Petroleum; Coal Distillation; The Oxides of Carbon; Fuel; Nitrogen and its Compounds; The Atmosphere and Ventilation; Explosives — Gunpowder; Explosives — Gun-cotton and Nitro-Glycerin; Smokeless Powders; High Explosives, Fulminates and Blasting Explosives; Sulphur and Sulphur Compounds; The Halogens; Silicon and its Compounds; Phosphorus and Arsenic; The Metals; Iron and Steel; Copper; Lead, Tin, Zinc, Cadmium, and Mercury; Aluminum, Gold, Silver, Platinum; Nickel, Cobalt, Manganese, Chromium, Antimony and Bismuth; Metals of the Alkaline Earths; Alloys; Commercial Alloys; The Corrosion of Metals, Protection from Corrosion, Fouling of Ships, and its Prevention, Pigments.

Martin, Geoffrey. Modern Chemistry and Its Wonders. A popular account of some of the more remarkable recent advances in chemical science for general readers. 29 illustrations, 36 plates. 5¼ x 8. cloth. 368 pp. New York, 1915. $3.00

Contents: The Wonderland of Modern Chemistry; The Romance of Some Simple Nitrogen Compounds; The Romance of Explosives; Radium and the New Chemistry; The Mystery of the Periodic Law; The Radio-Elements and the Periodic Law; Modern Alchemy; Applications of Electricity to Chemistry; The Romance of the Hydrocarbons: Of Sugar, of Alcohol, of Coal-Tar, of Common Salt, Metallic Firestones; Artificial Precious Stones.

Martin, Geoffrey. Researches on the Affinities of the Elements, and on the Causes of the Chemical Similarity or Dissimilarity of Elements and Compounds. Fully illustrated. 6½ x 9½. cloth. 302 pp. London, 1905. net, $4.00

Contents: Method of Describing the Properties of an Element by Means of a Characteristic Surface; Mechanical Cause of the Chemical Similarity of Elements and Radicles; Bearing of the Preceding Facts on the Theory of Solution; Normal Affinity Surfaces of the Elements: Connection Between the Form of the Affinity Surfaces of the Elements and Their Chemical Properties and on the Wave Law of Affinity in the Periodic System; Theory of the Alteration in the Properties of Elements and Compounds.

Martin, G. Triumphs and Wonders of Modern Chemistry. A popular treatise on modern chemistry and its marvels, written in non-technical language for general readers and students. 76 illustrations. 24 plates. 5½ x 8¼. cloth. 378 pp. New York, 1911. $3.00

Contents: The Mystery of Matter; Underworld of Atoms; Distribution and Evolution of the Elements; Wonders of Chemical Change; Water; Element Hydrogen; The Air; Oxygen, the Life Supporting Element; The Element Nitrogen; Element Carbon; Carbon Dioxide; Silicon and its Compounds; Sulphur and its Compounds; Phosphorous Group of Elements; Fire, Flame and Spectral Analysis.

Mathewson, C. H. First Principles of Chemical Theory. 6 x 9. cloth. 130 pp. New York, 1908. $1.00

Meyer, L. Outlines of Theoretical Chemistry. Translated by P. P. Bedson and W. C. Williams. *Second Edition.* Illustrated. 6 x 9. cloth. 254 pp. London, 1899. $2.75

Muir, M. M. P. A Course of Practical Chemistry. In two parts. Illustrated. 4¾ x 7½. cloth.

Part I. Elementary. 319 pp. London, 1897. $1.50

Part II. Intermediate 234 pp. London, 1899. $1.50

Ostwald, Wilhelm. Introduction to Chemistry. Authorized translation by W. T. Hall and Robert S. Williams. 74 illustrations. 6 x 8¼. cloth. 378 pp. New York, 1911. net, $1.50

Contents: Substances and Mixtures; Physical Transformations; Solutions; Chemical Reactions; Oxygen and Hydrogen; Halogens and Salts; Sulphur and the Alkaline Earth Metals; Nitrogen and Related Substances; Carbon; The Earth's Crust; Heavy Metals of the Iron Group; Heavy Metals of the Copper Group; Tin, Gold and Platinum.

Ostwald, W. The Fundamental Principles of Chemistry. An introduction to all textbooks of chemistry. Authorized translation by Harry W. Morse. 65 illustrations. 6 x 9. cloth. 361 pp. New York, 1909. $2.40

Contents: Bodies, Substances, and Properties; The Three States; Mixtures, Solutions, and Pure Substances; Change of State and Equilibrium; Solutions; Elements and Compounds; The Law of Combining Weights; Colligative Properties; Reaction Velocity and Equilibrium; Isomerism; The Ions.

Ostwald, W. Outlines of General Chemistry. Translated by W. W. Taylor. *Third Edition.* 6 x 9. cloth. 613 pp. London, 1912. $7.50

Contents: Matter; Laws of Conservation;

States of Aggregation; Gases; Specific Heat of Gases and the First Law of Energetics; Liquids; Solids; Staichiometry; Equivalents and Combining Weights; Gay-Lussac's Law; Dilute Solutions; Chemical Constitution; Chemical Thermodynamics; Thermochemistry; Chemical Kinetics; Chemical Equilibrium of the First Order, of the Second Order; Of the Third and Higher Order; Electrochemistry; Electrolytic Conduction; Ions; Electrolytic Equilibrium; Voltaic Cells; Electrolysis and Polarisation; Microchemistry: Theory; Disperse Systems; Special Microchemitry; The Kinetic Theory of Gases; Photochemistry; Radiant Energy; Chemical Action of Light; Conduction in Gases and Radioactivity; Chemical Affinity; Methods Stoichiometric Relations.

Ostwald, W. Scientific Foundations of Analytical Chemistry. Translated by George McGowan. *Third English Edition,* translated from the *Fourth German Edition,* with further alterations and additions by the author. Illustrated. 5 x 7½. cloth. 247 pp. London, 1908. $2.75

Palmer, John D. Practical Test-Book of Chemistry. 5 x 7¼. cloth. 100 pp. New York, 1907. $1.50

Perkin, F. M., and Jaggers, E. M. Textbook of Elementary Chemistry. 77 illustrations. 4¾ x 7. cloth. 342 pp. London, 1917. $1.00

Contents: Introduction; Examination of Water; Metric System; Distillation; Thermometers; Freezing, Boiling and Melting Points; The Atmosphere; Chemical Properties of the Atmosphere; Chemical Properties of Water; Hydrogen and Oxygen; Quantitative Examination of Chalk; Carbon and Its Oxides and Compounds with Hydrogen; Flame and Combustion; Compounds of Nitrogen; Hydrochloric Acid and the Halogens; Sulphur and Its Compounds; Phosphorus and Phosphorous Compounds; The Metals.

Pilcher, Richard B. The Profession of Chemistry. 5 x 7½. cloth. 215 pp. London, 1920. $2.00

Contents: Preliminary Education; Pharmacists and Chemists; Professional Training; Prospects and Conditions of Practice; Professional Organizations; Public Analysts and Official Agricultural Analysts; Professional Procedure; Industrial Chemistry; Chemistry and the State; Teaching to the State; Women in Professional Chemistry; Chemists in War.

Pilcher, R. B., and Jones, F. B. What Industry Owes to Chemical Science. With an introduction by Sir George Beilby. 5 x 7½. cloth. 150 pp. London, 1918. $1.50

Contents: Minerals and Metals; Heavy Chemicals and Alkali; Coal and Coal Gas; Dyes, Explosives, and Cellulose; Oils, Fats and Waxes; Leather; Rubber; Mortar and Cement; Refractory Materials; Glass and Enamels; Pottery and Porcelain; Chemical Products; Photography; Agriculture and Food; Brewing; Alcohol, Wines and Spirits; Tobacco, Inks, Pencils, etc.; Gases; Government Chemistry; Conclusions; Bibliography.

Roscoe, H. E., and Schorlemmer, C. A Treatise on Chemistry. In two volumes. Illustrated. 6 x 9. cloth.

Vol. I., The Non-Metallic Elements. *Fourth Edition,* completely revised with the assistance of Dr. J. C. Cain. 226 illustrations. 967 pp. London, 1911. *Reprinting*

Contents: Historical Introduction; General Principles of the Sciences; Physical Determination of the Atomic Weight of Monatomic Gases; Chemical Nomenclature; The Non-Metallic Elements; Comparison of Metrical with English Measures.

Vol. II., The Metals. *Fifth Edition, completely revised.* 259 illustrations. 1483 pp. London, 1913. $9.00

Contents: The Metals; Determination of Atomic Weights of Metals; Valency of the Elements; Crystalline Form and Colloidal Solutions of Metals; Alloys and Amalgams; Constitution of Salts, Acids and Bases; Solubility, Fusibility and Volatility of Salts; Generic Properties of Salts; Chemical Change and the Law of Mass Action; Spectrum Analysis; Crystallography; Systematic Description of the Metals and Their Derivatives by Groups; The Radioactive Elements.

Sadtler, Samuel S. Chemistry of Familiar Things. *Second Edition, revised.* 6 illustrations, 23 plates. 5¾ x 8¾ cloth. 334 pp. Phila., 1916. $2.25

Contents: Brief Chemical Outline; Historical Development of Chemistry; Periodic Systems of Elements; Chemistry and Production of Light; Heat, Combustion, and Insulation; Air, Oxidation, and Ventilation; Water; Alkalies and Salts; Metals; Gold and Silver; Chemistry of the Earth's Evolution; Soil and Its Conservation; Food Elements and Food Classes; Individual Foods; Animal Feeding; Fermentation; Chemistry of the Body; Soaps, Solvents, and Paints; Paper and Textiles; Leather and Rubber; Silicious Substances and Glass; A Few Important Definitions.

Smith, Alexander. A Textbook of Elementary Chemistry. 100 illustrations, 6 plates. 5¼ x 7½. cloth. 448 pp. New York, 1914. $1.35

Smith, Alexander. Intermediate Textbook of Chemistry. Illustrated. 6 x 9. cloth. 526 pp. New York, 1919. $2.60

Smith, Alexander, and Hall, Edwin H. The Teaching of Chemistry and Physics in the Secondary School. Illustrated. 5¼ x 8. cloth. 377 pp. New York, 1919. $1.75

Contents: The Teaching of Chemistry in the Secondary School; Introduction; Chemistry in the Curriculum; The Introduction of the Subject; Instruction in the Laboratory; Instruction in the Class-Room; Some Constituents of the Course; The Laboratory, Equipment, and Illustrative Material; The Teacher, His Preparation and Development; The Teaching of Physics in the Secondary School; Whether to be a Teacher of Physics; Preparation for Teaching; The Teacher as Student, Observer, and Writer; Problems of

Laboratory Practice; School Text-Books of Physics; Discovery, Verification, or Inquiry?; The Technique of Laboratory Management; Lectures and Recitations; Physics in Primary and Grammar Schools; Physics in Various Kinds of Secondary Schools; On the Presentation of Dynamics; Plan and Equipment of a Laboratory; Physics Teaching in other Countries; Index.

Smith, H. Carlton. Lecture-Notes on Chemistry for Dental Students. Including dental chemistry of alloys, amalgams, etc., such portions of organic and physiological chemistry as have practical bearing on the subject of dentistry. An inorganic qualitative analysis with specially adapted blowpipe and microscopical tests, and the chemical examination of urine and saliva. *Third Edition, revised and enlarged.* Illustrated. 6 x 9. cloth. 466 pp. New York, 1917. net, $3.00

Stewart, Alfred W. Chemistry and Its Borderland. Illustrated, 3 plates. 5½ x 8. cloth. 327 pp. N. Y., 1914. $2.00

Contents: Ramification of Chemistry; Allies of Chemistry Among the Sciences; Relations Between Chemistry and Industry; Immuno-Chemistry and Some Kindred Problems; Colloids and the Ultra-Microscope; Work of the Spectroscope; Chemistry in Space; Inert Gases and Their Place Among the Elements; Radium; Niton; Transmutation; Nature of the Elements; Chemical Problems of the Present and Future; Methods and Organization of Chemical Research; Appendices.

Tilden, Wm. A. An Introduction to the Study of Chemical Philosophy. Illustrated. 5 x 7½. cloth. 375 pp. London, 1902. $1.80

Tillman, S. E. Descriptive General Chemistry. A text-book for a short course. *Fourth Edition, revised.* Illustrated. 6 x 9. cloth. 469 pp. New York, 1907. $3.00

Wadmore, J. M. Elementary Chemical Theory. Illustrated. 5¼ x 7¾. cloth. 290 pp. New York, 1912. net, $1.50

Contents: Gravimetric Laws of Chemical Reactions; The Atomic Hypothesis; Law of Reacting Gas Volumes; Avogadro's Hypothesis; Vapor Densities—Molecular Weights; Sections of Atomic Weights; Dulong and Petit's Law of Specific Heat; Crystalline Shape—Isomorphism; The Periodic Law; Constitution of the Elements; Radio-Activity; Formula and Equations; Constitution and Configuration of Compounds; The Gas Laws and Kinetic Hypothesis; Critical Temperature and Liquefaction of Gases; Properties of Pure Liquids; Solutions; Freezing and Boiling Points of Solutions—Molecular Weights of Dissolved Substances; Liquid Diffusion—Osmotic Pressure; Electrolysis—Ionization; Degree of Ionization—Equilibrium of Electrolytes; Atomic Weights.

Watkins, C. A. Chemistry for the Engineer, Electrician and the Practical Man. Illustrated. 5½ x 7½. cloth. 181 pp. Chicago, 1913. $2.00

Contents: Air. Its Role in the Development of Chemistry; Its Constituents and Their Functions. *Water.* Its Composition and One of Its Constituents; As a Natural Substance; Definite Proportions and Chemical Formula; Chemical Equation. *Carbon.* The Element. *Fuels.* Their Combustion; Heating Value; General Principles; Calorimetry; Technology of Fuels; Combustion of Coal Under the Boiler; Chemical Talk.

Watts' Dictionary of Chemistry. Revised and entirely rewritten by H. F. Morley and Pattison Muir. 4 vols.

Vol I. *(A-Ch).* 6 x 9. cloth. 772 pp. London, 1911. net, $14.50

Vol. II. *(Ch-In).* 6 x 9. cloth. 772 pp. London, 1912. net, $14.50

Vol. III. *(In-Ph).* 6 x 9. cloth. 868 pp. London, 1912. net, $16.00

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Wilson, F. J., and Heilbron, I. M. Chemical Theory and Calculations. An elementary textbook. Illustrated, 3 folding plates. 5 x 7¼. cloth. 145 pp. $1.75

Contents: The Metric System; Density and Specific Gravity; Thermometry; The Gas Laws; Solubility of Gases in Liquids; The Atomic Theory; Formulæ and Equations; Calculations of Percentage Composition of a Compound from its Formula; Calculation of Empirical Formula from Percentage Composition; Equivalents or Combining Weights; Atomic Weights; Valency; Periodical Classification of the Elements; Law of Mass Action; Determination of Vapor Densities; Osmotic Pressure and Molecular Weight Determination; Dissociation of Gases; Electrolytic Dissociation; Diffusion of Gases; Quantitative Analysis; Thermochemistry.

INORGANIC CHEMISTRY

Blanchard, Arthur A. Synthetic Inorganic Chemistry. A laboratory course for first year college students. *Second Edition with Supplement.* Illustrated, diagrams. 5 x 7½. cloth. 225 pp. New York, 1916. $1.50

Cady, Hamilton P. Inorganic Chemistry. Illustrated. 6 x 8¼. cloth. 643 pp. New York, 1916. $3.00

Caven, R. M., and Lander, G. D. Systematic Inorganic Chemistry. A text-book for advanced students. 6 x 8¾. cloth. 350 pp. N. Y., 1907. $2.25

After an introductory chapter on the atomic and molecular theories and valency, an account of the periodic law is given, followed by an examination of the successive groups so as to show the variation of properties in accordance with the provisions of the law; in the descrip-

tion of the groups, the elements and their analogous compounds are dealt with comparatively for the purpose of illustrating the manner of variation. The latest available material has been utilized, and brief accounts are given in appendices of the no-valency elements of the helium group, of views on the origin of elements, and of radioactivity.

Darling, Elton R. Inorganic Chemical Synonyms and Other Useful Chemical Data. 4½ x 7¼. cloth. 109 pp. New York, 1919. $1.00

Contents: Introduction; The Elements; Specific Gravity and Temperature Comparison; Standards of Weights and Measures; Chemical Synonyms: Aluminum, Antimony, Arsenic, Barium, Bismuth, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead (Plumbum), Magnesium, Manganese, Mercury (Hydrargyrum), Nickel, Potassium, Silver, Sodium, Zinc, Miscellaneous Synonyms, Hydrogen Compounds; Cross Index of Chemical Terms.

Friend, J. Newton (Editor). A Text-book of Inorganic Chemistry. 88 illustrations.

Vol. I. An Introduction to Modern Inorganic Chemistry. *Second Edition,* revised by J. N. Friend, H. F. V. Little and W. E. S. Turner. 6½ x 9. cloth. 405 pp. London, 1917. $4.50

Vol. IV. Aluminium and Its Congeners, Including the Rare Earth Metals. By H. F. V. Little. 2 plates, 44 illustrations. 6½ x 9. cloth. 507 pp. London, 1917. net, $5.00

Volume V. Carbon and its Allies. By R. M. Caven. 15 illustrations. 6¼ x 9¼. cloth. 489 pp. London, 1917. $5.00

Vol. VIII. The Halogens and Their Allies. By G. Martin and E. A. Dancaster. 30 illustrations. 6½ x 9. cloth. 356 pp. London, 1915. $4.00

Vol. IX. Part I. Cobalt, Nickel, and the Elements of the Platinum Group. By J. Newton Friend. 4 illustrations. 6 x 9. cloth. 384 pp. London, 1920. $6.00

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Vol. VII. Sulphur and Its Congeners. By D. F. Twiss and A. V. Eldridge.

Hart-Smith, J. Recent Discoveries in Inorganic Chemistry. 6 x 9. cloth. 91 pp. New York, 1919. $1.40

An account of the more important discoveries in inorganic chemistry during the past fifteen years. Intended as a supplementary text book.

Hinds, J. I. D. Inorganic Chemistry. With the elements of physical and theoretical chemistry. *Second Edition, thoroughly revised.* 76 illustrations. 6 x 9. cloth. 659 pp. New York, 1905. $3.50

Holleman, A. F., and Cooper, H. C. A Text-book of Inorganic Chemistry. *Fifth Edition, completely revised.* 80 illustrations. 6¼ x 9¼. cloth. 529 pp. New York, 1916. $3.00

Contents: Physical and Chemical Phenomena; Chemical Operations; The Elements; Conservation of Matter; Compounds and Mixtures; Explanation of the Constant Composition of Compounds; Atomic Theory; Stoichiometrical Calculations; Molecular Weight from the Measurement of the Depression of the Freezing-point and Elevation of the Boiling-point; Dissociation; Electrolytic Dissociation; Thermochemistry; Methods of Determining Atomic Weights; Periodic System of the Elements; Salt Solutions; Acidimetry and Alkalimetry; Spectroscopy; Electrochemistry; Metallic State and Intermetallic Compounds; Werner's Extensions of the Notion of Valence; Atomic Structure.

Howe, J. L. Inorganic Chemistry for Schools and Colleges. *Second Edition.* 6 x 9. cloth. 430 pp. Easton. $3.00

Contents: Hydrogen, Oxygen and Water; Salt, Sodium and Chlorin; Classification of the Elements; The Elements; The Compounds of Hydrogen; The Halids; Oxids and Sulfids; Binary Compounds of the Compounds of Hydrogen; Binary Compounds of the Elements and Classification of the Elements; Alloys; Outlines of Metallurgy.

Jones, Harry C. Elements of Inorganic Chemistry. *Third Edition.* Illustrated. 5¼ x 7¾ cloth. 356 pp. London, 1907. net, $1.25

Jones, Harry C. Principles of Inorganic Chemistry. *Third Edition.* Illustrated 6 x 9. cloth. 541 pp. N. Y., 1906. $3.50

Contents: Generalizations; Oxygen; Ozone; Hydrogen; Water and Hydrogen, Dioxide; Determination of Relative Atomic Weights; Determination of the Molecular Weights of Gases and of Dissolved Substances; Osmotic Pressure and the Theory of Electrolytic Dissociation; Chlorine; The Periodic System; Bromine, Iodine, Fluorine; Sulphur; Selenium and Tellurium; Nitrogen; Neutralization of Acids and Bases; Atmosphere Air and Certain Rare Elements Occurring in It; Phosphorus; Arsenic; Antimony; Bismuth; Vanadium, Columbium Neodymium, Prascodymium, Tantalum; Carbon; Silicon; Germanium; Titanium; Zirconium, Cerium and Thorium; Boron; The Metals; The Alkali Metals; Lithium, Sodium, Potassium, Rubidium and Caesium; Calcium; Strontium and Barium; Magnesium Group; Glucinum, Magnesium, Zinc, Cadmium, Mercury; The Earth Metals; Iron; Cobalt and Nickel; Manganese; Chromium; Molybdenum; Tungsten; Uranium; Copper; Silver and Gold; Lead, Tin; Ruthenium; Rhodium, Palladium, Osmium, Iridium, Platinum.

Kipping, F. S., and Perkin, W. H. Inorganic Chemistry. Parts I. and II. bound in one volume. Illustrated, 2 folding plates. 5 x 7¼. cloth. 766 pp. Philadelphia, 1911. $2.50

Mellor, J. W. Introduction to Modern Inorganic Chemistry. *New Edition.* 232 illustrations. 5½ x 7¾. cloth. 700 pp. New York, 1915. $2.50

Contents: Physical Properties of Atmospheric Air; Chemical Nature of Air; Ice, Water, and Steam; Mixtures and Compounds; Three Gases: Hydrogen, Oxygen, Nitrogen; Atomic Hypothesis, Composition of Water; Chlorine and Some of Its Compounds; Revision of the Atomic Hypothesis; Acids Bases and Salts; Chalk, and the Products of its Decomposition; Combustion and Flame; Energy and Matter; Relations of Chlorine, Iodine, Bromine, and Fluorine; Oxygen Compounds of the Halogens; Sulphur and its Compounds; Nitric Acid and the Nitrates; The Alkaline Earths; Magnesium, Zinc, Cadmium, and Mercury; Alkali Metals; Copper, Silver and Gold; Ionic Hypothesis; Chromium and its Compounds; Manganese and its Compounds; Iron, Nickel, and Cobalt; Boron, Aluminium, and Related Elements; Nitrogen Oxides; Ammonium and Air; Phosphorus, Arsenic, Antimony and Bismuth; Carbon; Compounds of Carbon with Hydrogen and Nitrogen; Compounds of Nitrogen and Carbon; Silicon; Tin and Lead; Platinum Metals; Classification of the Elements; Some Organic Compounds.

Mellor, J. W. Modern Inorganic Chemistry. 334 illustrations. 5¼ x 8¼. cloth. 928 pp. London, 1916. $3.50

Contents: Introduction; Combination by Weight; Water and Hydrogen; Combination by Volume; The Physical Properties of Gases; Hydrogen; The Kinetic Theory of Atoms and Molecules; Oxygen; Water; Crystals and Crystallization; Ozone and Hydrogen Peroxide; Osmotic Pressure and Related Phenomena; Chlorine and Hydrogen Chloride; Relations of Chlorine, Iodine, Bromine, Fluorine; Oxides and Oxyacids of Chlorine, Bromine and Iodine; Electrolysis and the Ionic Hypothesis; The Alkaline Earths; Beryllum, Mangesium, Zinc, Cadmium and Mercury; The Alkali Metals; Electrical Energy; Copper, Silver, Gold; Sulphur and its Hydrogen Compounds; Compounds of Sulphur with Oxygen; Chromium, Molybdenum, Tungsten. Uranium, Manganese; Iron, Nickel. Cobalt; Oxygen Compounds of Nitrogen; Compounds of Nitrogen and Hydrogen; Nitrogen and Atmospheric Air; Phosphorus; Oxides and Acids of Phosphorus; Arsenic, Antimony and Bismuth; Boron, Aluminium and Related Elements; Platinum Metals; Oxides of Carbon; Hydrocarbons; Allotropic Forms of Carbon; Combustion and Flame; Compounds Containing Carbon and Nitrogen; Silicon; Tin, Lead, and Some Related Elements; Classification of the Elements; Radioactivity.

Monographs on Inorganic and Physical Chemistry. Edited by A. Findlay. 5¾ x 8¾.

Desch, C. H. Intermetallic Compounds. Illustrated. 116 pp. London, 1914. $1.50

Dunstan, A. E., and Thole, F. B. The Viscosity of Liquids. 91 pp. London, 1914. $1.50

Findlay, Alexander. Osmotic Pressure. *Second Edition.* 127 pp. London, 1919. $2.25

Le Bas, G. Molecular Volumes of Liquid Chemical Compounds. 275 pp. London, 1915. $3.00

Price, T. S. Per-Acids and Their Salts. 126 pp. London, 1912. $1.40

Soddy, F. Chemistry of the Radio-Elements. Part I. *Second Edition.* 151 pp. London, 1914. $1.80
Part II. London, 1914. *Reprinting*

Turner, W. E. S. Molecular Association. 171 pp. London, 1915. $2.25

Newth, G. S. Elementary Inorganic Chemistry. A laboratory manual for use in organized science schools. Illustrated. 4¾ x 7½. cloth. 288 pp. London, 1913. $1.30

Newth, G. S. A Text-book of Inorganic Chemistry. Illustrated. 5 x 7½. cloth. 737 pp. London, 1918. $2.75

Contents: Introductory Outlines; The Study of Four Typical Elements; Hydrogen, Oxygen, Nitrogen, Carbon, and their More Important Compounds; The Systematic Study of the Elements, Based upon the Periodic Classification.

Senter, Geo. A Text-Book of Inorganic Chemistry. *Fourth Edition.* 90 illustrations. 5 x 7½. cloth. 631 pp. London, 1918. $3.00

Contents: Illustrations of Chemical Change; Conservation of Mass and Energy; Chemical Attraction; The Chemical Elements; Hydrogen; General Properties of Gases; Oxygen; Combustion; Water; General Properties of Liquids; Solution; Chlorine and Hydrochloric Acid; Laws of Chemical Combination; The Atomic Theory; Determination of Atomic Weights; Combining Weights and Chemical Equivalents; Formulae and Equations; Valency; Ozone and Hydrogen Peroxide; Thermochemistry; The Halogen and Halogen Acids; Chemical Equilibrium; Thermal Dissociation; Oxides and Oxygen Acids of the Halogens; Osmotic Pressure and Molecular Weight in Solution; Nitrogen, the Atmosphere and the Elements of the Helium Group; Compounds of Nitrogen with Hydrogen and with the Halogens; Oxydes and Oxyacids of Nitrogen; Phosphorus; Electrolysis and Electrolytic Dissociation; Sulphur, Selenium and Tellurium; Carbon; Combustion and Flame; Silicon and Boron; Classification of the Elements; The Periodic System; General Properties of the Metals and Their Compounds; The Alkali Metals; Metals of the Copper Group, Alkaline Earths, of the Zinc, Aluminum, Tin, Arsenis, Chromium, Manganese, Iron and Platinum Groups; Radio-Activity.

Segerblom, Wilhelm. Tables of Properties of Over Fifteen Hundred Common Inorganic Substances. *Second Edition, revised.* 6½ x 9¼. cloth. 154 pp. Exeter, N. H., 1916. **net, $3.00**

Senter, G. A Textbook of Inorganic Chemistry. 89 illustrations. 5½ x 7½. cloth. 593 pp N. Y., 1912. $3.00

Contents: Illustrations of Chemical Change; Conservation of Mass and Energy; Chemical Attraction; The Chemical Elements; Hydrogen; General Properties of Gases; Oxygen; Combustion; Water; General Properties of Liquids; Solution; Chlorine and Hydrochloric Acid; Laws of Chemical Combination; The Atomic Theory; Determination of Atomic Weights; Combining Weights and Chemical Equivalents; Formulae and Equations; Valency; Ozone and Hydrogen Peroxide; Thermochemistry; The Halogen and Halogen Acids; Chemical Equilibrium; Thermal Dissociation; Oxides and Oxygen Acids of the Halogens; Osmotic Pressure and Molecular Weight in Solution; Nitrogen, the Atmosphere and the Elements of the Helium Group; Compounds of Nitrogen with Hydrogen and with the Halogens; Oxydes and Oxyacids of Nitrogen; Phosphorus; Electrolysis and Electrolytic Dissociation; Sulphur, Selenium and Tellurium; Carbon; Combustion and Flame; Silicon and Boron; Classification of the Elements; The Periodic System; General Properties of the Metals and Their Compounds; The Alkali Metals; Metals of the Copper Group, Alkaline Earths, of the Zinc, Aluminum, Tin, Arsenis, Chromium, Manganese, Iron and Platinum Groups; Radio-Activity.

Smith, Alex. Introduction to Inorganic Chemistry. *Third Edition, rewritten.* Illustrated, diagrams. 5½ x 8¾. cloth. 939 pp. New York, 1917. $3.50

Voge, A. L. The Inorganic Compounds (14,000). Clast according to common properties by means of a decimal symbolization. In two parts. Part I., Introduction, Code, Systematics. Part II., Condenst-Formula Index. 6 x 9¼. cloth. 726 pp. Zurich, 1911. net, $12.00

Simplified spelling is used in this work.

Werner, A. New Ideas on Inorganic Chemistry. Translated with the author's sanction from the second *German Edition* by E. P. Hedley. 6 x 9. cloth. 284 pp. London, 1911. $3.50

ORGANIC CHEMISTRY

Alexeyeff, P. General Principles of Organic Syntheses. Translated and revised by J. M. Matthews. 6 x 9. cloth. 254 pp. N. Y., 1906. $3.50

Contents: Oxidation; Reduction; Substitution; Removal of Radicals; Direct Fixation of Groups; Fixations Accompanied by a Decomposition of the Molecule; Condensations; Types of Syntheses; Isomerization.

Barnett, E. DeB. The Preparation of Organic Compounds. *Second Edition.* 54 illustrations. 5½ x 8½. cloth. 288 pp. Philadelphia, 1920. $3.25

Contents: Apparatus, Methods of Manipulation, Reagents; Hydrocarbons; Halogen Compounds; Alcohols, Phenols, and Mercaptans; Aldehydes, Ketones, Quinones (and Quinoneimides) and Some Other Derivatives of the Same; Ethers and Sulphides; Carboxylic Acids, Their Anhydrides and Esters; Nitriles or Cyanides; Nitroso and Nitro-Compounds; Amino-Compounds; Diazo-, Diazoamino-, Diazoimino-, Azo-, Azoxy- and Hydrazo-Compounds: Sulphinic and Sulphonic Acids; Miscellaneous Types.

Barrowcliff, M., and Carr, F. H. Organic Medicinal Chemicals. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Benedict, Francis G. Elementary Organic Analysis. The determination of carbon and hydrogen. 15 illustrations. 5½ x 8. cloth. 87 pp. Easton, 1912. $1.00

Contents: Preparation of Oxygen; Compressed Oxygen; Gasometers or Gasholders; Air; Purifying Apparatus; Rubber Tubing and Stoppers; Combustion Furnaces; Combustion Tubes; Oxidizing Agents; Filling the Combustion Tube; Boats; Absorbing Agents; Absorbing Apparatus; Cleaning and Weighing Absorbing Apparatus; Weight of Material Used; Burning Out the Combustion Tube; General Process of the Combustion; Combustion of Nitrogenous Substances; Combustion of Bodies Containing the Halogens; Combustion of Bodies Containing Sulphur; Combustion of Bodies Containing the Alkali Metals; Combustion of Difficulty Combustible Bodies; Combustion of Liquids and Volatile Bodies; Combustion of Explosive Bodies; Calculation of Results; Appendix.

Bernthsen, A. A Textbook of Organic Chemistry. Edited and revised to date by J. J. Sudborough. Illustrated. 5¼ x 7½. cloth. 735 pp. N. Y., 1912. $3.50

Contents: Aliphatic or Open-Chain Compounds. Hydrocarbons; Haloid Substitution Products of the Hydrocarbons; Monohydratic Alcohols or Alkyl Hydroxides; Derivatives of the Alcohols; Aldehydes and Ketones; Monobasic Fatty Acids; Acid Derivatives; Polyhydric Alcohols; Hydro Monobasic Acids and Compounds Related to Them; Dibasic Acids; Polybasic Acids; Cyanogen Compounds; Carbonic Acid Derivatives Carbohydrates; Chemistry of the Cyclic Compounds. *Carbocyclic Compounds.* Polymethylene Derivatives; Benzene Derivatives; Benzene Hydrocarbons; Halogen Derivatives; Nitro-Substitution Products of the Aromatic Hydrocarbons; Amino-Derivatives or Arylamines; Diazo- and Azo-Compounds; Hydrazines; Aromatic Sulphonic Acids; Phenols; Aromatic Alcohols, Aldehydes and Ketones; Aromatic Acids: Compounds Containing Two or More Benzene Nuclei; Diphenyl Group; Diphenyl-Methane Group; Dibenzyl Group; Triphenyl-Methane Group; Compounds with Condensed Benzene Nuclei; Anthracene and Phenanthrene Groups. *Heterocyclic Compounds.* Furane Group; Compounds Formed by the Condensation of a Benzene Nucleus with a Furane, Triophene, or Pyrrole Ring; Pyrazole Group; Six-Membered Heterocyclic Rings; Quinoline and Acridine Groups; Six-Membered Heterocyclic Compounds with Four Carbon Atoms in Ring; Alkaloids; Terpenes and Camphors; Resins; Glucosides; Albumins; Physiological Chemistry; Reduction; Oxidation; Stereochemistry of Sulphur; Selenion,

Tin, and Nitrogen Compounds; Relationships between Physical Properties and Chemical Constitution; Fermentation and Enzyme Action; Catalytic Action of Finely-Divided Metals and Metallic Oxides; Unsaturation; Aliphatic Diazo- and Triazo-Compounds.

Clarke, H. T. A Handbook of Organic Analysis. Qualitative and Quantitative. With an introduction by J. N. Collie. *Second Edition.* Illustrated. 5 x 7½. cloth. 271 pp. N. Y., 1916. $2.00

Contents: Preliminary Investigation; Examination for Radicles; Separation of Mixtures of Organic Compounds; Classified Tables of Common Organic Compounds; Quantitative Determination of Constituent Elements; Quantitative Determination of Radicles; Determination of Some Physical Properties.

Clarke, H. T. An Introduction to the Study of Organic Chemistry. Diagrams. 5¼ x 7¾. cloth. 492 pp. London, 1914. $2.50

In the writing of text-books of organic chemistry there are two distinct and incompatible systems. In the one it is the practical aspect of the science which is kept in chief view; in the other its symmetry and homogeneity. The one constantly directs attention to detail; the other approaches the subject with the desire of displaying its orderly principles and structural unity. The latter method is adhered to in this book.

Cohen, Julius B. A Class-book of Organic Chemistry. Illustrated. 5 x 7½. cloth. 352 pp. New York, 1917. $1.75

Cohen, Julius B. Theoretical Organic Chemistry. *New Edition.* Illustrated. 5½ x 7. cloth. 604 pp. New York, 1916. $2.75

Cohen, Julius B. Organic Chemistry for Advanced Students. In three parts. *Second Edition.* 5¾ x 8¾. cloth. London, 1918. Price per set, $18.00

Part I. Reaction. 435 pp. $6.00

Contents: Historical Introduction; Valency of Carbon; Nature of Organic Reactions; Dynamics of Organic Reactions; Abnormal Reactions.

Part II. Structure. Illustrated. 435 pp. $6.00

Contents: Physical Properties and Structure; Color and Structure; Isomerism and Stereoisomerism; Stereo-chemistry of Unsaturated and Cyclic Compounds; Stereochemistry of Nitrogen; Isomeric Change; The Benzene Theory.

Part III. Synthesis. 378 pp. $6.00

Contents: The Carbohydrates; Fermentation and Enzyme Action; The Purine Group; The Proteins; The Terpenes and Camphors; The Alkaloids.

Fischer, Emil. Introduction to the Preparation of Organic Compounds. Translated with the author's sanction from the new (*Eighth*) *German Edition* by R. V. Stanford. 19 illustrations. 5 x 7½. cloth. 194 pp. London, 1910. $2.00

The preparation of 90 compounds are shown and these have been selected because of their practical nature, such as the cost of materials and apparatus, the easiness, shortness and freedom from danger of the operations. The work is designed to be of use primarily to chemists and secondly to biologists and medicals who desire to acquaint themselves with the methods of organic chemistry.

Gattermann, Ludwig. The Practical Methods of Organic Chemistry. *Third American Edition* from the *Eleventh German Edition.* Translated by W. B. Schober and V. S. Babasinian. Illustrated. 5¼ x 7¾. cloth. 418 pp. New York, 1919. $2.00

Contents: General Part; Organic Analytical Methods; Special Part; Aliphatic Series; Transition from the Aliphatic to the Aromatic Series; Aromatic Series; Pyridine and Quinoline Series; Inorganic Part.

Hale, Arthur J. Synthetic Use of Metals in Organic Chemistry. 5 x 7½. cloth. 169 pp. Philadelphia, 1914. $2.00

Hart-Smith, J. Recent Discoveries in Inorganic Chemistry. 6 x 9. cloth. 91 pp. New York, 1919. $1.40

An account of the more important discoveries in inorganic chemistry during the past fifteen years. Intended as a supplementary text book.

Haskins, Howard D. Organic Chemistry. Including certain portions of physical chemistry for medical, pharmaceutical, and biological students (with practical exercises). *Third Edition, thoroughly revised.* 25 illustrations. 5¼ x 7¾. cloth. 485 pp. N. Y., 1917. $2.50

Holleman, A. F., Walker, A. J., and Mott, O. E. A Textbook of Organic Chemistry. *Fourth Edition, partly rewritten.* 82 illustrations. 6 x 9. cloth. 639 pp. New York, 1914. $3.00

Keane, C. A. Modern Organic Chemistry. 29 illustrations. 5 x 8. cloth. 518 pp. London, 1909. $1.50

Contents: Historical; Structure and Classification of Organic Compounds; Aliphatic Hydrocarbons; Cyclic Hydrocarbons; Melting Point and Boiling Point of Organic Compounds; Sources and Derivatives of Hydrocarbons; Ethereal Salts; Derivatives of the Hydrocarbons Containing Nitrogen; Laboratory Methods; Stereochemistry; Sugars; Isometric Change and Dynamic Isomerism; Hetrocyclic and Polycyclic Compounds; Synthesis of Physiologically Active Organic Compounds.

Landolt, H. The Optical Rotating Power of Organic Substances and Its Practical Applications. Translated with additions by J. H. Long. *Second Edition.* 83 illustrations. 6 x 9. cloth. 771 pp. Easton, 1902. net, $7.50

Contents: Part First—General Conditions of Optical Activity. Part Second—Physical Laws of Circular Polarization. Part Third—Numerical Values for the Rotating Power; Specific Rotation. Part Fourth—Apparatus and Methods for the Determination of the Specific Rota-

tion. Part Fifth—Practical Applications of Optical Rotation. Part Sixth—Constants of Rotation of Active Bodies.

Lassar-Cohn. Application of Some General Reactions to Investigations in Organic Chemistry. Authorized translation by J. B. Tingle. 5 x 7¼. cloth. 108 pp. New York, 1904. $1.25

Lowy, Alexander. Organic Type Formulas. Two color chart. 5 x 8. paper leaflet. New York, 1919. $0.10

Two charts for use with the usual elementary organic chemistry textbook, giving the type formulas for both the aromatic and the aliphatic series. In benzine rings the single and double bonds are differentiated, and various endings, type groups, etc., are indicated by the use of red type.

McCollum, Elmer V. Organic Chemistry for Students of Medicine and Biology. 5 x 7½. cloth. 416 pp. New York, 1916. $2.60

Meldola, R. The Chemical Synthesis of Vital Products and the Inter-Relations Between Organic Compounds. Volume I. 6¾ x 10. cloth. 354 pp. London, 1904. $6.75

Contents: Introductory; Hydrocarbons; Alcohols and Terpene Alcohols; Ketone Alcohols; Glycols and Polyhydric Alcohols; Aromatic Alcohols and Phenols; Aldehydes and Ketones; Fatty Group; Aromatic Aldehydes and Ketones; Carbohydrates and Glucosides; Sulphur Compounds; Cyanogen Compounds; Appendix.

Meyer, H. Determination of Radicles in Carbon Compounds. *Third American Edition, revised and enlarged.* Authorized translation by J. Bishop Tingle. Illustrated. 5 x 8. cloth. 232 pp. New York, 1908. $2.00

Moore, F. J. Outlines of Organic Chemistry. A book designed especially for the general student. *Second Edition, rewritten.* Illustrated. 5¼ x 7¾. cloth. 337 pp. New York, 1915. $2.00

Contents: The Saturated Aliphatic Hydrocarbons; Alcohols and Their Derivatives; Acids and Their Derivatives; Aldehydes, Ketones, and Amines; Unsaturated Compounds; Polyatomic Alcohols and Their Derivatives; Hydroxy-Acids; Optical Isomerism; The Carbohydrates; Derivatives of Cyanogen and Carbonic Acid; The Amino-Acids and Proteins; Organic Chemistry of Certain Vital Processes; Benzene and Its Homologues; Aromatic Nitrogen Compounds; Aromatic Oxygen Compounds; Some Important Dyes; Naphthalene and Anthracene; The Coal-Tar Industry; Heterocyclic and Alicyclic Compounds; The Structure Theory.

Mulliken, S. P. Identification of Pure Organic Compounds. By a systematic analytical procedure based on physical properties and chemical reactions. In four volumes. *(3 now ready.)* 6¾ x 10. cloth.

Vol. I. contains classified descriptions of about 2300 of the more important compounds of carbon with hydrogen and with hydrogen and oxygen. 264 pp. New York, 1904. $5.00

Vol. II., containing classified descriptions of about 4000 of the more important compounds of carbon with the elements nitrogen, hydrogen, and oxygen, including the alkaloids and many drugs, proteolytic products, intermediates of the dyestuff industry, etc. 327 pp. New York, 1916. net, $5.00

Vol. III. Identification of the Commercial Dyestuffs, containing classified original descriptions of most of the commercially important synthetic and natural pure dyestuffs used in the arts, arranged for the use of color chemists, dyers, and analysts. 274 pp. New York 1913. $5.00

In Preparation

Vol. IV., containing classified descriptions of the more important organic compounds formed by combinations of elements not provided for in the earlier volumes.

Neave, G. B., and Heilbron, I. M. Identification of Organic Compounds. *Second Edition.* 5 x 7¾. cloth. 111 pp. New York, 1916. $1.50

Contents: Preliminary Tests; Group Reactions; Hydrocarbons; Alcohols; Ethers; Phenols; Aldehydes; Ketones; Acids; Esters; Quinones; Carbohydrates; Glucosides; Amines; Nitro and Nitroso Compounds; Nitriles and Isonitriles; Isocyanites; Ureas and Ureides; Uric Acid Group; Halogen Compounds; Azo Compounds; Pyrodine and Quinoline Group; Alkaloids; Sulphur Compounds; Terpenes and Allied Compounds; Albumins and Proteids.

Norris, J. F. The Principles of Organic Chemistry. 6 x 8¼. cloth. 594 pp. New York, 1912. $3.00

Noyes, A. A., and Mulliken, S. P. Laboratory Experiments on the Class Reactions and Identification of Organic Substances. *Third Edition.* 5 x 7. cloth. 81 pp. Easton, 1915. $0.70

Noyes, W. A. Organic Chemistry for the Laboratory. *Third Edition, revised and enlarged.* 41 illustrations. 6 x 9. cloth. 303 pp. Easton, 1916. $2.50

Contents: Analysis of Compounds of Carbons; General Operations; Hydrocarbons; Alcohols and Phenols; Ethers; Aldehydes, Ketones and Their Derivatives; Acids, Derivatives of Acids Hydroxy and Ketonic Acids; Carbohydrates; Halogen Compounds; Nitro Compounds; Amines; Diazo, Hydrazo-Nitro and Other Compounds; Sulphur Compounds; Qualitative Examination of Carbon Compounds.

Perkins, W. H., and Kipping, F. S. Organic Chemistry. Entirely new edition. Parts I and II bound in one volume. 18 illustrations. 5 x 7¼. cloth. 695 pp. London, 1917. $2.50

Plimmer, R. H. A. Practical Organic and Bio-Chemistry. 86 illustrations, 1 color plate. 6¼ x 10. cloth. 648 pp. New York, 1915. $6.00

Contents: Recognition of an Organic Compound; Isolation and Preparation of Pure Organic Compounds; Criteria of Their Purity; Composition of Organic Compounds; Identification of an Organic Compound, Hydrocarbons; Halogen Derivatives of the Hydrocarbons; Alcohols; Esters; Ethers; Mercaptans and Sulphides; Aldehydes; Ketones; The Fatty Acids; Halogen Substitution Derivatives of the Fatty Acids; Acid or Acyl Chlorides; Acid Anhydrides; Unsaturated Alcohols, Aldehydes and Fatty Acids; Hydroxy-, Keto- and Dybasic Acids; Amines; Amides; The Amino Acids; Betaines; Cyanogen Compounds; Guanadine and Its Derivatives; Di- Tri-, and Polyhydric Alcohols; Fats and Oils; Waxes; Lecithins; The Carbohydrates; Aromatic Compounds; Tannins; Heterocyclic Compounds; Ureides; Pyrimidines; Glyoxaline or Iminazole Derivatives; Purines; Nucleic Acids; Furfurane, or Furane, and Its Derivatives; Thiophene and Its Derivatives; Pyrrole and Its Derivatives; Pyridine and Its Derivatives; Hydroaromatic Compounds; Complex Aromatic Compounds; The Anthoxanthins; The Anthocyans; Indole and Its Derivatives; Quinoline and Isoquinoline; The Alkaloids; The Proteins; Enzymes; Individual Groups of Proteins; The Chemical Constitution of Haemin and Haematoporphyrin; The Pigments of Leaves; Metabolism; Composition of the Commoner Tissues Used as Food-Stuffs for Animals; Analysis of Normal Urine; Analysis of Tissues; Tables; List of Reagents.

Pope, F. G. Modern Research in Organic Chemistry. 261 illustrations. 5½ x 7½. cloth. 336 pp. N. Y., 1913. $3.00

Contents: List of Abbreviations; The Polymethylenes; The Terpenes and the Camphors; Uric Acid or Purine Group; The Alkaloids; The Relation between the Color and Constitution of Chemical Compounds; Salt Formation Pseudo-Acids and Bases; The Pyrones; Ketens, Ozonides, Triphenylmethyl; The Grignard Reaction.

Reid, E. Emmet. Introduction to Research in Organic Chemistry. *In Press*

Contents: Introduction; Definition of Research and General Point of View; Literature; How to Find What Has Been Done on a Subject, etc.; The Study of Properties of Known Substances as an Object of Research; Study of Methods of Preparation of Known Substances as an Object of Research; Preparation of New Compounds; Study of Structures; Methods of Determination; Synthesis; Study of Reactions, Limits, Velocities; Intermediate Compounds; Study of Quantitative Methods for Estimation of Organic Compounds; Publication of Results.

Remsen, Ira. An Introduction to the Study of the Compounds of Carbon or Organic Chemistry. *Fifth Revision.* Illustrated. 5 x 8. cloth. 441 pp. Boston, 1909. $1.60

Scudder, Heyward. The Electrical Conductivity and Ionization Constants of Organic Compounds. A bibliography of the periodical literature from 1889 to 1910, inclusive, including all important work before 1889 and corrected to the beginning of 1913. Giving numerical data for the ionization constants at all temperatures at which they have been measured; and some numerical data of the electrical conductivity. 6½ x 9½. cloth. 570 pp. New York, 1914. net, $3.00

Contents: Explanation; Abbreviation of Words; Abbreviations of Journal Titles; Cyclic Formulæ; Tables: Compounds Arranged Alphabetically, with the Ionization Constant, Some Data of Conductivity, and All Bibliographical References Given Under Each Compound; Formula Index; Author List: Bibliography of Authors' Names Arranged Alphabetically; Subject Index; Journal List: Names of Journals Arranged Alphabetically.

Sherman, Henry C. Methods of Organic Analysis *Second Edition, rewritten and enlarged.* Illustrated. 6 x 9. cloth. 423 pp. New York, 1917. $3.00

Contents: Alcohols; Aldehydes; Carbohydrates; General Methods; Special Methods of Sugar Analysis; Starch and Amylase; Vinegar and Acetate; Fatty Acids; Oils, Fats, and Waxes; General Methods; Analytical Methods; Edible Oils and Fats; Drying Oils; Petroleum and Lubricating Oils; Fuels; Soap and Glycerin; Nitrogen Sulphur, and Phosphorus; Proteins and Proteases; Grain Products; Milk; Food Preservatives.

Sidgwick, N. V. The Organic Chemistry of Nitrogen. Illustrated. 6½ x 10. cloth. 426 pp. Oxford, 1910. $5.60

Contents: Compounds with no Nitrogen directly attached to Carbon; Bodies containing one Nitrogen Atom attached to Carbon; Compounds containing an Open Chain of two or more Nitrogen Atoms; Ring Compounds.

Stewart, Alfred W. Recent Advances in Organic Chemistry. With an introduction by J. N. Collie. *Third Edition.* 5¾ x 8¾. cloth. 370 pp. London, 1918. $4.50

Contents: Organic Chemistry in the Twentieth Century; Monocyclic Trepenes; Dicyclic Trepenes; Olefinic Trepenes; Rubber; The Alkaloids; The Polypeptides; The Chlorophyll Problem; The Anthocyanins; Some Theories of the Natural Synthesis of Vital Products; Some Aromatic Derivatives of Arsenic; Trivalent Carbon; Other Elements Which Exhibit Abnormal Valency; Modern Formulæ and Other Failings.

Sudborough, J. J., and James, J. C. Practical Organic Chemistry. 92 illustrations. 5 x 7½. cloth. 394 pp. London, 1909. $3.50

Contents: Common Methods of Purification; Methods for Testing Purity; Solubility of Solids in Liquids; Detection of the Common Elements Which Occur in Carbon Compounds; Estimation of Commonly Occurring Elements;

Determination of the Equivalent of an Acid and of a Base; Determination of Molecular Weights by Physical Methods; Hydrocrbons; Alcohol and Ethers; Halogen Derivatives; Carboxylic Acids; Derivatives of Acids; Non-derivatives; Nitration; Sulphonic Acid; Sulphonation; Phenols and Phenolic Ethers; Amines and Quaternary Amonium Compounds; Acetyl and Benzol Derivatives; Diazonium Salts and Their Uses; Aldehydes and Ketones; Oximes; Phenyl-hydrazones and Semicarbazones; Quinones; Claisen's Condensation; Ethyl Acetonacetate: Its Reactions and Condensations; Ethyl Malonate and Its Use as a Synthetical Reagent; Reduction, Oxidation, Condensation; Grignard's Reagents; Dyes; Iodine Compounds Containing a Polyvalent Iodine Atom; Stereosomeric Acids; Molecular Rearrangement; Quantitative Experiments with Carbohydrates; Quantitative Experiments with Acids, Esters, Amines, etc.; Velocities of Typical Organic Reactions; Electrical Conductivity; Examination of Unknown Organic Substances; Preparation of Inorganic Reagents; Tables.

Von Richter, Victor. Organic Chemistry or Chemistry of the Carbon Compounds. Volume I., Chemistry of the Aliphatic Series. Newly translated and revised from the *German Edition* by Percy E. Spielmann. *Second Edition, revised.* 6 x 9. cloth. 735 pp. Philadelphia, 1919. $7.00

Contents: Introduction; Fatty Compounds; Aliphatic Substances or Methane Derivatives; Chain or Acyclic Carbon Derivatives; Hydrocarbons; Halogen Derivatives of the Hydrocarbons; Oxygen Derivatives of the Methane Hydrocarbons; The Monohydric Alcohols and Their Oxidation Products; Dihydric Alcohols or Glycols, and Their Oxidation Products; Carbonic Acid and Its Derivatives; Trihydric Alcohols: Glycerols and Their Oxidation Products; Tetrahydric Alcohols and Their Oxidation Products; The Pentahydric Alcohols or Pentitols and Their Oxidation Products; Hexa- and Poly-Hydric Alcohols and Their Oxidation Products; Animal Substances of Unknown Constitution.

Walker, James. Organic Chemistry for Students of Medicine. *Second Edition.* 22 illustrations. 6 x 9. cloth. 340 pp. New York, 1919. $4.00

The time allotted in the ordinary medical curriculum is usually very short, yet the student, when he takes up physiology, pharmacology and pathology, is expected to possess a knowledge not only of the principles of chemistry, but of numerous substances and processes, many of them very complex. In this book the chemical substances considered in the course are selected not so much for their importance in systematic or synthetic chemistry as for their medical interest, in order that the student study the things that will be of some utility to him in the later portions of his professional education. The work will be found a useful reference volume for the physician.

Weston, Frank E. A Scheme for the Detection of the More Common Classes of Carbon Compounds. *Third Edition.* Illustrated. 5½ x 8½. flexible cloth. 108 pp. London, 1912. $1.25

Wren, Henry. The Organometallic Compounds of Zinc and Magnesium. 5¼ x 7½. cloth. 108 pp. *(Van Nostrand's Chemical Monographs, No. 1.)* New York, 1914. $1.25

Contents: General Notes on Grignard's Reaction; Products Formed by the Aid of Grignard's Reagents; Theoretical; Zinc Organometallic Compounds; Bibliography.

THEORETICAL and PHYSICAL CHEMISTRY

Ames, Joseph S. The Constitution of Matter. 5¼ x 8. cloth. 254 pp. Boston, 1914. $1.50

Contents: General Properties of Matter: Mass; Corpuscles and Atoms: Electrical Mass; Radioactivity; Gravitation; Radiation: Formation of Molecules, Elasticity; Properties of Metals; Thermionics; Magnetism; Models of Atoms; Conclusions.

Arrhenius, S. Theories of Solutions. 6 x 9. cloth. 247 pp. New Haven, 1912. $2.50

The lectures included in this volume are not a repetition of facts already found in textbooks on chemistry, but a review of recent work and a definition of our present position on various topics concerning theories of solutions, particularly those topics which are at present in a state of rapid development.

Baly, E. C. C. Spectroscopy. *Second Edition.* 180 illustrations. 5 x 7½. cloth. 701 pp. London, 1912. $4.75

Contents: Historical; The Slit, Prisms, and Lenses; The Complete Prism Spectroscope; The Prism Spectroscope in Practice; The Diffraction Grating; Ruled Grating in Practice; The Extreme Infra-red and Ultra-violet Regions of the Spectrum; The Application of Interference Methods to Spectroscopy; Practical Resolving Power of the Spectroscope; Photography of the Spectrum; Methods of Illumination; Phosphorescence and Fluorescence; Absorption Spectra; Nature of Spectra; The Zeeman Effect; Series of Lines in Spectra; Change of Wave-Length; Appendix.

Bigelow, S. L. Theoretical and Physical Chemistry. 6 x 9. cloth. 504 pp. New York, 1912. $3.50

Duhem, O. Thermodynamics and Chemistry. A non-mathematical treatise for chemists and students of chemistry. Authorized translation by Geo. K. Burgess. 140 illustrations. 6 x 9. cloth. 466 pp. New York, 1903. $4.00

Ellis, C. Ultraviolet Light, Its Application in Chemical Arts. Illustrated. 5 x 7½. cloth. *In Press*

Ewell, Arthur W. A Textbook of Physical Chemistry, Theory and Practice. 102 illustrations, 63 tables. 5 x 7. cloth. 379 pp. Philadelphia, 1909. $2.75

Findlay, Alexander. The Phase Rule and Its Applications. 134 illustrations. 5 x 7½. cloth. 379 pp. London, 1917. $3.00

Contents: Introduction; The Phase Rule; Typical Systems of One Component; General Summary; Systems of Two Components; Phenomena of Dissociation; Solutions of Solids in Liquids, Only One of the Components Being Volatile; Equilibria Between Two Volatile Components; Solid Solutions; Mixed Crystals; Equilibrium Between Dynamic Isomerides; Summary-Application of the Phase Rule to the Study of Systems of Two Components; Systems of Three Components; Solutions of Liquids in Liquids; Presence of Solid Phases; Isothermal Curves and the Space Model; Absence of Liquid Phase; Systems of Four Components; Experimental Determination of the Transition Point.

Findlay, Alexander. Physical Chemistry, and Its Applications in Medical and Biological Science. Being a course of seven lectures delivered in the University of Birmingham. 6¼ x 9¾. cloth. 68 pp. London, 1905. $0.90

Findlay, Alex. Osmotic Pressure. *Second Edition.* 10 illustrations. 6 x 9. cloth. 127 pp. London, 1919. $2.25

Contents: Semi-Permeable Membranes and Osmotic Pressure; Van Hoff's Theory of Dilute Solutions; Direct Determination of the Osmotic Pressure of Concentrated Solutions; Discussion of the Recent Determination of Osmotic Pressure and of the Van Hoff Theory; The General Theory of Solutions; Discussion of the Osmotic Pressure of Aqueous Solutions of Cane Sugar in the Light of the Theory of Ideal Solutions; Indirect Determination of the Osmotic Pressure; Views Regarding the Cause of Osmosis and the Action of the Semi-Permeable Membrane; Bibliographical References.

Findlay, Alex. Practical Physical Chemistry. 104 illustrations. 5¼ x 7¾. cloth. 343 pp. London, 1917. $3.00

Contents: Calculation of Results and Errors; Determinations of Weight and Volume; Density of Liquids and Gases; Thermostats; Vicosity and Surface Tension; Optical Measurements; Molar Weight of Substances in Solution; Distribution of a Substance between two Non-Miscible Solvents; Conductivity of Electrolytes; Transport Numbers; Measurements of Electromotive Force; Velocity of Chemical Reaction in Homogeneous Systems; Thermo-Chemistry; Determination of Solubility; Determination of Transition Points; Appendix.

Firth, James B. Practical Physical Chemistry. 74 illustrations. 5 x 7¼. cloth. 190 pp. New York, 1916. $1.25

Contents: Thermostats; Density of Gases, Liquids, and Vapors; Determination of Viscosity and Surface Tension; Determination of Solubility; Of Molecular Weights; Of Transition Points; Osmotic Pressure; Refractivity Measurements; Rotation of the Plane of Polarization; Spectrum Analysis; Determination of Partition Coefficients; Thermo-Chemical Measurements; Determination of Transport Numbers; Electrical Conductivity; Electromotive Force; Velocity of Chemical Reaction; Quantitative Electrolytic Determinations; Electrolytic Preparations; Preparation of Colloids; Appendix.

Getman, Frederick H. Outlines of Theoretical Chemistry. 104 illustrations. 5¾ x 8¼. cloth. 479 pp. New York, 1913. net, $3.50

Contents: Fundamental Principles; Classification of the Elements; The Electron Theory; Gases; Liquids; Solids; Solutions; Dilute Solutions and Osmotic Pressure; Association, Dissociation and Solvation; Colloidal Solutions; Thermochemistry; Homogeneous and Heterogeneous Equilibrium; Chemical Kinetics; Electrical Conductance; Electrolytic Equilibrium and Hydrolysis; Electromotive Force; Electrolysis and Polarization; Actinochemistry.

Getman, F. H. Laboratory Exercises in Physical Chemistry. *Second Edition, revised.* 115 illustrations. 5 x 7¼. cloth. 295 pp. New York, 1908. $2.00

Jones, Harry C. The Freezing-point, Boiling-point and Conductivity Methods. *Second Edition.* 5 x 7. cloth. 84 pp. Easton, 1912. $1.25

Jones, Harry C. Introduction to Physical Chemistry. *Second Edition, revised.* Illustrated. 5¼ x 7½. cloth. 294 pp. New York, 1914. $1.60

Jones, Harry C. The Elements of Physical Chemistry. *Fourth Edition, revised and enlarged.* 78 illustrations. 6 x 9. cloth. 686 pp. N. Y., 1918. $4.75

Contents: Atoms and Molecules; Gases; Liquids; Solids; Solutions; Thermochemistry; Electrochemistry; Photochemistry; Chemical Dynamics and Equilibrium; Measurements of Chemical Activity.

Jones, Harry C. The Nature of Solution. With a biographical memoir by Prof. E. Emmet Reid and tributes by Professors Arrhenius, Ostwald and Woodward and others. Illustrated. 6 x 9. cloth. 406 pp. New York, 1917. $3.75

Contents: Importance of Solution; Earlier Views as to the Nature of Solution; The Osmotic Pressure of Solutions; Relations Between Solutions and Gases Demonstrated by Vant Hoff; The Theory of Electrolytic Dissociation as Announced by Arrhenius; Diffusion in Solution; Depression of the Vapor-tension of a Solvent by Substance Dissolved in It; Depression of Freezing-Point of a Solvent by the Solute; Aqueous Solutions of Acids, Bases and Salts—Electrolytes; Some Electrical Properties of Aqueous Solutions of Electrolytes; Solution in Nonaqueous and in Mixed Solvents; Colloidal Solutions; Solutions in Solids as Solvents; The Newer Hydrate Theory; The Solvate Theory of Solutions.

Jones, Harry C. A New Era in Chemistry. Some of the more important developments in general chemistry during the last quarter of a century. Illustrated. 6 x 8. cloth. 338 pp. New York, 1913. net, $2.00

Contents: Condition of Chemistry in 1887; Development of the Law of Mass Action; Energy Changes That Take Place in Chemical Reactions; Van't Hoff, Le Bel, and Guye and the Origin of

Stereochemistry; Phase Rule of Willard Gibbs; Chemical Dynamics of Van't Hoff and Chemical Equilibrium of Le Chatelier; Role of Osmotic Pressure in the Analogy between Solutions and Gases; Arrhenius and the Theory of Electrolytic Dissociation; Solvate Theory of Solution and Importance of Solutions for Science in General; Work of Wilhelm Ostwald in Inaugurating the New Era in Chemistry; Investigations by Students and Co-workers of Wilhelm Ostwald; The Electron and Radiochemistry; Explanation of Radioactive Phenomena; Appendix.

Kemble, W. F., and Underhill, C. R. The Periodic Law and the Hydrogen Spectrum. 5 folding plates. 6 x 9. paper. 20 pp. New York, 1909. $0.50

Endeavors to show a connection between the possible action of a spiral nebula and the Periodic Law as enunciated by Mendeleeff, Meyer, Newlands and others.

Knox, J. Physico-Chemical Calculations. 5¼ x 7½. cloth. 196 pp. New York, 1912. $1.50

Kremann, R. The Application of Physico-chemical Theory to Technical Processes and Manufacturing Methods. Translated from the German by Harold E. Potts and edited by Albert Mond. 35 illustrations. 5¾ x 8¾. cloth. 229 pp. New York, 1913. net, $3.00

Contents: Two Fundamental Laws of the Mechanical Theory of Heat; Reaction Velocity and Catalytes; Other Special Applications of the Law of Mass Action; Influence of Temperature on the Equilibrium-Constant; Dissociation Pressure; Application of the Phase Rule; Application of the Phase Rule to Solid-Liquid Systems; Transformation Phenomena in Hydraulic Binding Agents; Other Applications of the Phase Rule; The Distribution Law; Adsorption Compounds; Reciprocal Pairs of Salts.

LeBas, Gervaise. The Molecular Volumes of Liquid Chemical Compounds. From the point of view of Kopp. Illustrated. 6 x 9. boards. 287 pp. London, 1916. 3$.00

Contents: The Molecular Volumes of Organic Compounds at the Melting Point; The Molecular Volumes of the Hydrocarbons at the Boiling-Point; The Molecular Volumes of the Halogen Compounds; Of Organic Compounds Containing Oxygen; Of Sulphur Compounds; Of Nitrogen Compounds; Of Phosphorus Compounds, Etc.; Summary of the Theory of Molecular Volumes; Appendices; Table of References; Bibliography.

Lehfeldt, R. A. A Text-Book of Physical Chemistry. Illustrated. 4¾ x 7½. cloth. 308 pp. London. $2.75

Contents: Introduction; Determination of Molecular Weight; Physical Constants in Relation to Chemical Constitution; The Principles of Thermodynamics; Chemical Dynamics of Homogeneous Systems; Chemical Dynamics of Heterogeneous Systems; Applications of Thermodynamics to Chemical Equilibrium; Electro-Chemistry; Index.

Letts, E. A. Some Fundamental Problems in Chemistry: Old and New. 44 illustrations. 6 x 9. cloth. 250 pp. New York, 1914. $2.00

Contents: The Older Chemistry. Ancient Theories Regarding the Nature of Matter and More Recent Theories as to the Nature of Energy; The Atomic Theory and Atomic Weights; The Periodic Law. *The Newer Chemistry.* The Effects of Electrical Discharges on Gases in High Vacua; Radioactivity; The Question of Inorganic Evolution; Lockyer's Views and Works; The Birth and Death of Worlds; Gravitation and Radiation Pressures; Arrhenius' Views; Continuation of Collie and Patterson's Researches on the Presence of Neon in Hydrogen After the Passage of the Electric Discharge Through the Latter at Low Pressures.

Lewis, W. C. M. A System of Physical Chemistry. In three volumes. Illustrated. 6 x 9. cloth.
Vol. I. Kinetic Theory. *Second Edition.* 506 pp. London, 1918. $5.00
Vol. II. Thermodynamics. *Second Edition.* 409 pp. London, 1919. $5.00
Vol. III. Quantum Theory. *Second Edition.* 217 pp. London, 1919. $2.50

McClendon, J. F. Physical Chemistry of Vital Phenomena. For students and investigators in the biological and medical sciences. 6 x 8. cloth. 248 pp. Princeton, 1917. $2.00

Course of lectures and laboratory work given in University of Minnesota, where the author is assistant professor of physiology.

Mellor, J. W. Chemical Statics and Dynamics. Including the theories of chemical catalysis and explosions. 50 illustrations. 5 x 7½. cloth. 542 pp. London, 1914. *Reprinting*

Contents: Introduction; Homogeneous Chemical Reactions; Side Reactions; Opposing Reactions; Consecutive Reactions; Beginnings of a Reaction; Heterogenous Reactions; Equilibrum and Dissociation; Electrolytic Dissociation; Catalysis and the Theory of Chemical Change Fermentation; Influence of Temperature on Chemical Reactions; Influence of Pressure; Explosions.

Morgan, J. L. R. Physical Chemistry for Electrical Engineers. *Second Edition, revised.* 5 x 7¼. cloth. 259 pp. New York, 1909. $1.60

Morgan, J. Livingston R. The Elements of Physical Chemistry. *Fifth Edition, revised and enlarged.* Illustrated. 5¾ x 8¼. cloth. 522 p. N. Y., 1914. $3.50

Contents: The Gaseous State; Liquid and Solid States; The Phase Rule; Solutions; Thermochemistry; Chemical Change; Electrochemistry; Problems; Tables of Logarithms.

Nernst, W. Theoretical Chemistry from the Standpoint of Avogadro's Rule and Thermodynamics. Revised in accordance with the *Seventh German Edition. Fourth English Edition.* 6 x 9. cloth. 853 pp. New York, 1917. $6.50

A statement of guiding ideas which gives instruction to the student and advice to the in-

vestigator who seeks to prosecute his researches in the light of the more recent chemical theories.

Partington, James R. A Text-book of Thermodynamics (with special reference to Chemistry). 91 diagrams. 6 x 9. cloth. 550 pp. London, 1913. $4.00

Contents: Thermometry and Calorimetry. The First Law of Thermodynamics and Some Applications. The Second Law of Thermodynamics; Entropy. The Thermodynamic Functions and Equilibrium. Fluids. Ideal and Permanent Gases. Changes of Physical State. Van der Waals' Equation and the Theory of Continuity of States. Thermochemistry. Gas Mixtures. Elementary Theory of Dilute Solutions. General Theory of Mixtures and Solutions. Capillarity and Adsorption.

Pauli, W. Physical Chemistry in the Service of Medicine. Authorized translation by Martin H. Fischer. 5 x 7¼. cloth. 164 pp. N. Y., 1907. $1.25

Perrin, Jean. Atoms. (Translated by D. Ll. Hammick.) 16 illustrations. 5¾ x 8¾. cloth. 228 pp. New York, 1916. net, $2.50

Contents: Chemistry and the Atomic Theory; Molecular Agitation; The Brownian Movement: Emulsions; The Laws of the Brownian Movement; Fluctuations; Light and Quanta; The Atom of Electricity; The Genesis and Destruction of Atoms.

Philip, James C. Physical Chemistry. Its Bearing on Biology and Medicine. *Second Edition.* 24 illustrations. 5¼ x7½. cloth. 333 pp. N. Y., 1915. $2.75

Contents: Gas from the Standpoint of Experiment and Theory; Diffusion Phenomena; Absorption of Gases by Liquids; Osmotic Pressure; Comparison of Osmotic Pressures; Isotonic Solutions; Permeability and Impermeability of Membranes; Vapour Pressure, Boiling Point and Freezing Point of Solutions; The Behaviour of Salts, Acids, and Bases in Aqueous Solution; Electrolytic Dissociation; Physical and Biological Applications; Colloidal Solutions; Separation of Colloids from Their Solutions; Adsorption; Chemical Equilibrium and the Law of Mass Action; Velocity of Chemical Reaction; Electromotive Force.

Prideaux, E. B. R. Problems in Physical Chemistry. With practical applications. Illustrated. 6 x 9. cloth. 325 pp. New York, 1912. net, $2.00

Contents: Mathematical Methods and Formula; Table of Logarithms; List of Symbols and Abbreviations; Units and Standards of Measurement; Thermochemistry; Systems of One Component; Mixtures; Gas Reactions; Reactions in Solutions; Electromotive Force; Kinetics of Molecular and Radioactive Changes.

Roth, W. A. Exercises in Physical Chemistry. Authorized translation by A. T. Cameron. 49 illustrations. 5¾ x 8¾. cloth. 208 pp. London, 1909. net, $2.00

Contents: The Determination of Density; Determination of Molecular Weights in Solutions; Thermochemistry; The Determination of Optical Constants; The Thermostat; Chemical Statics and Dynamics. *Electrochemistry.* Foundations, Electrical Conductivity; Faraday's Law, Transport Numbers; Measurement of Differences of Potential; Electrostatics.

Sackur, Otto. A Text Book of Thermochemistry and Thermodynamics. Translated and revised by G. E. Gibson. Illustrated. 5¾ x 8¾. cloth. 455 pp. London, 1917. $4.50

Schenck, R., and Dean, R. S. The Physical Chemistry of the Metals. 114 illustrations. 6 x 9. cloth. 247 pp. New York, 1919. $3.00

Contents: Introduction; Properties of Metals; Metallic Solutions and Alloys; Alloys of Metals with Carbides, Oxides and Sulfides, Iron and Steel, Mattes, Phase Rule; The Metallurgical Reactions, Oxidation and Reduction; Decomposition of Carbon Monoxide, Blast Furnace Process; The Reactions of Sulfides.

Senter, G. Outlines of Physical Chemistry. *Second Edition, revised.* 42 illustrations. 5 x 7½. cloth. 401 pp. New York, 1911. $3.00

Contents: Fundamental Principles of Chemistry; The Atomic Theory; Gases; Liquids; Solutions; Dilute Solutions; Thermochemistry; Equilibrium in Homogeneous Systems—Law of Mass Action; Heterogeneous Equilibrium; The Phase Rule. Velocity of Reaction—Catalysis; Electrical Conductivity; Equilibrium in Electrolytes; Strength of Acids and Bases; Hydrolysis; Theories of Solution; Electromotive Force.

Stewart, Alfred W. Stereochemistry. *Second Edition.* 58 illustrations. 5¾ x 8¾. cloth. 293 pp. London, 1919. $4.20

Contents: Stereoisomerism in Carbon Compounds. Optical Activity; Stereoisomerism in Carbon Compounds without Optical Activity; The Complex Salts. *Stereochemical Problems Into Which Isomerism Does Not Enter.* Conclusion; Appendices.

Thomsen, J. Thermochemistry. Translated from the Danish by Katharine A. Burke. With tables. 5 x 8. cloth. 495 pp. London, 1908. $3.00

The experimental work, consisting of the numerical and theoretical results recorded in the following pages, was carried out in the years 1851 to 1885; the greater part of it, however, belongs to the last twenty years of that period —*Extract from Preface.*

Tower, O. F. The Conductivity of Liquids. Methods, results, chemical applications and theoretical considerations. 20 illustrations. 6 x 9. cloth. 82 pp. Easton, 1905. $1.50

Van Deventer, C. M. Physical Chemtry for Beginners. Translated by R. A. Lehfeldt. Illustrated. 4¾ x 7½. cloth. 146 pp. London. $0.90

Contents: Definitions; Fundamental Laws of Combination; Behaviour of Gases; Some Points of Thermo-Chemistry; Solutions; Photochemistry; The Periodic System; Index; List of Tables.

Van Klooster, Henry S. Lecture Demonstrations in Physical Chemistry. 83 illustrations. 5¼ x 8¾. cloth. 202 pp. Easton, 1919. $2.00

Contents: General Properties of Matter in the Liquid and Solid State; Diffusion; Osmosis; Vapor Pressure and Determination of Molecular Weights; Chemical Equilibrium and the Law of Mass Action; Catalysis; Electrochemistry and Ionic Theory; Solubility and its Changes, Colloids and Adsorption; Actinochemistry; Flame, Combustion and Explosion; Liquid Air Experiments; Bibliography.

Van't Hoff, J. H. Lectures in Theoretical and Physical Chemistry. Translated by R. A. Lehfeldt. In three parts. Illustrated. 6 x 9. cloth. London, 1899.

Price per set. $9.50

Part I. Chemical Dynamics. Illustrated. 254 pp. $4.00

Part II. Chemical Statics. Illustrated. 156 pp. $3.00

Part III. Relations Between Properties and Composition. 143 pp. $3.00

Walker, James. Introduction to Physical Chemistry. *Eighth Edition.* 63 illustrations. 5¼ x 8¾. cloth. 446 pp. London, 1919. $5.75

Contents: Units and Standards of Measurement; The Atomic Theory and Atomic Weights; Chemical Equations; The Simple Gas Laws; Specific Heats; The Periodic Law; Solubility; Fusion and Solidification; Vaporisation and Condensation; The Kinetic Theory and Van der Waal's Equation; The Phase Rule; Alloys; Hydrates; Thermochemical Change; Variation of Physical Properties in Homologous Series; Relation of Physical Properties to Composition and Constitution; Properties of Dissolved Substances; Osmotic Pressure and the Gas Laws for Dilute Solutions; Methods of Molecular Weight Determination; Molecular Complexity; Colloidal Solutions; Electrolytes and Electrolsis; Electrolytic Dissociation; Balanced Actions; Rate of Chemical Transformation; Relative Strengths of Acids and of Bases; Equilibrium Between Electrolytes; Neutrality and Salt-Hydrolysis; Applications of the Dissociation Theory; Electromotive Force; Polarisation and Electrolysis; Dimensions of Atoms and Molecules; Atoms and Electrons; Radio-active Transformations· Atomic Number; Thermodynamical Proofs.

Washburn, Edward W. An Introduction to the Principles of Physical Chemistry. From the standpoint of modern atomistics and thermodynamics. A course of instruction for students intending to enter physics or chemistry as a profession. 61 illustrations. 6 x 8¼. cloth. 474 pp. New York, 1915. **net, $3.50**

BIOCHEMISTRY

Arrhenius, Svante. Immunochemistry. The Application of the Principles of Physical Chemistry to the Study of the Biological Antibodies. 5¼ x 7¾. cloth. 321 pp. New York, 1907. $2.00

Contents: Reversibility of Reactions Between Antibodies; Velocity of Reaction; Homogeneous Systems; Heterogenous Systems; Equilibria in Absorption Processes; Neutralisation of the Hæmolytic Properties of Bases and of Lysins of Bacterial Origin; Of Diphtheria-Toxin, Ricin, Saponin, and Snake Venoms; Compound Hæmolysins; Precipitins and Their Antibodies.

Arrhenius, Svante. Quantitative Laws in Biological Chemistry. 36 illustrations. 5¾ x 8¾. cloth. 176 pp. London, 1915. $2.75

Contents: Necessity of Quantitative Methods: Material Treated; Use of Physico-Chemical Methods; Graphical Methods; Enzymes; Toxins; Antibodies; Specificity; Velocity of Reactions; Influence of Temperature on the Velocity of Reactions; Reactions of Cells; Quantitative Laws of Digestion and Resorption; Chemical Equilibria; Immunization.

Bayliss, W. M. The Nature of Enzyme Action. *Fourth Edition, revised and enlarged.* 6 x 9. cloth. 190 pp. London, 1919. $2.50

Contents: Catalysis in General; Enzymes as Catalysis; Physical and Chemical Properties of Enzymes; General Methods of Preparation and of Investigation; Reversibility of Enzyme Action; The Velocity of Reaction and the Various Conditions Affecting It; The Mode of Action of Enzymes; Co-Enzymes and Anti-Enzymes; Zymogens; Oxidation-Processes and Certain Complex Systems; General Conclusions.

Beatty, James. The Method of Enzyme Action. With an introduction by Prof. E. H. Starling. 5½ x 8¾. cloth. 153 pp. Philadelphia, 1917. $2.25

Contents: Catalysis; General Considerations of Enzymes; Colloids; Adsorption; The Properties of Enzymes; Chemical Action—Hydrolysis; Chemical Action—Oxidation and the Oxidases; Reduction and the Reducases; The Method of Enzyme Action; Deductions; Conclusions.

Bechhold, H. Colloids in Biology and Medicine. Authorized translation from the *Second German Edition,* with notes and emmendations by Jesse G. M. Bullowa. 54 illustrations. 6¼ x 9¼. cloth. 478 pp. New York, 1919. $5.00

Contents: Introduction to the Study of Colloids. Introduction; What Are Colloids? Surfaces; Size of Particles, Molecular Weight, Osmotic Pressure, Conductivity; Phenomena of Motion; Consistency of Colloids; Optical and Electrical Properties of Colloids; Methods of Colloid Research. *The Biocolloids.* Introduction; Carbohydrates; Lipoids; Proteins; Food and Condiments; Enzymes; Immunity Reactions. *The Organism as a Colloid System.* Significance of the Colloidal Condition for the Organism; Metabolism and the Distribution of Material; Growth, Metamorphosis and Development; The Cell; The Movements of Organism; Blood, Respiration, Circulation and its Disturbances; Absorption; Secretion and Excretion; The Nerves; Toxicology and Pharmacology; Microscopical Technic.

Burnet, E. Microbes and Toxins With a preface by E. Metchnikoff. Translated from the French by C. Broquet and W. M. Scott. 71 illustrations. 6 x 8½. cloth. 333 pp. New York. 1912. **net, $2.00**

Cohnheim, O. Enzymes. Six lectures delivered under the Herter Lectureship Foundation at the University and Bellevue Hospital Medical College. 5½ x 7¾. cloth. 183 pp. N. Y., 1912. $1.75

Czapek, F. Chemical Phenomena in Life. 4½ x 7. cloth. 162 pp. London. 1911. **net, $0.75**

Dakin, H. D. Oxidations and Reductions in the Animal Body. 6 x 9¾. boards. 143 pp. London, 1912. $1.40

Contents: The Nature of the Oxidizing and Reducing Agents of the Body; Methods of Investigation; The Normal Saturated and Unsaturated Fatty Acids; Fatty Acids with Branched Chains; The Dibasic Acids; The a-Amino, a-Hydroxy, and a-Ketonic Acids; The Oxidation of Phenylalanine, Tyrosine, Tryptophane and Related Substances; Oxidation and Reduction of Amino Acids by Micro-Organisms; The Carbohydrates; The Purine Derivatives; Hydrocarbons; Phenols; Alcohols; Aldehydes; Amines and Indole Derivatives; Bibliography.

Effront, Jean. Enzymes and Their Applications. Translated by S. C. Prescott. 6 x 9. 333 pp. N. Y., 1902. $3.00

Contents: Preface: General Remarks; General Properties; Manner of Action of Diastases; Individuality of Enzymes; Sucrase; Fermentation of Molasses; Amylase; Chemical Work of Amylase; Amylase of Different Sources; Industrial Applications of Amylase; Role of Amylase in the Brewery; Manufacture of Maltose; Panary Fermentation; Role of Amylase in the Distillery; Quantitative Study of Malt; Maltase; Industrial Applications of Maltase; Enzymes of Carbohydrates; Ferments of Glycerides and Glucosides; Zymase; Oxidases.

Effront, Jean. Biochemical Catalysts in Life and Industry. Proteolytix Enzymes. Translated by Samuel C. Prescott. 6 x 9. cloth. 763 pp. New York, 1917. **net, $5.00**

Contents: Coagulating Enzymes. Thrombin; Myosinase; Rennet. *Pepsin.* Reversible Action of Enzymes; Synthetic Action of Pepsin; Plasteins. *Trypsin.* Pancreatic Trypsin; Trypsin of Various Origins; Antigens; Antibodies; Complement. *Erepsins.* Intestinal Erepsin; Peptolytic Enzymes; Enzymes of the Nucleo-Proteins; Arginase; Creating-Creatase. *Amidases. Applications.*

Euler, Hans. General Chemistry of the Enzymes. Translated from the revised German edition by T. H. Pope. 6 x 9. 332 pp. New York, 1912. **net, $3.00**

Contents: Introduction; Special Chemistry of the Enzymes; Physical Properties of the Enzymes; Activators (Co-enzymes), Paralysors and Poisons. Chemical Dynamics of Enzyme Reactions; Influence of Temperature and Radiation on Enzymic Reactions; Chemical Statics in Enzyme; Reactions; Enzymic Syntheses; Specificity of Enzyme Action; Appendix; Practical Methods; Tables for the Estimation of Sugars by Bertrand's Method.

Fischer, Martin H. Oedema and Nephritis. A critical, experimental and clinical study of the pathology of water absorption in the living organism. *Second and Enlarged Edition.* 160 illustrations. 6 x 9. cloth. 705 pp. New York, 1915. **net, $5.00**

Fowler, Gilbert J. An Introduction to Bacteriological and Enzyme Chemistry. Illustrated. 5¼ x 7½. cloth. 336 pp. New York, 1911. $2.75

Maclean, Hugh. Lecithin and Allied Substances, The Lipins. 6 x 9½. cloth. 213 pp. London, 1918. $2.60

Contents: Introduction and Nomenclature; The Chemistry of the Phosphatides; The Occurrence, Methods of Extraction, Isolation and Purification of the Phosphatides; The Cerebrosides; Protagon; Alleged Lipins; Plant Lipins; The Function of Lipins.

Mast, S. O. Light and the Behavior of Organisms. Illustrated. 5½ x 8⅜. cloth. 421 pp. New York, 1911. **net, $2.50**

Contents: Introduction and Historical Review; Experimental Observations and Discussions Bearing on the Question as to How Organisms (Especially Those Without Eyes) Bend or Turn and Move Toward or from a Source of Stimulation; General Consideration of Reactions to Light; Adaptation, Formation of Aggregations in Regions of a Given Light Intensity and Different Methods of Response in Attaining This Region and Remaining in It; Reactions in Light of Different Wave-Lengths or Colors; Bibliography.

Monographs on Biochemistry. Edited by R. H. A. Plimmer and F. G. Hopkins. 6¼ x 9¾.

The editors of these monographs have kept two objects in view: firstly, that each author should be himself working at the subject with which he deals; and secondly, that a bibliography, as complete as possible, should be included, in order to avoid cross references which are apt to be wrongly cited, and in order that each monograph may yield full and independent information of the work which has been done upon the subject.

Armstrong, E. F. The Simple Carbohydrates and the Glucosides. *Third Edition.* 249 pp. London, 1919. $4.20

Barger, George. The Simple Natural Bases. 223 pp. London, 1914. $2.50

Bayliss, W. M. The Nature of Enzyme Action. *Fourth Edition, revised and enlarged.* 188 pp. London, 1919. $2.50

Cathcart, E. P. The Physiology of Protein Metabolism. 150 pp. London, 1912. *Reprinting*

Dakin, H. D. Oxidations and Reductions in the Animal Body. 144 pp. New York, 1912. *Reprinting*

Harden, Arthur. Alcoholic Fermentation. *Second Edition.* 8 illustrations. 164 pp. London, 1914. $1.80

Jones, Walter. Nucleic Acids. 126 pp. London, 1914. $1.60

Krough, A. The Respiratory Exchange of Animals and Man. Illustrated. 181 pp. London, 1916. $2.50

Leathes, J. B. The Fats. New edition in preparation.

Osborne, Thomas B. The Vegetable Proteins. 138 pp. London, 1916. $1.80

Plimmer, R. H. A. The Chemical Constituents of Proteins. Part I., Analysis. *Second Edition.* 175 pp. London, 1917. $2.25

Russell, E. J. Soil Conditions and Plant Growth. *Third Edition.* Illustrated. 251 pp. London, 1918. $2.50

Schryver, S. B. The General Characters of the Proteins. New edition in preparation.

Hardy. Colloids. *In Preparation*

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Ling. Carbohydrates. The Polysaccharides. *In Preparation*

Osborne, Thos. B. The Vegetable Proteins. 6 x 9½. cloth. 138 pp. London, 1918. $2.00

Contents: Historical Review; Occurrence of Proteins in the Different Parts of Plants, and their General Characteristics; Isolation and Preparation of Seed Proteins; Basic and Acid Properties of Proteins; Solubility of Vegetable Proteins; Precipitation of Vegetable Proteins; Denaturing of Vegetable Proteins; Physical Constants of Vegetable Proteins; Products of Hydrolysis of Vegetable Proteins; Classification of Vegetable Proteins; Some Physiological Relations of Vegetable Proteins to the Animal Organism and the Biological Relations of Seed Proteins to One Another.

Pictet, A. The Vegetable Alkaloids. With particular reference to their chemical constitution. From the *Second French Edition.* Rendered into English, revised and enlarged by H. C. Biddle. 6 x 9. cloth. 512 pp. N. Y., 1904. $4.50

Plimmer, R. H. A. The Chemical Constitution of the Proteins. In three parts. Part I. Analysis. *Third Edition.* Illustrated. 6 x 9½. boards. 175 pp. *(Monographs on Biochemistry.)* London, 1917. $2.25

Plimmer, R. H. A. Practical Organic and Bio-Chemistry. Illustrated. 6½ x 10. cloth. 647 pp. London, 1915. $6.00

Contents: Recognition of an Organic Compound Isolation and Preparation of Pure Organic Compounds; Composition of Organic Compounds; Identification of an Organic Compound; Hydrocarbons; Halogen Derivatives of the Hydrocarbons; Alcohols; Esters Ethers; Mercaptans and Sulphides; Aldehydes; Ketones; Acetone; Fatty Acids; Halogen Substitution Derivatives of the Fatty Acids; Acid or Acyl Chlorides; Acid Anhydrides; Carbohydrated Enzymes Fermentation; Individual Groups of Proteins; Chemical Constitution of Haemin and Haematoporphyrin; Pigments of Leaves; Metabolism; Composition of the Commoner Tissues Used as Food-Stuffs for Animals.

Robertson, T. B. The Physical Chemistry of the Proteins. 6 x 9. cloth. 500 pp. London, 1918. **net, $5.00**

Contents: Chemical Statics in Protein Systems. Chemical Constitution of the Proteins; Preparation of Pure Proteins; Quantitative Estimation of the Proteins; Compounds of the Proteins. *Electrochemistry of the Proteins.* Formation and Dissociation of Protein Salts; Combining-Capacity of the Proteins; Electrical Conductivity of Solutions of Protein Salts; Electrochemistry of Coagulation. *Physical Properties of Protein Systems.* Phenomena Which Accompany Changes in the State of Aggregation of Proteins; Certain Physical Properties of Protein Solutions, etc.; Optical Properties of Protein Solutions. *Chemical Dynamics in Protein Systems.* Hydrolysis of the Polypeptids; Hydrolysis of the Proteins; Enzymatic Synthesis of Proteins; Technique of Electrochemical Measurements in Protein Systems.

Snyder, Harry. The Chemistry of Plant and Animal Life. *Fourth Revised Edition.* 102 illustrations. 5 x 7½. cloth. 410 pp. New York, 1916. $2.25

Contents: Composition of Matter; Properties of Elements and Compounds; Laboratory Manipulation; Oxygen; Nitrogen; Carbon; Water; Air; Acids, Bases; Salts, and Neutralization; Hydrochloric Acid Chlorin and Chlorids; Nitric Acid and Nitrogen Compounds; Phosphorus, Sulfur, Silicon and Their Compounds; Oxids of Carbon and Carbon Compounds; Writing Equations; Potassium, Sodium, Calcium, etc., and Their Compounds; The Water Content and Ash of Plants; The Non-nitrogenous Organic Compounds of Plants; Nitrogenous Organic Compounds of Plants; Chemistry of Plant Growth; Composition of Plants at Different Stages of Growth; Factors Which Influence the Composition and Feeding Value of Crops; Composition of Coarse Fodders; Wheat; Maise, Oats, Barley, Rye, etc.; Mill and By-products; Roots, Tubers, and Fruits; Fermentation; Chemistry of Digestion and Nutrition; Rational Feeding of Animals; Composition of Animal Bodies; Rational Feeding of Men.

Spiegel, Leopold. Chemical Constitution and Physiological Action. Translated with additions from the German by C. Luedeking and A. C. Boylston. 5¼ x

7¾. cloth. 162 pp. New York, 1915. net, $1.25

Contents: General Considerations; Inorganic Compounds; Organic Compounds; Aliphatic Series; Alachydes and Ketones; Acids and Derivatives; Aromatic Series; Inner Disinfection; Hydroaromatic Compounds; Nitrogen Compounds; Ammonia and Simple Derivatives; Ammonium Bases; Cyclic Bases and Alkaloids; Group Atropine-Cocaine; Opium Alkaloids and Relatives; Veronal Group; Quinine and Relatives; Purin Group; Hydrazin and Hydroxylamin; Hyponitrous Acid Derivatives; Resume.

Tashiro, Shiro. A Chemical Sign of Life. Illustrated. 5¼ x 7½. cloth. 142 pp. Chicago, 1917. $1.00

Contents: Irritability as a Sign of Life; Chemical Signs of Irritability in the Nerve Fiber; Excitation and Conduction; Chemical Signs of Life; Conclusions; Appendix; The Biometer.

CATALYSIS

Ellis, Carleton G. The Hydrogenation of Oils, Catalyzers and Catalysis and the Generation of Hydrogen and Oxygen. *Second Edition, thoroughly revised and enlarged.* 240 illustrations. 6¼ x 9½. cloth. 767 pp. N. Y., 1919. $7.50

Contents: Methods of Hydrogenation; Catalyzers and Their Role in Hydrogenation Processes; The Base Metals as Catalyzers; The Occlusion of Hydrogen and the Mechanism of Hydrogen Addition; The Analytical Constants of Hydrogenated Oils; Edible Hydrogenated Oils; Use of Hydrogenated Oils and Their Utilization in Soap Making; Uses of Hydrogenated Oils and Properties of Certain Hardened Products; Hydrogenation Practice; The Hydrogenation of Petroleum; The Hydrogen Problem in Oil Hardening; Water Gas as a Source of Hydrogen and the Replacement of Carbon Monoxide by Hydrogen; Liquefaction and Other Methods for the Removal of Carbon Monoxide; Hydrogen by the Decomposition of Hydrocarbons; Hydrogen by the Action of Steam on Heated Metals; Action of Acids on Metals; Miscellaneous Methods of Hydrogen Generation; Hydrogen and Oxygen by Electrolysis of Water; Precautions in Handling Hydrogen; Appendices.

Henderson, G. G. Catalysis in Industrial Chemistry. 5½ x 8¾. cloth. 211 pp. London, 1919. $3.40

Contents: Catalysis and Catalysts: Generalities; Preparation of Active Metals; Hydrogen; Chlorine and Chlorine Compounds; Graphite; Carbon Tetrachloride and Oxychloride; Carbon Disulphide, Elimination from Coal Gas; Sulphur, Sulphuric Acid, Sulphuryl Chloride, Persulphates; Regeneration of Chromic Acid; Ammonia; Other Compounds of Nitrogen; Nitric Acid; Ammonia; Other Compounds of Nitrogen; Nitric Acid; Hydrogenation; Dehydrogenation; Oxidation, in Gaseous Systems; Oxidation, in Liquid Systems; Hydration and Hydrolysis; Dehydration; Polymerization; Condensation; Preparation of Hydrocarbons; Preparation of Halogen Derivatives; Sulphonation and Nitration; Preparation of Amine Derivatives: Diazo-Compounds; Preparation of Aldehydes and Ketones; Preparation of Sulphur Compounds; Intramolecular Rearrangement; Enzymes; Surface Combustion; List of Catalysis.

Jobling, E. Catalysis and Its Industrial Applications. 12 illustrations. 5 x 7½. cloth. 128 pp. Phila., 1916. *Reprinting*

Contents: Sulphuric Acid Manufacture; Industrial Chlorine, Salt Cake and Sulphur Recovery; Fixation of Atmospheric Nitrogen; Surface Action; Hydrogenation; Dehydrogenation and Oxidation; Dehydration, Hydrolysis, etc.

Maxted, Edw. B. Catalytic Hydrogenation and Reduction. 12 illustrations. 5 x 7½. cloth. 112 pp. Philadelphia, 1919. $2.00

Contents: Historical Introduction; Preparation of Catalysis; Methods of Catalytic Hydrogenation; Hydrogenation of Unsaturated Chains; Hydrogenation of Unsaturated Rings; Miscellaneous Reductions; Dehydrogenation; The Technical Hydrogenation of Unsaturated Oils.

Rideal, E. K., and Taylor, H. S. Catalysis in Theory and Practice. Illustrated. 6 x 9. cloth. 511 pp. N. Y., 1919. $6.00

Sabatier, Paul. Catalysis in Organic Chemistry. Translated from the French by E. Emmet Reid. *In Press*

INDUSTRIAL CHEMISTRY

Benson, Henry K. Industrial Chemistry for Engineering Students. 52 illustrations. 5¼ x 7¾. cloth. 445 pp. New York, 1915. $2.50

Contents: General Processes and Apparatus; The Atmosphere; Industrial Water; Combustion and Destructive Distillation; Solid Fuels; Liquid and Gaseous Fuels; Petroleum and Lubricating Oils; The Manufacture of Pig Iron; Commercial Forms of Iron and Steel; The Industrial Alloys; Clay Products; Hydraulic Cements and Lime Products; Paving Materials and Wood Preservation; Paint and Varnish Materials; Plastics for Electrical Insulation; Cellulose Products; Explosive Materials.

Blount, B., and Bloxam, A. G. Chemistry for Engineers and Manufacturers. A practical text-book. In two volumes. 6 x 8¾. cloth.

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Vol. II. Chemistry of Manufacturing Processes. *Second Edition.* 47 illustrations. 6 x 8¾. cloth. 528 pp. London, 1913. net, $5.00

Contents: Sulphuric Acid Manufacture; Alkali and its By-Products; Destructive Distillation; Artificial Manure Manufacture; Petroleum; Lime and Cement; Clay Industries and Glass; Sugar and Starch; Brewing and Distilling; Oils, Resins, and Varnishes; Soap and Candles; Textiles and Bleaching; Coloring Matters, Dyeing and Printing; Paper and Pasteboard; Pigments and Paints; Manufacture of Leather, Glue, and Size; Explosives; Minor Chemical Manufactures.

Bourcart, E. Insecticides, Fungicides and Weedkillers. A practical manual on the diseases of plants and their remedies, for the use of manufacturing chemists, agriculturists, arboriculturists and horticulturists. Translated from the French, revised and adapted to British standards and practice by Donald Grant. 83 tables, 12 illustrations. 6 x 8¾. cloth. 450 pp. New York, 1913. $6.00

Davis, George E. Handbook of Chemical Engineering. *Second Edition.* Two volumes. Illustrated. 7 x 10¼. cloth. 1059 pp. Manchester, 1904. *Reprinting*

Contents: Introduction; The Technical Laboratory; Materials Used in Plant Construction; Weighing and Measuring; Steam Production and Distribution; Power and its Application; Moving Solids, Liquids and Gases; Treating and Preparing Solids; Application of Heat and Cold; Separating Solubles from Insolubles; Absorbing and Compressing Gases; Evaporation and Distillation, Crystalization and Dialysis; Electrolysis and Electro-Smelting; Construction of Packages; Organization and Building; Index.

Duncan, Robert K. The Chemistry of Commerce. A simple interpretation of some new chemistry in its relation to modern industry. 58 illustrations. 5½ x 8½. cloth. 275 pp. N. Y., 1907. $2.25

Contents: Catalysis; Problem of the Fixation of Nitrogen; Rare Earths and Some of Their Applications; High Temperatures and Modern Industry; Modern Chemistry and Glass-making; Floral Perfumes; Making of Medicines; New Microbe Inoculation; Cellulose; Industrial Fellowships.

Dyson, S. S. A Manual of Chemical Plant. Illustrated. In twelve parts. 7 x 10. paper. Dover, England, 1916-1919. (Not sold separately) $7.50

A record of the practical outcome of research and experiment as embodied in the range of plant which is actually available for the carrying out of the operations and processes of industrial chemistry. The work therefore places in the hands of the chemical engineer, the chemical manufacturer, the chemical works manager, and the student of chemical technology the results of a long and patient examination of the claims of almost every new piece of chemical plant that has been introduced during the last twenty-five years, together with an exhaustive analysis of the patent literature of the same period. Each part consists of about forty pages.

Dyson, S. S., and Clarkson, S. S. Chemical Works, Their Design, Erection and Equipment. 80 illustrations, 9 folding plates. 6½ x 10. cloth. 220 pp. New York, 1912. $9.00

Contents: Choice of Site; Notes on Materials Used in Construction; First Principles in Laying Out a Works: Arrangement of Buildings; Stores; Workshops; The Drainage System; Foundations; Retaining Walls; Fire Prevention; Ambulance Arrangements. The Power House: Boilers; Coal Store; Automatic Weighing Machines; Chimney; Economizers; Steam Engines; Steam Turbines. Sulphuric Acid Plant: General Design; Chambers; Glover Tower; Gay-Lussac Tower; Notes on Vitriol Manufacture; Recent Developments in Vitriol Plant Design and Working. Hydrochloric Acid Plant; Nitric Acid Plant; Notes on High Explosives Plant; Sulphate of Ammonia Plant; Notes on Artificial Manure Plant; General Plant; On the Chemical Engineer; The Saw-Mill and Box-Making Department; The Alkali, etc., Works Regulation Act: Alkali Works and Alkali Waste; Sulphuric Acid, Muriatic Acid and Other Specified Works; Regulation of Works: Inspection; Special Rules; Procedure. "Welfare Work" or "Prosperity Sharing."

Grossman, J. The Elements of Chemical Engineering. With a preface by Sir W. Ramsay. *Second Edition, revised.* 50 illustrations. 5¾ x 8. cloth. 160 pp. London, 1913. $2.00

Contents: The Beaker; Distilling Flasks; Liebig Condensers; Fractionating Tubes; Air-Bath; The Blowpipe and the Crucible; The Steam Boiler and Other Sources of Power; Application of Heat in Chemical Engineering; The Funnel; The Mortar; Measuring Instruments; Materials Used in Chemical Engineering, and Their Mode of Application; Technical Research and the Designing of Plant; Current Prices of Chemicals and Materials.

Groves, C. E., and Thorp, W. (Editors). Chemical Technology. The application of chemistry to the arts and manufactures. Each volume sold separately.

Vol. I. Fuel and Its Applications. By E. J. Mills and F. J. Rowan. Illustrated. 6 x 9. half morocco. Philadelphia, 1889. $6.00

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Vol. III. Gas Lighting. By Chas. Hunt. Illustrated. 6 x 9. cloth. Philadelphia, 1900. $4.50

Vol. IV. Electric Lighting and Photometry. By Arthur G. Cooke and W. J. Dibdin. Illustrated. 6 x 9. cloth. Philadelphia, 1903. $4.50

Hamlin, M. L. Action of Chemicals on Industrial Materials. *In Press*

Hinckley, J. W. Chemical Engineering. Notes on grinding, sifting, separating, and transporting solids. Illustrated. 5 x 7. cloth. 103 pp. Phila., 1914. $3.00

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Johnstone, Sydney J. The Rare Earth Industry. Including the manufacture of incandescent mantles, pyrophoric alloys, and electrical glow lamps. Together with a chapter on The Industry of Radio-active Substances, by Alexander S. Russell. 42 illustrations. 6½ x 10. cloth. 144 pp. N. Y., 1915. $4.00

Contents: The Thorium and Cerium Industry; Titanium; Zirconium; Tantalum and Niobium; Tungsten; The Incandescent Electric Glow Lamp Industry; Uranium; Vanadium; The Industry of Radioactive Substances.

Kremann, R. The Application of Physico-chemical Theory to Technical Processes and Manufacturing Methods. Translated from the German by Harold E. Potts and edited by Albert Mond. 35 illustrations. 5¾ x 8¾. cloth. 229 pp. N. Y., 1913. **net.** $3.00

Contents: Two Fundamental Laws of the Mechanical Theory of Heat; Reaction Velocity and Catalytes; Other Special Applications of the Law of Mass Action; Influence of Temperature on the Equilibrium-Constant; Dissociation Pressure: Application of the Phase Rule; Application of the Phase Rule to Solid-Liquid Systems; Transformation Phenomena in Hydraulic Binding Agents; Other Applications of the Phase Rule; The Distribution Law; Adsorption Compounds; Reciprocal Pairs of Salts.

Lassar-Cohn, Dr. An Introduction to Modern Scientific Chemistry. Translated from the second German edition by M. M. Pattison Muir. *New Edition.* 58 illustrations. 5¼ x 7½. cloth. 358 pp. London, 1908. $2.25

Contents: List of the Elements; Hydrogen Gas; Chlorine, Bromine, Iodine, Fluorine, and Their Compounds with Hydrogen; Hydrochloric Acid Gas; Acids, Bases and Salts; Hydrobromic, Hydriodic and Hydrofluoric Acid; Atoms and Their Weights; Calculating Formula from the Results of Analyses; Molecules and Their Weights; Oxygen; Sulphur; Sulphuric Acid; Acid Salts; Double Salts; Basic Salts; Nitrogen; Nitric Acid; Aqua Regia; Explosives; Phosphorus; Various Modifications of Certain Elements; Ozone; Phosphoretted Hydrogen; Building up of Plants from Inorganic Substances; Arsenic; Antimony; Carbon; Organic Chemistry; Valencies of the Elements; Chemistry of Organized Substances; Asymmetric Carbon Atom; Manufacture of Coal-Gas; Acetylene Gas; Petroleum; Flame; Silicon; The Metals; The Light Metals; Preparation of the Light Metals by Electricity; Potassium; Sodium; Calcium; Magnesium; Aluminum; The Systematic Arrangements of the Elements.

Leighou, Robert B. Chemistry of Materials of the Machine and Building Industries. Illustrations. 5¾ x 8¼. cloth. 464 pp. New York, 1917. $3.50

Levy, S. I. The Rare Earths. Their occurrence, chemistry and technology. Illustrated. 5¾ x 8¾. cloth. New York, 1915. $4.00

Contents: The Occurrence of the Elements in Nature. Nature of the Minerals, and Their Mode of Occurrence; Silicates; Titano-silicates and Titanates; Tantalo-Columbates; Oxides and Carbonates; Phosphates and Halides; Monazite Sands; Radioactivity of the Minerals. *Chemistry of the Elements.* General Properties of the Cerium and Yttrium Groups; General Methods of Separation; The Cerium Group; The Terbium Group; The Erbium and Ytterbium Groups, Yttrium and Scandium; The Group IVa

Elements; Zirconium and Thorium. *The Technology of the Elements.* Incandescent Mantle Industry—Historical and General Introduction; Chemical Treatment of Monazite; Manufacture of Mantles from Cotton and Ramie; Artificial Silk; Other Technological Uses of the Cerium and Yttrium Elements with Zirconium and Thorium; Industrial Applications of Titanium and Its Compounds.

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Martin, G. Industrial and Manufacturing Chemistry. *Second Revised and Enlarged Edition.* In two parts. (3 volumes.) Part I., Organic. 249 illustrations. 6½ x 10. cloth. 754 pp. New York, 1915. $12.50

Contents: Oil, Fat, Varnish, and Soap Industry; The Sugar Industry; Starch Industry; Cellulose Industry; Fermentation Industry; Charcoal and Wood-distilling Industries; Turpentine and Resin Industry; Industrial Gums and Resins; Rubber Industry; Industry of Aliphatic Chemicals; Illuminating Gas Industry; Coal-tar and Coal-tar Products; Synthetic Colouring Matters; Natural Dyestuffs; Ink Industry; Paint and Pigment Industry; Textile Fibre, Bleaching and Proofing Industries; The Dyeing and Colour-printing; Leather and Tanning; Glue, Gelatine and Albumen Industries; Modern Synthetic and Other Drugs; Modern Explosives Industry; Industry of Photographic Chemicals.

Part II. Inorganic. In two volumes. (Sold separately.) Illustrated. 6½ x 10. cloth. N. Y., 1918. Each, $12.50

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Martin, G., and others. Industrial Gases. Including the liquefaction of gases and the manufacture of hydrogen, oxygen, nitrogen, carbon dioxide, sulphur, dioxide, sulphur dioxide, ammonia, producer gas, illuminating gas, acetylene, ozone, etc. 84 illustrations, 3 folding plates. 6½ x 10. cloth. 158 pp. New York, 1916. $4.00

Contents: The Liquefaction of Gases, including the Manufacture of Oxygen, Nitrogen, and Hydrogen from Liquefied Gases, by John M. Dickson; Industrial Oxygen, by G. Martin; Industrial Nitrogen, by G. Martin; Hydrogen, by H. S. Redgrove; Producer Gas, by H. S. Redgrove; The Carbon Dioxide (Carbonic Acid) Industry, by H. S. Redgrove; Manufacture of Nitrous Oxide, by G. Martin; The Ammonia and Ammonium Salts Industry, by G. Martin; Manufacture of Sulphur Dioxide and Sulphites, by G. Martin; Acetylene, by Frank B. Gatehouse; The Illuminating Gas Industry, by Ernest A. Dancaster.

Molinari, E. Treatise on General and Industrial Inorganic Chemistry. *Second Edition,* translated from the Fourth Revised and Amplified Italian Edition by Thomas H. Pope. 330 illustrations. 6½ x 10. cloth. 895 pp. Philadelphia, 1920. $12.00

Contents: GENERAL. Matter, Space, substance, Mass; Physical and Chemical Phenomena; History of Chemistry; Fundamental Laws of Modern Chemistry; Laws of Matter in the Gaseous State; Chemical Equations; Matter in the Liquid State; Study of Dilute Solutions; Matter in the Solid State; SPECIAL PART. Classification of the Elements; Non-Metals; Hydrogen Compounds of the Halogens; Oxygen Compounds of the Halogens; Oxygen Group; Hydrogen Compounds of the Group; Oxygen, Sulphur, Selennium, Tellurium; Oxygen Compounds of Sulphur, Selenium and Tellurium; Nitrogen Group; Vanarium; Columbium; Tantalum; Carbon Group; METALS. Electrochemistry; Magnesium Sub-Group; Group of Copper, Silver and Gold; Trivalent Metals; Tetravalent Metals; Platinum Group.

Molinari, E. Treatise on General and Industrial Organic Chemistry. Translated from the *Second Enlarged and Revised Edition*, by T. H. Pope. 506 illustrations. 6½ x 10. cloth. 789 pp.

Philadelphia, 1913. *Reprinting*

Contents: Purification of Organic Compounds; Analysis of Organic Compounds; Calculation of Empirical Formulæ; Determination of Molecular Weight by Chemical Means; Polymerism; Valency of Carbon, Constitutional Formulæ, Isomerism, Metamerism, Pseudoisomerism, Tautomerism Desmotropy; Stereoisomerism, or Space Isomerism; Homology, Isology; Physical Properties of Organic Compounds in Relation to the Chemical Composition and Constitution; Classification of Organic Compounds; Official Nomenclature; Saturated Hydrocarbons; Unsaturated Hydrocarbons; Halogen Derivatives of Hydrocarbons; Alcohols; Derivatives of Alcohols; Aldehydes and Ketones; Derivatives of Polyhydric Alcohols; Monobasic Saturated Fatty Acids; Monobasic Unsaturated Fatty Acids; Oleric or Acrylic Series; Acids with Three Double Linklings; Polybasic Fatty Acids; Unsaturated Dibasic Acids; Tribasic Acids; Tetrabasic Acids; Derivatives of Acids; Cyanogen Compounds; Derivatives of Carbonic Acid; Treatment of Fats for Oils and Soaps; Aldehydic or Ketonic Polyhydric Alcohols; Industrial Preparation of Sucrose; Cyclic Compounds; Isocyclic Compounds; Aromatic Hydrocarbons; Halogen Substitution Derivatives of Benzene; Sulphonic Acids; Phenols; Quinones; Nitro-Derivatives of Aromatic Hydrocarbons; Amino-Derivatives of Aromatic Hydrocarbons; Nitrophenols, Aminophenols and Thiophenols; Azo-Diazo and Diazoamino-compounds and Hydrazines; Aromatic Alcohols, Aldehydes and Ketones; Hydroxy-Alcohols-Aldehydes and Ketonic Alcohols; Aromatic Acids; Hydrogenated Benzene Compounds; Condensed Benzene Nuclei; Heterocyclic Compounds; Colouring Matters; Textile Fibres; Quantitative Analysis of Mixtures of Textile Fibres; Dyeing and Printing Test; Fastness; Theory of Dyeing; Proteins; Glucosides and Other Substances.

Nagel, Oscar. The Mechanical Appliances of the Chemical and Metallurgical Industries. Illustrated. 6 x 9. cloth: 307 pp. New York, 1908. $2.50

Contents: General; Steam and Water Power; Gas Power; Electric Power; Transportation of Solids; Transportation of Liquids; Transportation of Gases; Grinding; Mixing Machines; Firing and Furnaces; Separating; Purification of Gases; Evaporating, Distilling and Condensing; Drying Appliances; Measurement of Temperature; The Works Chemist as Engineer. A useful book, descriptive rather than analytical and critical in character.

Rogers, Allen. Elements of Industrial Chemistry. An abridgement of "Manual of Industrial Chemistry," written by forty eminent specialists and edited by Allen Rogers. 117 illustrations, 1 folding plate. 5½ x 8. cloth. 521 pp. New York, 1916. net, $3.00

Contents: General Processes; Water, Its Uses and Purification; Fuels; Sulphuric Acid; Nitric Acid; Elements and Inorganic Compounds; Ceramic Materials and Products; Pigments; Fertilizers; Illuminating Gas; Coal-Tar and Its Distillation Products; The Petroleum Industry; The Destructive Distillation of Wood; Oils, Fats and Waxes; Lubricating Oils; Soap, Soap Powder and Glycerine; Essential Oils; Resins, Oleo-Resins, Gum-Resins, Gums; Varnish; Sugar; Starch, Glucose, Dextrin and Gluten; Beer, Wine and Liquor; Textiles; Dyestuffs and Their Application; The Paper Industry; Explosives; Leather.

Rogers, Allen. Industrial Chemistry. A manual for the student and manufacturer. *Third Edition, thoroughly revised and enlarged.* 377 illustrations. 6½ x 9¾. flexible fabrikoid. 1255 pp. New York, 1920. $7.50

Contents: General Processes, by Allen Rogers; Water for Industrial Purposes, by H. Stabler and A. A. Chambers; Fuels, by J. C. W. Frazer; Sulphuric Acid, by W. M. Grosvenor; Nitric Acid, by W. M. Grosvenor; Salt and Hydrochloric Acid, by O. L. Shinn; Elements and Compounds, by Allen Rogers; Chlorine and Allied Products, by W. F. Doerflinger; Electrochemical Industries, by W. L. Landis; Lime, Cement and Plaster, by Richard K. Meade; Clay, Bricks and Pottery, by Allen Rogers; Glass, by James Gillinder; White Lead, by G. W. Thompson; Zinc Oxide, by George B. Heckel; Pigments and Paint Oils, by Maximilian Toch; Mixed Paints, by Henry A. Gardner; The Metallurgy of Iron and Steel, by Bradley Stoughton; Fertilizers, by A. G. Stillwell; Commercial Organic Chemicals, by Allen Rogers; Illuminating Gas, by W. H. Fulweiler; Coal Tar and Its Distillation Products, by F. E. Dodge; The Petroleum Industry, by Thomas T. Gray; The Destructive Distillation of Wood, by W. B. Harper; Oils, Fats and Waxes, by Carleton Ellis; Linseed Oil, by G. W. Thompson; Hydrogenation of Oils, by Carleton Ellis; Lubricating Oils, by Augustus H. Gill; Soaps and Soap Powder, by Lincoln Burrows; Glycerine, by A. C. Langmuir; Laundering, by W. F. Faragher; Essential Oils, Synthetic Perfumes and Flavoring Materials, by Alois von Isakovics; Turpentine and Rosin, by Charles H. Herty; Resins, Oleo-Resins, Gum-Resins and Gums, by Allen Rogers; Shellac, by A. C. Langmuir; Rubber and Allied Gums, by Frederic Dannerth; Varnish, by A. H. Sabin; Sugar, by Guilford L. Spencer; Starch, Glucose, Dextrin and Gluten, by G. W. Rolfe; Brewing and Malting, by Robert Wahl; Wine Making, by L. W. Haas; Distilled Liquors, by Gustave L. Goob; Textiles, by J. Merritt Matthews; Dyestuffs and Their Application, by L. A. Olney; The Art of Paper Making, by G. F. Lull; Cellulose Industries, by Jasper E. Crane; Explosives, by O. W. Willcox; Leather, by Allen Rogers; Glue and Gelatine, by Jerome Alexander; Casein, by E. L. Tague; Practical Applications of Colloid Chemical Principles, by Jerome Alexander; Dehydrated, Dried and Evaporated Foods, Condensed Foods, by Clarence V. Ekroth; Baking, by Arnold Wahl.

Rogers, Allen. Laboratory Guide of Industrial Chemistry. *Second Edition, entirely rewritten and enlarged.* 33 illustrations. 5¼ x 8¼. cloth. 223 pp. New York, 1917. net, $2.00

Contents: General Process; Inorganic Preparations; Organic Preparations; Dyeing of Textile Fibres; Pigments and Lakes; Driers, Varnishes, Paints and Stains; Soap and Allied Products; Leather Manufacture; Wood Fiber, Pulp and Paper; Useful Data.

Sadtler, S. P. Industrial Organic Chemistry. Adapted for the use of manufacturers, chemists, and all interested in the utilization of organic materials in the industrial arts. *Fourth Edition, revised, enlarged and reset.* 122 illustra-

tions. 19 diagrams. 7 x 10. cloth. Philadelphia, 1912. $6.00

Contents: Petroleum and Mineral Oil Industry; Industry of the Fats and Fatty Oils; Industry of the Essential Oils and Resins; The Cane-Sugar Industry; The Industries of Starch and Its Alteration Products; Fermentation Industries—Malt Liquors, Wine, Ardent Spirits, Bread, Vinegar; Milk Industries; Vegetable Textile Fibres—Paper-Making, Guncotton, etc.; Textile Fibres of Animal Origin—Wool, Silk, Artificial Silk; Animal Tissues and Their Products—Leather, Glue, etc.; Industries Based Upon Destructive Distillation—Wood and Coal; The Artificial Coloring Matters; Natural Dye-Colors; Bleaching, Dyeing, and Textile Printing; The Metric System; Tables for Determination of Temperature; Specific Gravity Tables; Alcohol Tables; Physical and Chemical Constants of Fixed Oils and Fats.

Scheele, C. W. A Re-Issue of the Chemical Essays. Translated from the Transactions of the Academy of Sciences at Stockholm. With additions. First published in 1786. 5½ x 8. cloth. 300 pp. London, 1901. $2.50

Scherer, R. Casein. Its preparation and technical utilization. Translated from the German by Charles Salter. *Second Edition, revised and enlarged.* Illustrated. 5¾ x 8¾. cloth. 196 pp. London, 1911. $3.50

Contents: Casein: Its Origin, Preparation and Properties; Various Methods of Preparing It; Its Composition; Casein Paints; Technics of Casein Painting; Adhesives and Putties; Preparation of Plastic Masses from Casein; Uses of Casein in the Textile Industry, for Finishing, Colour Printing, etc.; Casein Foodstuffs; Sundry Applications; Compounds; Recent Patents Granted for the Improved Manufacture and Utilization of Casein.

Slosson, Edwin E. Creative Chemistry. Descriptive of recent achievements in the chemical industries. Illustrated. 5½ x 8. cloth. 320 pp. N. Y., 1919. $2.50

Contents: Three Periods of Progress; Nitrogen; Feeding the Soil; Coal-Tar Colors; Synthetic Perfumes and Flavors; Cellulose; Synthetic Plastics; The Race for Rubber; The Rival Sugars; What Comes from Corn; Solidified Sunshine; Fighting with Fumes; Products of the Electrical Furnace; Metals, Old and New; Reading References.

Stillman, Thomas B. Engineering Chemistry. A manual of quantitative chemical analysis for the use of students, chemists and engineers. *Fifth Edition.* 149 illustrations. 6 x 9. cloth. 768 pp. Easton, 1916. $6.00

Contents: Examination and Analysis of Coal, Coke, Limestone, Iron Ores, and Pyrites; Commercial Sampling of Iron Ores; Analysis of Blast Furnace Slag; Analysis of Manganese Ores; Methods for Copper, Lead and Zinc; Graphic Method for Blast Furnace Charges; The Blast Furnace as a Power Plant; Cast Iron Analysis; Foundry Chemistry; Examination and Analysis of Steel; Analyses of Tin Plate; Alloys; Chemical and Physical Examination of Portland and Natural Cements; Concrete; Analysis of Clay, Kaolin, Fire Sand, Building Stones, etc.; Asphalt; Methods of Testing Coal Tar and Refined Tars, Oils and Pitches; Examination of Lubricating Oils; Remarks on Lubricants and Lubrication; Oils Used for Illumination; Linseed Oils; Fuel Oils; Ultimate Analysis of Oils; Soap Analysis; Paris Green; Paint Analysis; Chemical and Physical Analysis of Paper; Water Analysis Filtration; Water for Locomotive Use: Feed Water Heaters; Fuel Economizers; Gas Analysis; Flue Gas Analysis; Of Illuminating Gas; Gas; Calorimetry; Manufacture of Water Gas; Natural Gas; Acetylene; Valuation of Coal for Gas Production; Manufacture of Oil Gas; Practical Photometry; Pyrometry; Appendix; Analysis of Cylinder Deposits; Cyanides; Welsbach Mantles; Gelatine Dynamite; Tables; Determination of Phosphorus Pentoxide; Iron Determinations.

Thorpe, Edward. A Dictionary of Applied Chemistry. *Revised Edition.* 5 vols. London, 1916.

Vol. I. *(A-Che).* 208 illustrations. 6 x 9. cloth. 766 pp. $18.00

Vol. II. *(Chi-Gou).* 294 illustrations. 6 x 9. cloth. 794 pp. $18.00

Vol. III. *(Gr-Oils).* With illustrations. 6 x 9. cloth. 797 pp. $18.00

Vol. IV. *(Oilstone-Soda Nitre).* Illustrated. 6 x 9. cloth. 735 pp. $18.00

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"The appearance of this second completely revised and enlarged edition is a matter of importance to the chemical profession. It would be difficult to find a more representative set of men than those chosen to treat the subjects presented in this volume. From the standpoint of bibliography alone, the work is of inestimable value and a careful comparison of individual articles shows a consistent and judicious editorial policy. New chapters have been introduced. These, together with the extension of other subjects which have increased in importance since the first edition make the book of great reference value to the chemist and chemical engineer. The general workmanship on the volume is excellent. The paper and binding are well adapted to withstand the hard service of the reference library and laboratory and the chemical profession will receive the timely revision and reissue of this well known work with gratitude to both editors and publishers."—*Journal of Industrial and Engineering Chemistry.*

Thorp, Frank H. Outlines of Industrial Chemistry. A text-book for students. *Third Edition,* revised and enlarged by Warren K. Lewis. 137 illustrations. 6 x 9. cloth. 690 pp. N. Y., 1918. $3.75

Vosmaer, A. Ozone, Its Manufacture, Properties, and Uses. 75 illustrations. 6 x 9¼. cloth. 210 pp. New York, 1916. net, $2.50

Contents: Nature of Ozone. Early History; Constitution; Nature; Occurrence; Properties; Tests. *Manufacture of Ozone.* Non-Electrical Methods; Electrical Methods; Electrical Discharges; Theory; Ozonators; Efficiency. *Uses of Ozone.* Purification of Drinking Water; Puri-

fication of Air; Therapeutic Uses; Use in the Industries; List of American Patents Bearing on Ozone; Bibliography.

Watson, E. R. Color in Relation to Chemical Constitution. 65 illustrations, 4 colored plates. 5½ x 8¾. cloth. 210 pp. London, 1918. (Monographs on Industrial Chemistry.) $4.50

Contents: Early History of the Subject; Discussion of the Quinonoid Theory—Modifications of the Quinonoid Theory; Absorption Spectra—Methods of Examining and Recording; Absorption Spectra of Typical Organic Substances and Dye-stuffs; Relationships Between Constitution and Depth of Color Theories of the Nature of the Vibrations Causing Absorption Bands and Color; Infra-Red Absorption Spectra of Organic Substances; Fluorescence; The Color and Spectra of Inorganic Compounds.

COLLOIDS

Alexander, Jerome. Colloid Chemistry. An introduction, with some practical applications. Illustrated. 5 x 7. cloth. 95 pp. New York, 1919. $1.00

Contents: Introduction; Classification of Colloids; Consequences of Subdivision; The Ultramicroscope; General Properties of Colloids; Practical Applications of Colloid Chemistry.

Arndt, Kurt. A Popular Treatise on the Colloids in the Industrial Arts. Translated from the *Second Enlarged German Edition* by Nahum E. Katz. 5 x 7¼. cloth. 80 pp. Easton, Pa., 1914. $1.00

Bechhold, H. Colloids in Biology and Medicine. Authorized translation from the *Second German Edition*, with Notes and Emmendations by J. G. M. Bullowa. 54 illustrations. 6¼ x 9¼. cloth. 478 pp. N. Y., 1919. $5.00

Contents: Introduction to the Study of Colloids. Introduction; What are Colloids? Surfaces; Size of Particles, Molecular Weight, Osmotic Pressure, Conductivity; Phenomena of Motion; Consistency of Colloids; Optical, and Electrical Properties of Colloids; Methods of Colloid Research. *The Biocolloids.* Introduction; Carbohydrates; Lipoids; Proteins; Food and Condiments; Enzymes; Immunity Reactions. *The Organism as a Colloid System.* Significance of the Colloidal Condition for the Organism; Metabolism and the Distribution of Material; Growth, Metamorphosis and Development; The Cell; The Movements of Organisms; Blood, Respiration, Circulation and its Disturbances; Absorption; Secretion and Excretion; The Nerves; Toxicology and Pharmacology; Microscopical Technic.

Burton, E. F. The Physical Properties of Colloidal Solutions. 18 illustrations. 6 x 9. cloth. 208 pp. London, 1916. *Reprinting*

Contents: Preparation and Classification of Colloidal Solutions; The Ultramicroscope; The Brownian Movement; The Optical Properties of Colloidal Solutions; Measurement of the Sizes of Ultramicroscopic Particles: Motion of Colloidal Particles in an Electric Field, Cataphoresis; The Coagulation of Colloids; Theory of the Stability of Colloids; Practical Applications of the Study of Colloidal Solutions.

Hatschek, Emil. An Introduction to the Physics and Chemistry of Colloids. *Third Edition.* 17 illustrations. 5¼ x 7½. cloth. 118 pp. Phila., 1919. $1.75

Contents: History of the Subject; Methods of Investigation as Applied to Elucidation of Peculiarities of Colloidal State; Viscosity of Liquids; Methods of Preparing Suspensoid Sols; Emulsions; Gels; Changes of Concentration of Boundary Surfaces; General Conclusions and Points of View to be Drawn from Preceding Chapters; Experimental Methods of Examination and Preparation.

Hatschek, Emil. Laboratory Manual of Elementary Colloid Chemistry. 20 illustrations. 5 x 7½. cloth. 135 pp. Philadelphia, 1920. $2.00

Contents: General Remarks on Apparatus, Materials and Procedure; Dialysis; Suspensoid Sols; Suspensions; Organosols; Emulsoid Sols and Gels; Egg Albumin Sol; Emulsions; Ultra-Filtration; Optical Methods of Examination; Cataphoresis; Electrolyte Precipitation of Suspensoid Sols; Mutual Precipitation of Suspensoid Sols; Protection; Viscosity Measurements; Adsorptions; Capillary Analysis; Determination of an Adsorption Isotherm; The Liesegang Phenomenon.

Ostwald, W. An Introduction to Theoretical and Applied Colloid Chemistry. Translated by M. H. Fischer. 41 illustrations. 6 x 9. cloth. 251 pp. New York, 1917. net, $2.50

Contents: Fundamental Properties of the Colloid State; Colloids as Examples of Dispersed Systems; Methods of Preparing Colloid Solutions; Classification of the Colloids; The Physico-Chemical Properties of the Colloids and Their Dependence upon the Degree of Dispersion; Changes in State of Colloids; Scientific Applications of Colloid Chemistry; Some Technical Applications of Colloid Chemistry.

Ostwald, Wolfgang. A Handbook of Colloid-Chemistry The recognition of colloids, the theory of colloids, and their general physico-chemical properties. *Second Edition.* Translated from the Third German Edition by Dr. Martin H. Fischer, with numerous notes added by Emil Hatschek. 63 illustrations. 6½ x 9½. cloth. 300 pp. Philadelphia, 1919. $4.50

Contents: Elementary General Colloid Analysis. Elementary Special Colloid Analysis. General Colloid-Chemistry. General Constitution of Colloid Systems; Relations Between the Physical State and the General Properties of Colloid Systems; General Energetics of the Dispersoids; Distribution of the Colloid State and the Concept of Colloid Chemistry. *Special Colloid-Chemistry.* Mechanical Properties of Colloid Systems.

Pösch, V. An Introduction to the Chemistry of Colloids. A compendium of colloidal chemistry for students, teachers and works managers. Translated from the *Second Enlarged German Edition* by H. H. Hodgson. 5 x 7½. cloth. 114 pp. London, 1910. $1.75

Contents: General Characteristics; Relation of Colloidal Solutions to Solutions Proper and to Suspensions; Dispersoids and Their Classification; Preparation of Colloidal Solutions; Research Methods; Ultramicroscopy; Recent Views on the Nature of the Colloid State; Importance of Colloidal Chemistry to Other Sciences and in Chemical Industry and Technology.

Rohland, Dr. P. The Colloidal and Crystalloidal State of Matter. Translated by W. J. Britland and H. E. Potts. 5 x 7½. cloth. 54 pp. New York, 1912. *Reprinting*

This subject concerns everyone who is not opposed to, or ignorant of, modern natural science, whether he is a technologist, industrialist, chemist, physicist, forestry worker, practical doctor, physiologist, or natural philosopher, it will lead to work yielding splendid fruit and perhaps to the latent secrets of nature still to be disclosed. The book is written for general orientation in this field.

Searle, Alfred B. The Uses of Colloids in Health and Disease. With foreword by Sir Malcolm Morris. Illustrated. 6 x 9. cloth. 127 pp. London, 1920. $3.50

Contents: Nature and Properties of Colloids; Animal and Vegetable Fluids; Hygienic Uses of Colloids; Micro-Organisms and Disease; Poisoning; Use of Colloids in Medicine; Preparation of Colloidal Sols; Colloids as Germicides and Disinfectants; Typical Colloidal Remedies and Their Uses; Conclusions.

Taylor, W. W. The Chemistry of Colloids, and Some Technical Applications. Illustrated. 5½ x 7½. cloth. 336 pp. New York, 1915. $2.75

Contents: General Properties of Colloids. General Differences between Suspensoids and Emulsions; Diffusion and Dialysis; Osmotic Pressure and Molar Weight; Optical Properties, Brownian Movements; Size of Particles and Ultra-Filtration; Electrical Properties; Precipitation; Properties of Gels. *Methods of Preparation.* Crystallization Methods; Solution Methods; Electrical Dispersion Methods. *Adsorption.* Surface Phenomena; Surface Concentration. *Application of Colloid Chemistry.* Semi-Colloids; Dyeing; Tanning, The Soil, and Purification of Sewage; Applications of Colloid Chemistry to Biology.

Zsigmondy, Richard. Colloids and the Ultramicroscope. A manual of colloid chemistry and ultramicroscopy. Authorized translation by Jerome Alexander. Illustrated. 5½ x 8¾. cloth. 258 pp. New York, 1909. $3.00

Contents: Limitation of the Field; Classification of Hydrosols According to Two Different Points of View; History of the Irreversible Colloids; Facts Pointing to the Homogeneity of Gold Hydrosols; Development of Ultramicroscopy; Description of the Apparatus for Making Visible Ultramicroscopic Particles; Certain Terms Often Used Herein; Principles of Ultramicroscopic Investigation of Fluids; Preparation of Colloidal Gold Solutions; Ultramicroscopic Examination of the Solutions of Gold; Motion of the Gold Particles; Size and Color of the Particles; Color Change of Colloidal Gold; Precipitation and Protection of Colloidal Gold; Filtration Experiments; Size of Gold Particles vs. Size of Other Bodies; Superior and Inferior Limits to Size of Particles; Amicroscopic Nuclei in Colorless Ruby Glass; General Remarks on Metal Hydrosols; Ultramicroscopic Examination of Certain Solutions and Suspensions; Formation of Hydrosol and Hydrogel.

Zsigmondy, Richard. The Chemistry of Colloids. Translated by E. B. Spear. 39 illustrations. 6 x 9. cloth. 295 pp. New York, 1917. net, $3.00

Contents: General Considerations; Classification, Properties of Colloids; Theory; Inorganic Colloids, Colloidal Nonmetals; Colloidal Oxides, Sulfides and Salts; Organic Colloids; Dyestuffs; Protein Bodies; Smoke, Flue Fumes, Liquid Particles in Gases, Rubber, Tanning, Milk, Colloidal Graphite; Clays; Colloids in Sanitation.

ACIDS—BASES—SALTS

Barger, Geo. The Simpler Natural Bases. 6 x 9. cloth. 223 pp. London, 1914. $2.50

Bingham, Chas. The Manufacture of Carbide of Calcium. 39 illustrations. 5¾ x 8½. cloth. 219 pp. London, 1916. $3.00

Contents: Chemistry; Choice of Site; Arrangement of the Factory; Equipment; Electric Furnaces; Construction of the Furnaces—The Body; The Bottom Electrode Holders; The Upper Electrode Holders; Crushing Apparatus; Screeners for Carbide; Transport Appliances; Laboratory; Drum-making Plant; Limekiln; Materials of Manufacture; Results of Manufacture; Power Plant; Limekiln; Furnaces; Heat Losses in Furnace; Power Factor; Electrode Consumption; Packing; Testing of the Carbide and Quality; Tables.

Calvert, Albert F. Salt and the Salt Industry. Illustrated. 5 x 7½. cloth. 158 pp. London, 1919. $1.00

Contents: The Chemistry and Properties of Salt; The Beginnings of the Salt Industry; The Cheshire Wiches; Development of Brine Processes; Formation and Extent of the Cheshire Deposits; The Cheshire Subsidences; Latest Methods of Salt-Making; The Salt Market.

Calvert, Albert F. Salt in Cheshire. Illustrated. 6½ x 9. cloth. 1240 pp. London, 1915. $10.00

Contents: The Chemistry of Salt. Early History of the Cheshire Salt Industry; Salt and Salt-Making in the 17th and 18th Centuries; The Cheshire Salt Deposits; Theories of the Formation of the Deposits; The Area of the Cheshire Salt Beds; The Top Rock Mines; Rock-

Salt Mining in Cheshire; The Growth of the Salt Industry; Tapping the Brine; The Cheshire Subsidences; The Cheshire Salt Districts Compensation Bills; The River Weaver Navigation; The Salt Trade from 1878 to 1912; Salt Association; Salt Union; The Salt Trade of Winsford; Northwich; Nantwich; Middlewich; Sandbach and Wheelock; Lawton; Lymm; Salt Statistics; Patents Relating to the Treatment of Brine and the Manufacture of Salt. Old Documents Referring to Salt: The Salt Tax in England and Acts of Parliament Relating to Salt; Particulars of the DeTabley Sale in Northwich, 1828; Manufacture of Salt; Ancient Northwich Records.

Calvert, G. T. The Manufacture of Sulphate of Ammonia and Crude Ammonia. *Second Edition, revised and enlarged.* 128 illustrations. 5½ x 8¾. cloth. 165 pp. London, 1918. $4.00

Contents: Sulphate of Ammonia, Its Composition and Analysis; The Raw Materials, Ammoniacal Liquor, Sulphuric Acid and Lime; Plant Required for the Manufacture of Sulphate of Ammonia; A Detailed Description of the Apparatus and Processes Used; Starting, Working and Stopping the Plant, Difficulties and Their Remedies; Cost of Manufacture of Sulphate of Ammonia; Manufacture of Crude Ammonia or Concentrated Ammoniacal Liquor; Manufacture of Sulphate of Ammonia in Small Works; Design of a Sulphate of Ammonia House—Comparisons of Ammoniacal Liquors—Sulphuric Acid Table.

Claude, G. Liquid Air, Oxygen, Nitrogen. Translated by H. E. P. Cottrell. 151 illustrations. 7¼ x 10¼. cloth. 443 pp. Philadelphia, 1913. *Reprinting*

Contents: Liquefaction of Gases; Commercial Liquefaction of Air; Preservation and Properties of Liquid Air. *Separation of the Air Into Its Elements.* Diverse Processes; Particulars of the Evaporation of Liquid Air; Recuperation of Cold; Various Processes for Progressive Evaporation; Accelerated Liquefaction of the Oxygen of the Air; Some Considerations on the Liquefaction of Gaseous Mixtures; Application of the Antecedent Liquefaction of the Oxygen of the Air; Rectification; Grouping of Apparatus; Existing Plants.

Geschwind, L. Manufacture of Alum and Sulphates, and the Sulphates and Other Salts of Aluminia and Iron. Trans. by Chas. Salter. 195 illustrations. 6¼ x 9¼. cloth. 390 pp. London, 1901. *Reprinting*

Contents: Theoretical Study of Aluminum, Iron, and Compounds of These Metals; Manufacture of Aluminum Sulphates and Sulphates of Iron; Uses of the Sulphates of Aluminum and Iron; Uses and Applications of Ferrous Sulphate and Ferric Sulphates; Chemical Characteristics of Iron and Aluminum; Analysis of Various Aluminous or Ferruginous Products; Analysing of Aluminum Products.

Goosmann, J. C. The Carbonic Acid Industry A comprehensive review of the manufacture and uses of $C. O_2$. The commercial production of carbon dioxide, design and construction of apparatus and machinery, efficiency for refrigerating purposes, mineral waters and other beverages, methods of carbonating and bottling, utilization of fermentation carbonic acid gas—its collection in the brewery. With 183 figures and diagrams. Illustrated. 6 x 9. cloth. 5½x 8¾. 356 pp. Chicago, 1908. *Reprinting*

Grossmann, J. Ammonia and Its Compounds. Illustrated. 5 x 7. cloth. 151 pp. London, 1906. $1.50

Contents: Ammonia; Concentrated Gas-liquor; Liquor Ammoniae; Liquid Ammonia; The Carbonates, Sulphate, Chloride, Nitrate, Phosphate, Sulphides, Fluorides, Sulphocyanide, and Ferrocyanide of Ammonia; Waste Gases and Liquors from the Manufacture of the Sulphate; Ammonia Recovery from Spent Oxide; Tables.

Keyes, F. G., and Brownlee, R. B. The Thermodynamic Properties of Ammonia. Computed for the use of engineers from new experimental data derived from investigations. 7 illustrations, folding plate. 7 x 10. cloth. 78 pp. New York, 1916. $1.25

Knox, Joseph. The Fixation of Atmospheric Nitrogen. Illustrated. 5 x 7½. cloth. 120 pp. (Van Nostrand's Chemical Monographs, no. 4.) New York. 1914. net, $1.00

Contents: Fixation of Atmospheric Nitrogen as Nitric and Nitrous Acids, or as Their Salts; Synthesis of Ammonia and Ammonium Compounds from Atmospheric Nitrogen; Conversion of Atmospheric Nitrogen into Compounds Which Readily Yield Ammonia; Bibliography.

Lunge, George. The Manufacture of Sulphuric Acid and Alkali. With the collateral branches. A theoretical and practical treatise. In four volumes. (Three and one supplement now ready.) 6¾ x 9. cloth.

Vol. I. Sulphuric Acid. In three parts. *Fourth Edition.* 543 illustrations, 11 folding plates. 1665 pp. New York, 1913. *Reprinting*

Contents: Introduction; Historical and General Notes on the Manufacture of Sulphuric Acid; Raw Materials of the Sulphuric Acid Manufacture, Including Nitric Acid; Properties and Analysis of the Technically Employed Oxides, and Acids of Sulphur; Production of Sulphur Dioxide; Construction of the Lead Chambers; Recovery of the Nitrogen Compounds; Chamber-Process; Purification of Sulphuric Acid; Concentration of Sulphuric Acid; Sulphuric Acid Works Arrangement on the Chamber Process; Yields and Costs; Manufacture of Nordhausen or Fuming Oil of Vitriol, and of Sulphuric Anhydride; Other Processes for Manufacturing Sulphuric Acid; By-Products of the Manufacture of Sulphuric Acid; Application of Sulphuric Acid and Statistics; Addenda.

Sulphuric and Nitric Acid. Supplement to Vol. I. *Fourth Edition.* Illus-

trated. 347 pp. *Reprinting*

Since the issue of the fourth edition very numerous contributions have been made to the industries described, and in response to numerous requests this material has been compiled and brought up to date in this supplemental volume. The text arrangement is in the form of references to the large book, giving the number of the page in the subject matter of which needed changing or amplification.

Vol. II. Sulphate of Soda, Hydrochloric Acid, Leblanc Soda. *Third Edition, much enlarged.* In two parts, not sold separately. 335 illustrations. 1044 pp. London, 1910. *Reprinting*

Contents: Properties and Occurrences in Nature of the Raw Materials and Products of the Alkali Industry and their Analysis; Manufacture of Sulphate of Soda: from Salt and Sulphuric Acid by the process of Hargreaves and Robinson, Other Methods; Purification of Sodium Sulphate; The Condensation of the Hydrochloric Acid Produced in the Manufacture of Sulphate of Soda; Manufacture of Hydrochloric Acid by Other than Ordinary Methods; Weak Acid; Control of Condensation; Yields, Costs, Purification, Pumping and Conveyance of Hydrochloric Acid; Notes on Alkali Manufacture; Theory of the Leblanc Process; The Manufacture of Black-Ash; Black-Ash and Tank-Liquor; Manufacture of Finished Soda and Bicarbonate; Yield and Costs; Caustic Soda; Tank Waste.

Vol. III. Ammonia Soda, Various Processes of Alkali Making and the Chlorine Industry. 181 illustrations. 784 pp. New York, 1911. *Reprinting*

Contents: The Ammonia Soda Process. Historical and General; The Ammoniacal Solution of Salt; The Production of Carbonic Acid for the Ammonia Soda Process; Procepitation of Sodium Carbonate by the Carbonating Process; Filtering, Drying, and Calcining the Bicarbonate; Recovery of the Ammonia; Combination of the Apparatus, Final Products, Costs, Statistics; Other Forms of the Ammonia-Soda Process; Manufacture of Commercial Bicarbonate by the Ammonia-Soda Process. Various Processes of the Alkali Manufacture. The Manufacture of Soda from Cryolite; The Manufacture of Soda Directly from Sodium Chloride; Manufacture of Soda from Sodium Sulphate Without Previous Reduction to Sulphide; Manufacture of Soda from Sodium Sulphate After Reduction to Sulphide; The Manufacture of Soda from Nitrate of Soda and Felspar. The Chlorine Industry. General Notes on Chloring; The Manufacture of Chlorine by Manganese Ore; The Utilization of Still-Liquor-Original Weldon Process; The Deacon Process; Other Processes for the Manufacture of Chlorine; Properties and Behavior of the Hypochlorites and of Bleaching Powder; The Manufacture of Bleaching Powder; Bleach-Liquors and Other Bleaching Compounds; The Chlorates; Appendices.

Vol. IV. Electrolytic Methods. Edited by Professors Askenasy and Haber. *In Preparation*

Martin, Geoffrey. Chlorine and Chlorine Products. Including the manufacture of bleaching powder, hypochlorites, chlorates, etc. With sections on bromide, iodine, and hydrofluoric acid. Together with a chapter on Recent Oxidizing Agents, by G. W. Clough. Manuals of Chemical Technology, IV. 46 illustrations. 6½ x 10. cloth. 110 pp. New York, 1915. $4.00

Contents: The Manufacture of Chlorine by the Weldon and Deacon Processes; Electrolytic Chlorine and Alkali; Liquid Chlorine; Manufacture of Chlorates and Perchlorates; Bleaching Powder and Hypochlorates; Manufacture of Hydrochloric Acid; The Bromine Industry; The Iodine Industry; The Hydrofluoric Acid Industry; Peroxide and Per-Acids.

Martin, G., and Barbour, Wm. Industrial Nitrogen Compounds and Explosives. A practical treatise on the manufacture, properties, and industrial uses of nitric acid, nitrates, nitrites, ammonia, ammonium salts, cyanides, cyanamide, etc., including the most recent modern explosives. *Second Edition.* Illustrated. 6½ x 10. cloth. 125 pp. New York, 1917. $4.00

Martin, G., and Foucar, J. L. Sulphuric Acid and Sulphur Products. 7 x 10. cloth. 80 pp. N. Y., 1916. $4.00

Martin, Geoffrey, Smith, Stanley, The Salt and Alkali Industry; Including Potassium Salts and the Stassfurt Industry. 37 illustrations. 6¾ x 9¾. cloth. 112 pp. New York, 1916. $4.00

Contents: The Salt Industry; The Manufacture of Hydrochloric Acid; The Manufacture of Sodium Sulphate (Salt Cake); General Survey of the Sodium Carbonate Industry; The Manufacture of the Sodium Carbonate and Caustic Soda by the Leblanc Process; Manufacture of Sodium Carbonate by the Ammonia Soda Process; The Stassfurt Industry; Potassium Salts.

Morgan, Gilbert T. Organic Compounds of Arsenic and Antimony. 5¾ x 8¾. cloth. 400 pp. London, 1918. $5.50

Contents Cacodyl: Aliphatic Arsenicals and Antimonials; Aromatic Arsenicals; Atoxyl; Salvarsan; Neosalvarsan; Aromatic Primary Arsines; Luargol; Aromatic Antimonials; Miscellaneous Organic Derivatives of Arsenic and Antimony; Appendix.

Parsons, Charles L. The Chemistry and Literature of Beryllium. 6 x 9. cloth. 185 pp. Easton, 1909. net, $2.00

Contents: Introduction; Metallic Beryllium; Normal Compounds of Beryllium; Acid Salts of Beryllium; Double Salts of Beryllium; Basic Compounds of Beryllium; Bibliography.

Partington, J. R. The Alkali Industry. 63 illustrations. 5½ x 8½. cloth. 318 pp. London, 1918. (Industrial Chemistry Series.) $3.00

Contents: Introduction; The Salt Industry; Sulphuric Acid; Natural Soda and the Leblanc Process; The Ammonia-Soda Process; Electrolytic Processes; Chlorine and Derived Products; Nitric Acid; Ammonia and Ammonium Salts; The Oxidation of Ammonia; Utilization and Economy of Sulphuric Acid; Potassium Salts, Iodine, Magnesium.

Pranke, E. J. Cyanimid, Manufacture, Chemistry and Uses. 8 illustrations. 6 x 9. cloth. 118 pp. Easton, 1913. $1.50

Price, T. S. Per-Acids and Their Salts. 6 x 9. cloth. 126 pp. London, 1912. $1.50

Contents: Persulphates and Perselenates; Perborates; Percarbonates; Pernitric Acids and Perphosphoric Acids; Pertitanates, Perzirconates and Perstannates; Pervanadates, Percolumbates and Pertantalates; Perchromates; Permolybdates, Pertungstates and Peruranates; Literature Reference.

Sullivan, Thomas J. Sulphuric Acid Handbook. 5 x 7½ fabrikoid. 252 pp. New York, 1918. net, $2.50

Teed, P. L. The Chemistry and Manufacture of Hydrogen. 22 illustrations. 5¾ x 8¾. cloth. 152 pp. New York, 1919. $3.40

Contents: Hydrogen, its Use, Discovery, and Occurrence in Nature; The Chemical Properties of Hydrogen; The Manufacture of Hydrogen; Chemical Methods, Chemico-Physical Methods, Physical Methods; Appendix; Physical Constants.

Vincent, C. Ammonia and Its Compounds: Their Manufacture and Uses. Translated by M. J. Salter. 32 illustrations. 6½ x 10. cloth. 122 pp. London, 1901. $2.50

Contents: General Considerations; Extraction of Ammoniacal Products from Sewage; Extraction of Ammonia from Gas Liquor; Manufacture of Ammoniacal Compounds from Bones, Nitrogenous Waste, Beetroot Wash and Peat; Manufacture of Caustic Ammonia and Ammonium Chloride, Phosphate and Carbonate; Recovery of Ammonia from Ammonia; Soda Mother Liquor.

Williams, Herbert E. The Chemistry of Cyanogen Compounds, and Their Manufacture and Estimation. 5¾ x 8½. cloth. 434 pp. Philadelphia, 1915. $5.00

Contents: Chemistry of Cyanogen Compounds. Cyanogen and the Cyanogen Haloids; Cyanimide and Allied Compounds; Simple Cyanides; Iron Cyanogen Compounds; Oxycyanogen Compounds; Thiocyanates and Selenocyanates. *Manufacture and Application of Cyanogen Compounds.* Analysis of Cyanogen Compounds; Useful Tables.

SOLUBILITIES—REAGENTS

Cohn, A. I. Indicators and Test-papers. Their source, preparation, application and tests for sensitiveness. Designed for the use of chemists, pharmacists, and students. *Second Revised and enlarged Edition.* 5¼ x 7¾. cloth. 276 pp. New York, 1909. $2.50

Contents: Introduction, Indicators, Test-Papers; Tables and Tabular Summary; Appendix.

Cohn, A. I. Tests and Reagents. Chemical and Microscopical. Known by their authors' names. Together with an index of subjects. Compiled for the use of chemists, microscopists, pharmacists, etc. 6 x 9. cloth. 383 pp. New York, 1916. $3.50

Falk, K. G. Chemical Reactions: Their Theory and Mechanism. Illustrated. 5 x 7½. cloth. 220 pp. New York, 1920. $2.50

Contents: Introduction; Valence; Co-ordination Number; Acids and Bases; Catalysis; Chemical Reactions, General Considerations; Some Chemical Reactions; Olefins and their Reaction Products; Oxidation-Reduction; Some Oxidation-Reduction Reactions.

Krauch, C. Chemical Reagents, Their Uses, Methods of Testing for Purity and Commercial Varieties. Translated from the German. *Second Edition,* revised and enlarged by H. B. Stocks. 5½ x 8½. cloth. 375 pp. London, 1919. $7.00

In this edition all the new reagents, such as dimethyl-glyoxime, nitron, benzidine, etc., have been introduced annd their uses described. Much new matter has been added in connection with the older reagents. Temperatures are given in all cases in degrees centigrade, while the whole of the molecular weights have been recalculated from the International Atomic Weights for 1918.

Murray, B. L. Standards and Tests for Reagent Chemicals. 6 x 9. cloth. 400 pp. New York, 1920. $3.00

A new text, giving the latest and trustworthy standards of purity for chemicals used in research, analytical and control laboratories. The reagent chemicals are listed in alphabetical order, and for each one the following points are covered systematically: Name and Common Synonyms; Chemical Formulas; Molecular Weight; Physical Properties such as Color, Odor, Form, Melting Point, Boiling Point, Congealing Point, Specific Gravity, Solubility and Reactions; Standard of Purity; Uses as a Reagent; Storage Precautions; Tabular Statement of Maximum of Allowable Impurities; Methods of Testing; Quantitative Methods; References to Literature.

Prideaux, E. B. R. The Theory and Use of Indicators. An account of the chemical equilibria of acids, alkalies and indicators in aqueous solution, with applications. diagrams. 5½ x 8½. cloth. 382 pp. London, 1917. net, $5.00

Contents: Equilibria of Acids, Bases and Salts, and the Physical Methods of Determining Acidity and Alkalinity; Light Absorption in the Visible Spectrum and Colorimetry; Theories of Colour in Their Relation to the Ionic Theory, Chemical Constitution and the Formation of Salts; Colour of Indicators as a Function of Hydrion Concentration; Determination and Use of Indicator Constants; Preparation and Use of

Solutions of Standard Hydrion Concentration; Applications; Course of Neutralisation and the Theory of Titration; Solution Equilibrium and Titration of Some Acids; List of Principal Indicators, with Absorption Spectra.

Seidell, Atherton. Solubilities of Inorganic and Organic Compounds. A compilation of quantitative solubility data from the periodical literature. *Second Edition, enlarged and thoroughly revised.* 6 x 9½. cloth. 867 pp. New York, 1919. $7.50

The material has been collected in all cases where possible directly from the organic sources, and all available quantitative solubility data upon inorganic and organic compounds included. The arrangement of the material is alphabetical according to the customary English name by which the substance is known. An index is provided for those cases where a doubt appears as to which name is preferable, and also to furnish cross references to the tables containing results upon more than one substance.

Tognoli, Edgardo. Reagents and Reactions. Translated from the Italian by C. Ainsworth Mitchell. 4¼ x 6¾. cloth. 236 pp. Philadelphia, 1918. $2.75

RECIPES

Brannt, Wm. T. Metal Worker's Handy-Book of Receipts and Processes. Being a collection of chemical formulas and practical manipulations for the working of all the metals and alloys, including the decoration and beautifying of articles manufactured therefrom, as well as their preservation. *New Enlarged Edition.* 82 illustrations. 5 x 7½. cloth. 582 pp N. Y., 1919. $3.00

Brannt, Wm. T., and Wahl, Wm. H. (Editors). Techno-Chemical Receipt Book. Containing several thousand receipts and processes, covering the latest, most important, and most useful discoveries in chemical technology, and their practical application in the arts and the industries. *New Enlarged Edition.* 78 illustrations. 5 x 7¾. cloth. 539 pp. New York, 1919. $2.50

Griffiths, T. M. Non-Secret Formulas. *Second Edition.* 6¼ x 9¼. cloth. 541 pp. St. Louis, 1910. net, $5.00

Contains over two thousand formulas of use to manufacturers of patent medicines, pharmaceuticals, bakers, and confectioners' supplies, etc.

Hiscox, G. D. (Editor). Henley's Twentieth Century Formulas, Recipes and Processes. 6¼ x 8¾. cloth. 807 pp. New York, 1916. $4.00

Contains more than 10,000 practical recipes and formulas for everyday use in business, at home, or in the factory. Antiseptics, Waterproofing, Lubricants, Rust Preventives, Dyes, Filters, Cleaning Preparations, Enameling, Beverages, Inks, Adhesives, Polishes, Disinfectants, Flavorings, Cosmetics, Ceramics, etc., etc. Photography is treated in all its various branches, as are also Plating, Painting, Leather Work, etc. Tests for Food Adulterants are fully covered; how to make fly paper; to color flowers artificially; to estimate weight of ice by measurement; to make materials fireproof; to work with metals —aluminum, brass, etc.; to make anything and everything from A to Z.

Hopkins, Albert A. (Editor). The Scientific American Cyclopedia of Formulas. 15,000 formulas. 6¾ x 9¼. cloth. 1084 pp. New York, 1915. $5.50

Jameson, Lewis. The Manufacturers' Practical up-to-date Recipe Book. Nearly 3,000 practical up-to-date recipes for manufacturing all kinds and qualities of colors, paints, varnishes, japans, enamels, oils, greases, lubricants, soaps, etc., and for all manufactures connected with the allied trades. Buyers' and sellers' simple and reliable tests for materials, adulterations, &c. 5½ x 8½. London, 1902-03-04. 4 vols. each, $15.00

Vol. I. Dry Colors, Paints, Paint Oils, Paint Mediums. $15.00

Vol. II. Varnishes and Varnish Derivatives. $15.00

Vol. III. Oils, Fats, Waxes, Tallows, Greases for All Purposes. $15.00

Vol. IV. Soaps, Starches, Inks, Metal and Stove Polishes, Blackings, Boot Creams, Disinfectants, and Oilmen's Sundries. $15.00

Recipes for the Color, Paint, Varnish, Oil, Soap and Drysaltery, Trades, Compiled by an analytical chemist. *Second Revised and Enlarged Edition.* 5½ x 8½. cloth. 332 pp. London. 1912. $5.00

Contents: Pigments or Colors for Paints, Lithographic and Letterpress Printing Inks, etc.; Mixed Paints, Paint Removers and Preparations for Paint Making, Painting, Lime Washing, Paper Hanging, etc.; Varnishes for Decorators, Coach Builders, Cabinet Makers, Woodworkers, Metal Workers, Photographers, etc.; Soaps for Toilet, Cleansing, Polishing, etc.; Perfumes; Lubricating Greases, Oils, etc.; Cements, Pastes, Glues and Other Adhesive Preparations; Writing, Marking, Endorsing, Stencil and Other Inks, Sealing Wax and Other Requisites; Preparations for the Laundry, Kitchen, Stable and General Household Uses; Disinfectant Preparations and Sheep Dips; Leather Greases, Varnishes, Dressings, Polishes, etc.; Miscellaneous Preparations.

Workshop Receipts, for Manufacturers and Scientific Amateurs. *New and Thoroughly Revised Edition.* 5 x 7.

cloth. London, 1909. each, $2.50

Vol. I. Acetylene Lighting to Drying. 233 illustrations. 532 pp.

Vol. II. Dyes and Dyeing to Japans and Japanning. 259 illustrations. 540 pp.

Vol. III. Jointing Pipes to Pumps and Syphons. 250 illustrations. 528 pp.

Vol. IV. Rainwater Separators to Wire Rope Splicing. 321 illustrations. 540 pp.

CHEMICAL CALCULATIONS—TABLES

Ashley, R. Harmon. Chemical Calculations. *Second Edition, revised.* Illustrated. 5 x 7¼. cloth. 286 pp. New York, 1918. $2.50

Contents: Ratios; Approximate Numbers; Interpolation; Heat; Specific Gravity; Gas Calculations; Calculation of Atomic Weights and Formulas; Gravimetric Analysis; Volumetric Analysis; Use of Specific Gravity Tables and Acid Calculations.

Bayley, Thomas. A Pocket Book for Chemists, Chemical Manufacturers, Metallurgists, Dyers, Distillers, Brewers, Sugar Refiners, Photographers, Students, etc. Edited by R. Ensoll. *Eighth Edition.* 4¼ x 6½. cloth. 441 pp. London, 1917. $4.00

Contents: Mathematical; Weights and Measures; Physical; General Analysis; Gravimetric and Volumetric Analysis; Miscellaneous.

Biltz, Henry. Practical Methods for Determining Molecular Weights. Translated by H. C. Jones. 44 illustrations. 5¾ x 8. cloth. 244 pp. Easton, 1899. net, $2.00

Contents: Derivation of Molecular Weight from Vapor Density; The Gas-Displacement Method; Other Methods Based Upon the Gay Lussac Principle; Determination of the Densities of Gases; Critical Examination of Results; Osmotic Methods; Determination of the Molecular Weight by the Freezing-Point Method; Determination of the Molecular Weight of Solids; Critical Examination of Results; Determination of Molecular Weight by the Boiling-Point Method; Critical Examination of Results; Determination of Molecular Weight from the Principle of Lowering of Solubility; Determination of the Molecular Weight of Homogeneous Solids or Liquids; Description of the Method of Traube; Modification of the Traube Procedure for Solutions; Determination of the Density of a Liquid; Tables.

Castell-Evans, John. Physico-Chemical Tables for the Use of Analysts, Physicists, Chemical Manufacturers, and Scientific Chemists. In two volumes, each complete in itself.

Vol. I. Chemical Engineering and Physical Chemistry. 7x 9½. leather. 548 pp. London, 1902. $9.00

Contents: Introduction; Notes on the Use of the Tables. *Mathematical. Mechanics. Physics and Physical Chemistry.* Heat; Thermometry; Correction of Thermometric Readings; Air or Gas Thermometers; Measurement of Extreme Temperatures; Change of Dimensions Dependent on Variation of Temperature; Calorimetry; Specific Gravities and Densities; Barometry; Thermal Constants of Gases; Calculations of Gaseous Volumes; Determination of Vapor Densities; Specific Gravity of Gases; Fusion; Vaporization; Gases and Vapors; Vapor Tensions and Boiling Points.

Vol. II. Physical and Analytical Chemistry. 7 x 9½. leather. 700 pp. London, 1911. $13.00

Contents: Physics; Molecular Dynamics, Kinetic Theory of Gases, etc.; Molecular Speeds; Molecular Volumes, etc., of Liquids; Influence of Temperature on Surface Tension; Capillarity Constants of Solutions; Crysoscopic or Lowering of Freezing Point Method; Vapour Tension, and Ebullistic of Boiling Point Method; Distillation of Mixed Liquids; Analytical Chemistry.

Chauvenet, R. Chemical Arithmetic and Calculation of Furnace Charges. 6½ x 9½. cloth. 315 pp. Philadelphia, 1912. net, $4.00

Stoichiometric calculations have formed part of chemical exercises in a number of institutions in the United States, but have rarely been reduced to a systematic course. The present manual may serve either as a textbook, or as a convenient reference for the instructor. The author has often felt the need of a work covering all the elementary subdivisions of the subject, and has included in the text all of the problems which he was accustomed to present to his classes in General Chemistry.

The Chemists' Year Book, 1918-1919. Edited by F. W. Atack. Assisted by L. Whinyates. In two volumes. Illustrated. 4 x 6¼. flexible fabrikoid. 1146 pp. London, 1919. *(Not sold separately.)* $6.00

Coward, H. F., and Perkins, W. H. Exercises in Chemical Calculation. 6 x 9. cloth. 160 pp. London, 1912. $0.90

Deming, Horace G. A Manual of Chemical Nomography. Illustrated. 6 x 9. paper. 75 pp. Champaign, Ill., 1918. $1.50

A rapid calculating chart consisting of eighteen leaves in a flexible binding, so arranged so that many of the calculations of chemists may be mechanically carried out. A pamphlet explains fully the chart and its uses, especially as applied to chemical engineering.

Foye, James C. Chemical Problems. With brief statements of the principles involved. *Fifth Edition, revised and enlarged.* 3¾ x 6. boards. 141 pp. *(Van*

Nostrand Science Series, No. 69.) New York, 1908. $0.75

Contents: Weights and Measures; Thermometric Scales; Volume of Gases Under Varying Pressure, Temperature, and Pressure and Temperature; Specific Gravity; Molecular Weight of Gases; To Find Atonic Weights; Calculation of Molecular Weights from the Symbol; Symbol, Weight and Volume; Symbol and Composition; To Find the Symbol of a Compound, Equation, Weight and Volume; Diffusion of Gases; Specific Heat; Latent Heat; Calorific Power and Intensity; Tables.

Freeman, Nat. H. Baumè and Specific Gravity Tables. For liquids lighter than water. cloth. 4¼ x 6¼. 29 pp. London, 1914. $0.75

Hale, William J. The Calculations of General Chemistry with Definitions, Explanations, and Problems. *Second Edition, revised.* 275 problems. 16mo. cloth. 185 pp. N. Y., 1909. $1.50

Contents: Units of Measurement; Density and Specific Gravity; The Effect of Pressure upon Gases; The Effect of Temperature upon Gases; The Combined Effect of Pressure and Temperature on Gases; Partial Pressures; Avogadros Hypothesis and Some of Its Applications; The Law of Definite Proportions; The Derivation of Chemical Formulæ; Calculations Depending upon Chemical Equations; Normal Solutions; Combinations between Gases by Volume; Complex Equations; Tables.

Hering, C., and Getman, F. H. Standard Table of Electrochemical Equivalents and Their Derivatives. With explanatory text on electrochemical calculations, solutions of typical practical examples and introductory notes on electrochemistry. Illustrated. 4½ x 7½. flexible cover. 140 pp. New York, 1917. net, $2.00

Contents: Introduction; Fundamental Laws; Fundamental Data and Description of the Tables; Electrochemical Equivalents by Weight; Grams per Ampere-hour in the Order of Magnitude; Electrophysical Equivalents by Volume; Valences of the Elements in Their Combinations; Calculations Involving Electrochemical Equivalents; Examples; Electrolysis; Theory of Electrolytic Dissociation; Faraday's Law; Coulometers; Electronic Theory; Valence; Elementary Principles of Chemical Reactions and Calculations; Conversion Factors Used in Electrochemical Calculations; Glossary of Terms.

Johnson, A. E. Analyst's Laboratory Companion. A collection of tables and data for the use of general analysts, agricultural, brewers, and works' chemists, and students; together with numerous examples of chemical calculations and concise descriptions of several analytical Processes. *Fourth Edition.* 5 x 7½. cloth. 176 pp. Phila., 1912. $3.50

Kaye, G. W. C., and Laby, T. H. Tables of Physical and Chemical Constants and some Mathematical Functions. *Third Edition.* 6¾ x 9¾. flexible cloth. 160 pp. London, 1918. $2.50

Contents: General Physics, Astronomy, etc.; Heat; Sound; Light; Electricity; Magnetism; Radioactivity and Gaseous Ionization; Chemistry; Mathematical Tables.

Knox, J. Physico-Chemical Calculations. 5¼ x 7½. cloth. 196 pp. New York, 1912. $1.50

This book is intended for students of physical chemistry, as a supplement to the theoretical matter of lectures and textbooks. Here the theory is applied to the solution of practical problems. The book contains eleven chapters, dealing with the main subdivisions of physical chemistry. Each chapter consists of a short introduction dealing with the theory required for the solution of the problems, a series of typical problems with complete solutions, and a list of problems for solution with answers. Practically all the problems have been taken from the original literature of the subject, and by a careful study of the solved problems the student should learn much. The large collection of problems for solution should prove useful to teachers.

Krayer, Peter J. The Use and Care of a Balance. 18 illustrations. 5 x 7. cloth. 46 pp. Easton, 1913. $1.00

Contents: A Method of Weighing; Setting Up a Balance; Temperature; Testing a Balance for Zero Point; Arm Length; Testing a Balance for Arm Length; Testing for Sensibility; The Rider; Improperly Adjusted Balances—How to Adjust Them; To Use a Balance When the Arm Length is Incorrect; Rules to be Observed When Cleaning Balances; The Effect of an Electric Lamp; Vibration; The Staudinger Balance; Assay Balances; To Replace the Glass Base. *Weights.* Kinds of Weights. Care of Weights; Standard for Calibrating Weights; Calibrating Weights; Recipe for Lacquer for Aluminum, German Silver and Brass.

Liddell, Donald M. The Metallurgists' and Chemists' Handbook. A reference book of tables and data for the student and metallurgist. *Second Edition, revised and enlarged.* Illustrated. 4¼ x 7. fabrikoid. 665 pp. N. Y., 1918. $5.00

Meade, Richard K. The Chemist's Pocket Manual. A practical handbook containing tables, formulas, calculations, information, physical and analytical methods for the use of chemists, chemical engineers, assayers, metallurgists, manufacturers and students. *Third Edition.* Illustrated. 4 x 6¼. leather. 535 pp. Easton, Pa., 1918. $4.00

Mellor, J. W. Higher Mathematics for Students of Chemistry and Physics. With special reference to practical work. *Fourth Edition, enlarged.* 189 diagrams. 5½ x 8¾. cloth. 662 pp. London, 1913. $7.00

Contents: The Differential Calculus; Co-ordinate or Analytical; Geometry; Functions with Singular Properties; The Integral Calculus; Infinite Series and Their Uses; How to Solve

Numerical Equations, Differential Equations; Fourier's Theorem; Probability and the Theory of Errors; Calculus of Variations; Determinants; Collection of Formulæ and Tables for Reference.

Miller, E. H. The Calculations of Analytical Chemistry. *Third Edition, revised and enlarged.* 6¼ x 9½. cloth. 211 pp. New York, 1918. $2.00

Nernst, W. Experimental and Theoretical Applications of Thermodynamics to Chemistry. 5 x 7½. cloth. 123 pp. New Haven, 1913. $1.50

Partington, J. R. Higher Mathematics for Chemical Students. 44 illustrations 5¼ x 7¾. cloth. 278 pp. London, 1911. $2.50

Contents: Functions and Limits; Indefinite and Definite Integrals; Application; Differential Equations; Quadratic Equations; Solution of Systems of Linear Equations by Determinants; Approximation Formulae; Exponential and Logarithmic Functions.

Prideaux, E. B. R. Problems in Physical Chemistry. With practical applications. Illustrated. 6 x 9. cloth. 325 pp. New York, 1912. net, $2.00

Contents: Mathematical Methods and Formula; Table of Logarithms; List of Symbols and Abbreviations; Units and Standards of Measurement; Thermochemistry; Systems of One Component; Mixtures; Gas Reactions; Reactions in Solutions; Electromotive Force; Kinetics of Molecular and Radioactive Changes.

Redgrove, H. S. Calculation of Thermo-Chemical Constants. 5¾ x 9. cloth. 102 pp. London, 1909. $1.80

Contents: Introduction; Thermal Constants of the Hydrocarbons; Thermal Constants of Organic Halogen Compounds; Thermal Constants of Organic Oxygen Compounds; Thermo-Chemical Evidence for Von Baeyer's Strain Theory; Thermal Constants of Organic Sulphur Compounds; Thermal Constants of Organic Nitrogen Compounds; Appendix; Index of Substances; List of Tables.

Smith, Alex., and Moore, W. C. Calculations of Inorganic Chemistry and Quantitative Analysis. Illustrated. 5 x 7. cloth. 113 pp. N. Y., 1918. net, $1.00

Spielmann, P. E. Tables of Chemical and Physical Constants. Of special interest to the light naphtha section of the coal tar and coke oven industries, including weight-gallonage conversion tables and dip-gallonage tables for travelling tank wagons. Calculated by Edward G. Wheeler. Numerous folding plates. 5½ x 8½. boards. 67 pp. London, 1918. $2.00

Tables Annuales de Constantes ed Donnees Numeriques. De Chimie, Physique, et de Technologie. Publiees sous le Patronage de L'Association Internationales des Academies, par le Comite Internationale nomme per la VII Congres de Chimie Applique. Vol. III., 1912. 8¾ x 10½. 656 pp. Paris, 1914.
Cloth, net, $7.20
Paper, net, $6.40

Thorpe, E. Alcoholometric Tables. 5¼ x 7½. cloth. 106 pp. London, 1915. $1.20

Van Nostrand's Chemical Annual. Edited by John C. Olsen. A handbook of useful data for analytical manufacturing and investigating chemists and chemical students. *Fourth Issue, enlarged.* 5 x 7½. flexible fabrikoid. 785 pp. New York, 1918. $3.00

Contents: General (14 tables; Calculation of Volumetric Analyses (18 tables); Calculation of Gas Analyses (8 tables); Physical Constants of Chemical Compounds (7 tables); Specific Gravity Tables (25 tables); Alcohol Tables of the Bureau of Standards; Density; Volume and Vapor Pressure Tables (57 tables); Equivalents of Weights and Measures (7 tables); Thermochemistry (27 tables); Stoichiometry; New Books.

Wells, H. L. Text-Book of Chemical Arithmetic. A book designed for students of quantitative analysis. It comprises problems in weights as related to gravimetric analyses, calculations relating to gases and calculations relating to volumetric analyses. 5 x 7¼. cloth. 176 pp. New York, 1905. $1.50

Wells, Horace L. Chemical Calculation Tables. For laboratory use. *Second Edition, revised,* with a Double Thumb-Indexed Logarithm Table. 6¼ x 9¾. cloth. 48 pp. New York, 1919. $1.35

Contents: Introduction; Atomic Weights; Gravimetric Factors; Formula-Weights; Indirect Analyses; Reduction of Gas-Volumes; Calculation of Percentage of Nitrogen from the Gas-Volume; Barometer Corrections for Temperature; Multiples for Organic Compounds; Constants for Molecular-Weight Determinations; Weights and Measures; Notes for the Use of Logarithms; Logarithms of Numbers.

Wilson, F. J., and Heilbron, I. M. Chemical Theory and Calculations. An elementary textbook. Illustrated. 3 folding plates. 5 x 7¼. cloth. 145 pp. New York, 1912. $1.75

Contents: The Metric System; Density and Specific Gravity; Thermometry; The Gas Laws; Solubility of Gases in Liquids, The Atomic Theory; Formulæ and Equations; Calculation of Percentage Composition of a Compound from its Formula; Calculation of Empirical Formula from Percentage Composition; Equivalents or Combining Weights; Atomic Weights; Valency; Periodical Classification of the Elements; Law of Mass Action; Determination of Vapour Densities; Osmotic Pressure and Molecular Weight Determination; Dissociation of Gases; Electrolytic Dissociation; Diffusion of Gases; Quantitative Analysis; Thermochemistry.

Young, Sidney. Stoichiometry. With an introduction to the Study of Physical Chemistry by William Ramsay. *Second Edition.* 93 illustrations. 5 x 7½. cloth. 375 pp. London, 1918. $4.20

Contents: Fundamental Laws of Chemical Combination; General Properties of Gases; Determination of Atomic Weights; The Periodic Law; Dissociation of Gases and Vapours; The Properties of Liquids; The Kinetic Theory of Gases; Properties of Solids; Mixtures; Solubility and Miscibility; Properties of Dilute Solutions; Dissolution and Vaporization; Determination of Molecular Weights.

TECHNICAL CHEMICAL ANALYSIS

Allen's Commercial Organic Analysis. A treatise on the properties, modes of assaying, and proximate analytical examination of the various organic chemicals and products employed in the arts, manufactures, medicine, etc. With concise methods for the detection and estimation of their impurities, adulterations, and products of decomposition. 9 volumes. Illustrated. 6½ x 9½. cloth.

Vol. I. *Fourth Edition, entirely rewritten,* by Henry Leffmann and W. A. Davis, editors, and G. C. Jones, E. Schlichtig and R. W. Sindall. 85 illustrations. 586 pp. Phila., 1909. $7.00

Contents: Alcohols; Malt and Malt Liquors; Wines and Potable Spirits; Yeast; Neutral Alcoholic Derivatives; Sugars; Starch and Isomers; Paper and Paper Making Materials; Acid Derivatives of Alcohol.

Vol. II. Edited by H. Leffmann and W. A. Davis. *Fourth Edition, entirely rewritten.* 530 pp. Philadelphia, 1911. $7.00

Contents: Fixed Oils, Fats and Waxes, C. A. Mitchell; Special Characters and Methods, L. Archbutt; Butter Fat, C. Revis and E. R. Bolton; Lard, C. A. Mitchell; Linseed Oil, C. A. Klein; Higher Fatty Acids, W. Robertson; Soap, Henry Leffmann; Glycerol, W. A. Davis; Cholesterols, J. A. Gardner; Wool-Fat, Cloth Oils, A. H. Gill.

Vol. III. Edited by W. A. Davis and S. S. Sadtler. *Fourth Edition, entirely rewritten.* 645 pp. Philadelphia, 1910. $7.00

Contents: Hydrocarbons, F. C. Garrett; Bitumens, S. S. Sadtler; Napthlene and Its Derivatives, W. A. Davis; Anthracene and Its Associates, S. S. Sadtler; Phenols, S. S. Sadtler; Aromatic Acids, E. Horton; Gallic Acids and Its Ailies, W. P. Dreaper; Phtlalic Acid and the Phthaleins, W. A. Davis; Modern Explosives, A. Marshall. Tables.

Vol. IV. Edited by W. A. Davis and S. S. Sadtler. *Fourth Edition, entirely rewritten.* 484 pp. Philadelphia, 1911. $7.00

Contents: Resins, M. B. Blackler; India Rubber, Rubber Substitutes and Gutta Percha, E. W. Lewis; Hydrocarbons of Essential Oils, T. M. Lowry; Ketones of Essential Oils, T. M. Lowry; Volatile of Essential Oils, E. C. Parry; Special Characters of Essential Oils, H. Leffmann and C. H. LaWall.

Vol. V. Edited by W. A. Davis and S. S. Sadtler. *Fourth Edition, entirely rewritten.* 714 pp. Philadelphia, 1911. $7.00

Contents: Tannins, W. P. Dreaper; Analysis of Leather, W. P. Dreaper; Dyes and Colouring Matters, W. P. Dreaper and E. Feilmann; Dyestuffs of Groups 6 to 12, J. T. Hewitt; Colouring Matters of Natural Origin, W. M. Gardner; Analysis of Colouring Materials, W. P. Dreaper and E. Feilmann; Colouring Matters in Foods, A. F. Seeker; Inks, P. H. Walker.

Vol. VI. Organic Bases, Vegetable Alkaloids. *Fourth Edition, entirely rewritten.* Edited by W. A. Davis and S. S. Sadtler. 730 pp. Philadelphia, 1912. $7.00

Contents: Amines and Ammonium Bases, W. A. Davis; Aniline and Its Allies, S. S. Sadtler; Naphthylamines, Pyridine, Quinoline and Acridine Bases, W. H. Glover; Vegetable Alkaloids, T. A. Henry; Volatile Bases of Vegetable Origin, F. O. Taylor; Nicotine and Tobacco, R. W. Tonkin; Aconite Alkaloids, F. H. Carr; Atropine and Its Allies, F. H. Carr; Cocaine, S. S. Sadtler; Opium Alkaloids, F. O. Taylor; Strychnos Alkaloids, C. E. Vanderkleed; Cinchona Alkaloids, Oliver Chick; Berberine and Its Associates, E. Horton; Caffeine, Tea and Coffee, J. J. Fox and P. J. Sageman; Cocoa and Chocolate, R. Whymper.

Vol. VII. Vegetable Alkaloids, Glucosides, Non-Glucosidal Bitter Principles, Animal Bases, Animal Acids, Lactic Acid, Cyanogen, and Its Derivatives. *Fourth Edition, entirely rewritten.* Edited by W. A. Davis and S. S. Sadtler. 573 pp. Phila., 1913. $7.00

Contents: Vegetable Alkaloids, G. Barger; Glucosides, E. F. Armstrong; Non-Glucosidal Bitter Principles, G. C. Jones; Animal Bases, A. E. Taylor; Ptomaines or Putrefaction Bases, Animal Acids, J. A. Mandel; Lactic Acid, W. A. Davis; Cyanogen and Its Derivatives.

Vol. VIII., Enzymes, Proteins and Albuminoid Substances, Milk and Milk Products, Haemoglobin and Blood, Proteids, Fibroids. *Fourth Edition, entirely rewritten.* Edited by W. A. Davis and Samuel S. Sadtler. 52 illustrations. 706 pp. Philadelphia, 1913. $7.00

Contents: Enzymes, E. Frankland Armstrong; The Proteins and Albuminoid Substances, S. B. Schryver; Proteins of Plants, E. F. Armstrong; Proteins of Milk, L. L. Van Slyke; Milk, Henry Leffmann; Milk Products, Cecil Revis and E. Richards Bolton; Meat and Meat Products, W. D. Richardson; Digestion Products of the Proteins, S. B. Schryver; Hæmoglobin and Its Derivatives, J. A. Gardner and G. A. Buckmaster; Albuminoids or Scleroproteins, Jerome Alexander; Fibroids, W. P. Dreaper.

Vol. IX. Containing new matter bringing all the volumes up-to-date. Complete general index. Author index. Appendix on sugars, butter, arginine, meat products. *Fourth Edition.* Illustrated. 6¼ x 9½. cloth. 854 pp. Philadelphia, 1917. $7.00

Arup, Paul S. Industrial Organic Analysis. For the use of technical and analytical chemists and students. With a foreword by J. C. Irvine. 14 illustrations. 5¼ x 7½. cloth. 352 pp. Philadelphia, 1913. $3.50

Contents: Coal and Coke; Coal Tar and Its Distillation Products; Fatty Oils and Fats; Soap; Petroleum and Its Distillation Products; Milk and Butter; Starch and Its Decomposition Products; Flour, Barley and Malt; Preservatives and Artificial Coloring Matters in Foods.

Baker, F. T. The Spectroscope. Its Uses in General Analytical Chemistry. An intermediate text-book for practical chemists. Illustrated. 6 x 9. cloth. 130 pp. New York, 1907. net, $2.00

Bruce, Edwin M. Detection of the Common Food Adulterants. *Third Edition, revised and enlarged.* 5¼ x 7½. cloth. 95 pp. New York, 1917. $1.40

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Crookes, Wm. Select Methods in Chemical Analysis. *Fourth Edition, rewritten and enlarged.* 68 illustrations. 6 x 9. cloth. 762 pp. London, 1905. $8.00

Desch, Cecil H. Intermetallic Compounds. 17 illustrations. 6 x 8¾. cloth boards. 122 pp. New York, 1914. $1.45

Contents: Thermal Analysis; Microscopic Structure; Isolation of Intermetallic Compounds; Native Intermetallic Compounds; Physical Properties; Existence of Intermetallic Compounds in the Liquid State; Relations of Intermetallic Compounds to Carbides, Silicates, etc; Ternary Compounds.

Fischer, Emil. Introduction to the Preparation of Organic Compounds. Translated from the *Eighth German Edition* by R. V. Stanford. 19 illustrations. 5 x 7¼. cloth. 194 pp. London, 1910. $2.00

Franzen, Hartwig. Exercises in Gas Analysis. Translated from the first *German Edition* (with corrections and additions by the author) by Thomas Callan. 30 illustrations. 5 x 7½. cloth. 129 pp. New York, 1913. net, $1.00

Gill, A. H. A Short Handbook of Oil Analysis. *Revised Eighth Edition.* Illustrated. 5½ x 8¼. cloth. 209 pp. Philadelphia, 1918. $2.50

Gooch, F. A. Methods in Chemical Analysis. Originated or developed in the Kent Chemical Laboratory of Yale University. Illustrated. 6½ x 9¼. cloth. 548 pp. New York, 1912. net, $4.00

Contents: Appliances and General Procedure; Alkali Metals; Copper, Silver, Gold; Beryllium; Magnesium; Calcium; Strontium; Barium; Zinc; Cadmium; Mercury; Boron; Aluminum; Lauthanum; Thallium; Carbon, Silicon, Titanium, Zirconium, Cerium, Tin, Lead; Nitrogen, Phosphorus, Arsenic, Antimony; Bismuth, Vanadium; Oxygen, Sulphur, Selenium, Tellurium; Chromium, Molybdenum, Uranium; Fluorine, Chlorine, Bromine, Iodine; Manganese, Nickel, Cobalt, Iron.

Haldane, J. S. Methods of Air Analysis. *Second Edition, revised and enlarged.* 25 illustrations. 5 x 7½. cloth. 147 pp. London, 1918. $2.00

Contents: Collection of Samples of Air or Gas; Apparatus for General Air and Gas Analysis; Calculation and Statement of Results of Analyses; Portable Apparatus for Small Percentages of Carbon Dioxide; Portable Apparatus for Carbon Dioxide, Methane, or Carbon Monoxide in Air of Mines Worked with Naked Lights; Portable Apparatus for Routine Fire-Damp Estimations; Approximate Estimation of Oxygen by Flame Test; Approximate Estimation of Methane, etc., by Flame Test; Gravimetric Determination of Moisture and Carbon Dioxide; Determination of Moisture by Dry and Wet-Rule Thermometers; Recognition and Determination of Small Proportions of Carbon Monoxide; Recognition of Other Poisonous Gases; Determination of Dust in Air.

Knecht, E., and Hibbert, E. New Reduction Methods in Volumetric Analysis. 6 x 9. cloth. 118 pp. London, 1910. $1.75

Lunge, G. Techno-Chemical Analysis. Authorized translation by Alfred I. Cohn. 16 illustrations. 5 x 7¼. cloth. 143 pp. New York, 1905. $1.00

Lunge, George. Technical Chemists' Handbook. Tables and methods of analysis for manufacturers of inorganic chemical products. *Second Edition, revised.* leather. 283 pp. London, 1916. $4.00

Contents: General Tables; Fuel and Furnaces; Sulphuric Acid Manufacture; Saltcake and Hydrochloric Acid; Bleaching Powder and Chlorate of Potash Manufacture; Soda Ash Manufacture by the Leblanc Process; Manufacture of Soda by the Ammonia Process; Caustic Soda; Electrolytic Alkaline Liquors; Nitric Acid Manufacture; Potassium Salts; Ammonia Manufacture; Coal-Gas Manufacture; Calcium Carbide and Acetylene; Examination of the Pan Materials and Products of the Manufacture of Fertilizers; Alumina Preparations; Cement Industry; Preparation of Standard Solutions; Rules for Sampling; Comparison of the Hydrometer Degrees According to Baumé and Twaddell, with the Specific Gravities; Value of Alkali per Ton.

Lunge, George. Technical Methods of Chemical Analysis. English translation from the latest German edition,

adapted to English conditions of manufacture. Edited by Charles A. Keane. With the Collaboration of eminent specialists. In three volumes. 448 illustrations. 6½ x 9½. cloth. 3494 pp.

Vol. I. General Methods of Technical Analysis. *(In two parts.)* Illustrated. 1024 pp. *New Edition in Press*

Contents: Technical Gas Analysis; Fuel Analysis; Sulphurous Acid, Nitric Acid and Sulphuric Acid; Saltcake and Hydrochloric Acid; Sodium Carbonate; The Chlorine Industry; Potassium Salts; Cyanogen Compounds; Clay; Clay wares, Earthenware and Glazes; Aluminum Salts and Alumina; Glass; Calcareous Cements; Drinking Water and Water Supplies; Feed Water for Boilers and Water for other Technical Purposes; Sewage and Effluents; Soils; Air.

Vol. II. In two parts. 148 illustrations. 1291 pp. New York, 1911. *New Edition in Press*

Contents: Iron, by P. Aulich, edited by W. J. Lambert; Metals other than Iron, and Metallic Salts, by Prof. O. Pufahl, Revised by C. O. Bannister; Artificial Manures, Prof. O. Bottcher, Revised by A. Smetham; Feeding Stuffs, by F. Barnstein, Revised by A. Smetham; Explosives, O. Guttmann, Revised by the Author; Matches and Fireworks, by A. Bujard, Revised by E. G. Clayton; Calcium Carbide and Acetylene, by Prof. G. Lunge and E. Beri, Revised by J. T. Conroy; Illuminating Gas and Ammonia, by O. Pfeiffer, revised by H. G. Colman; Coal Tar, by H. Kohler, Revised by A. G. Green; Organic Dyes, by Prof. R. Gnehm, Revised by J. C. Cain.

Vol. III. In two parts. 98 illustrations. 1174 pp. New York, 1914. *New Edition in Press*

Contents: Mineral Oils; Lubricants; Oils, Fats and Waxes; Special Methods of Analysis Employed in the Oil and Fat Industries; Resins, Balsams, and Gum-Resins; Drugs and Galenical Preparations; Essential Oils; Tartaric Acid; Citric Acid; Organic Preparations; India Rubber and Rubber Goods; Vegetable Tanning Materials; Leather; Ink; Sugar; Starch and Dextrin; Alcohol, Potable Spirits, and Liquors; Vinegar; Wine; Brewing Materials and Beer; Paper; Textile Fibres; Inorganic Colors.

Lunge, George. Technical Gas Analysis. 143 illustrations. 6¼ x 9¼. cloth. 423 pp. New York, 1914. $4.50

Melick, C. W. Dairy Laboratory Guide. 52 illustrations. 5¼ x 7½. cloth. 134 pp. New York, 1907. $1.25

Contents: Cream Separators; Babcock Tester; Lactometer; Acidity of Milk; Pasteurization; Starter Making; Curd; Cream Ripening and Grading; Churning; Tests on Butter; Cheese; Ice Cream; Dairy Bacteriology; Tests for Preservatives and Oleomargarine; Repairing Machinery; Milk Preparations; Disinfectants; Refrigeration; Bookkeeping.

Munby, Alan E. Introduction to the Chemistry and Physics of Building Materials. Illustrated. 6 x 8¼. 365 pp. London, 1912. *(Van Nostrand's Westminster Series.)* $2.50

Contents: Elementary Science. Natural Laws and Scientific Investigations; Measurement and the Properties of Matter; Air and Combustion; Nature and Measurements of Heat and Its Effects on Materials; Chemical Signs and Calculations; Water and Its Impurities; Sulphur and the Nature of Acids and Bases; Coal and Its Products; Outlines of Geology. *Building Materials.* The Constituents of Stones; Clays and Cementing Materials; Classification; Examination and Testing of Stones; Brick and Other Clays; Kiln Reactions and the Properties of Burnt Clays; Plasters and Limes; Cements; Theories upon the Setting of Plasters and Hydraulic Materials; Artificial Stone; Oxychloride Cement; Asphalate; General Properties of Metals; Iron and Steel; Other Metals and Alloys; Timber, Paints; Oils, Thinners and Varnishes; Bases, Pigments and Driers.

Parry, L. The Analysis of Ashes and Alloys. 6 x 9. cloth. 151 pp. London, 1908. $2.50

Contents: Determination of Individual Elements; Analysis of Ashes; Miscellaneous Analyses.

Pickering, Geo. F. Aids in the Commercial Analysis of Oils, Fats, and Their Commercial Products. A laboratory handbook, with many tables in the text. 6 x 9. cloth. 141 pp. London, 1917. $3.00

Richards, W. A., and North, H. B. A Manual of Cement Testing. For the use of engineers and chemists in colleges and in the field. Illustrated. 5¾ x 8. cloth. 147 pp. New York, 1912. net, $1.50

Scott, Wilfred W. *(Editor).* Standard Methods of Chemical Analysis. A manual of analytical methods and general reference for the analytical chemist and for the advanced student. *Second Edition, revised,* with additional tables. 142 illustrations, 3 color plates. 7 x 9¼. cloth. 900 pp. N. Y., 1917. $7.50

(The following specialists have written chapters for this book: H. A. Baker, L. C. Barton, F. G. Breyer, B. S. Clark, Wallace G. Derby, Wm. F. Doerflinger, D. K. French, H. A. Gardner, A. H. Gill, F. E. Hale, R. E. Hickman, W. B. Hicks, R. K. Meade, J. C. Olsen, R. S. Owens, W. L. Savell, J. A. Schaefer.)

Contents: Aluminum; Antimony; Arsenic; Barium; Bismuth; Boron; Bromine; Cadmium; Calcium; Carbon; Cerium and Other Rare Earths; Chlorine; Chromium; Cobalt; Copper; Fluorine; Glucinum (Beryllium); Gold; Iodine; Iron; Lead; Magnesium; Manganese; Mercury; Molybdenum; Nickel; Nitrogen; Phosphorus; Platinum; Rarer Elements of the Allied Platinum Metals; Potassium, Sodium and Other Alkalies; Selenium and Tellurium; Silicon; Silver; Strontium; Sulphur; Thorium; Tin; Titanium; Tungsten, Tantalum and Columbium; Uranium; Vanadium; Zinc; Zirconium. *Special Subjects.* Acids; Water Analysis; Oils, Fats and Waxes; Paints; Cement; Special Alloys; Coal; Gas; Assaying of Gold, Silver, etc.; Useful Data; Conversion Tables; Table of Melting Points; Acid Tables; Books of Reference.

Sherman, H. C. Methods of Organic Analysis. *Second Edition, rewritten and enlarged.* Illustrated. 6½ x 9. cloth. 425 pp. New York, 1912. net, $2.40

Contents: Alcohols; Aldehydes; Carbohydrates; General Methods; Special Methods of Sugar Analysis; Starch and Amylase; Vinegar and Acetate; Fatty Acids; Oils, Fats and Acids; Edible Oils and Fats; Drying, Petroleum and Lubricating Oils; Fuels; Soap and Glycerin; Nitrogen, Sulphur and Phosphorus; Proteins and Proteases; Grain Products; Milk; Food Preservatives.

Smith, Edgar F. Electro-Analysis. *Sixth Edition, revised and enlarged.* 47 illustrations. 5½ x 7¾. cloth. 357 pp. Philadelphia, 1918. $3.50

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Snell, F. D. Colorimetric Analysis. Illustrated. 5 x 7. cloth. *In Press*

Contents: Conditions of Use of Colorimetric Methods; Apparatus Used and Methods of Using it; Figuring of Results; The Determination of Iron; Determination of Copper; Lead, Bismuth and Arsenic; Aluminum and Chromium; Nickel, Cobalt, Manganese and Zinc; Potassium and Magnesium; Gold; Titanium, Vanadium, and Tungsten; Fluoorine, Chlorine and Perchlorates; Nitric and Nitrous Acids, and Ammonia; Phosphorus, Silica and Boron; Oxygen and Hydrogen Peroxide; Sulphur, Hydrogen Sulphide and Selenious Acid; Color of Water; Oils and Dyes; Nephelometry.

Villaecchia, V. Treatise on Applied Analytical Chemistry. Methods and standards for the chemical analysis of the principal industrial and food products. Translated by Thomas H. Pope. Illustrated. 6½ x 10. cloth. Philadelphia, 1918.

Vol. I. 58 illustrations. 491 pp. $7.75

Vol. II. 105 illustrations. 550 pp. $7.75

For contents see page —

Washington, Henry S. Manual of the Chemical Analysis of Rocks. *Third Edition, revised and enlarged.* 6 x 9. cloth. 283 pp. New York, 1919. $2.50

Contents; Introduction; Apparatus and Reagents; The Sample; Operations; Methods; Appendices; Factors for Calculation; Example of Analysis; References.

White, A. H. Technical Fuel and Gas Analysis. 47 illustrations. 5½ x 8. cloth. 255 pp. New York, 1913. $2.00

Woollatt, G. H. Laboratory Arts. A teacher's handbook dealing with materials and tools used in the construction, adjustment and repair of scientific instruments with 119 diagrams. 5 x 7. cloth. 200 pp. New York, 1908. $1.50

EXPERIMENTS AND LABORATORY MANUALS

Benedict, F. G. Chemical Lectures. Experiments. 5 x 7½. cloth. 436 pp. New York, 1901. $2.40

Biltz, H. Introduction to Experimental Inorganic Chemistry. Authorized translation from the German by Wm. T. Hall and Jos. W. Phelan. 5 x 7¼. cloth. 191 pp. N. Y., 1909. $1.25

Biltz, Heinrich, and Biltz, Wilhelm. Laboratory Methods of Inorganic Chemistry. Translated by W. T. Hall and A. A. Blanchard. 26 illustrations. 6 x 9. cloth. 273 pp. N. Y., 1909. net, $2.50

Contents: The Elements; Changes of Condition; Simple Compounds; Compounds Containing a Complex Negative Component; Compounds Containing a Complex Negative Compound; Complex Non-Electrolytes; Preparation of Compounds of the Rare Elements from Their Minerals.

Bingham, E. C., and White, Geo. F. A Laboratory Manual of Inorganic Chemistry. 5 x 7¼. cloth. 155 pp. New York, 1911. $1.50

Blanchard, Wm. M. Laboratory Exercises in General Chemistry. *Second Edition.* Illustrated. 5 x 7½. cloth. 168 pp. New York, 1918. $1.00

Contents: Preliminary Operations; Chemical Action; Quantitative Relations; Oxygen; Proportion of Oxygen in the Atmosphere; Oxidation and Reduction; Hydrogen; Equivalent Weights; Water; Solutions; Influence of Temperature on Solubility; Hydrogen Peroxide; Atomic Weights; Chlorine; Hydrogen Chloride and Hydrobromic Acid; Iodine; Hydrogen Iodide and Hydriodic Acid; Hydrogen Fluoride and Hydrofluoric Acid; Oxygen Compounds of the Halogens; Acids—Bases—Salts; Sulphur; Hydrogen Sulphide; Sulphur Dioxide and Sulphurous Acid; Sulphur Trioxide and Sulphuric Acid; Nitrogen; Ammonia; Oxides of Nitrogen; Nitric Acid and Nitrates; Phosphorus—Phosphine—The Chlorides of Phosphorus; Phosphorus Pentoxide and the Phosphoric Acids; Arsenic; Antimony; Bismuth; Carbon; Hydrocarbons; Oxides of Carbon; Silicon; Boron; Sodium Chloride; Sodium Bicarbonate; Sodium Nitrite; Reactions of Potassium Salts; Potassium Carbonate; Potassium Hydroxide; Potassium Nitrate; Detection of Sodium, Potassium, and Ammonium Salts; Reactions of Calcium Salts; Calcium Hydroxide; Calcium Sulphate; Strontium Salts; Barium Salts; Detection of Calcium, Strontium, and Barium Salts; Compounds of Copper; Silver Salts; Zinc Salts; Cadmium Salts; Mercury Salts; Aluminum Salts; The Salts; Lead Salts; Detection of Aluminum, Tin, and Lead Salts; Compounds of Chromium; Manganese Compounds; Iron Compounds; Cobalt and Nickel Salts; Detection of Chromium, Manganese, Iron, Cobalt, and Nickel; Vapor Tension and Specific Gravity Tables; Solubility Curves; Partial List of Elements with Atomic Weights.

Dull, Chas. E. Laboratory Exercises in Chemistry. Illustrated. 6 x 9. paper. 224 pp. New York, 1919. $1.24

Ekeley, J. B. A Laboratory Manual of Inorganic Chemistry. To accompany A Textbook of Inorganic Chemistry, by A. F. Holleman. 46 illustrations. 5¼ x 7¾. cloth. 138 pp. N. Y., 1912. $1.25

Fisher, Harry L. Laboratory Manual of Organic Chemistry. Illustrated. 6 x 9. cloth. 341 pp. N. Y., 1920. $2.25

Hale, Wm. J. A Laboratory Manual of General Chemistry Illustrated. 5 x 7½. cloth. 485 pp. N. Y., 1917. $1.60

Hart, Edward. Second Year Chemistry. A handbook for laboratory and class work. 31 illustrations. 5 x 7. cloth. 165 pp. Easton, 1905. $1.25

Holleman, A. F., and Walker, A. J. A Laboratory Manual of Organic Chemistry for Beginners. *Third Edition.* 5 x 7¼. cloth. 100 pp. New York, 1913. $1.25

Hoyt, Wilbur F. Chemistry by Experimentation, Including Qualitative Analysis. A laboratory manual for the first year course. 25 illustrations. 5¾ x 7¾. cloth boards. 176 pp. New York, 1917. net, $0.70

Contents: Laboratory Directions and Emergency Notes; Introduction to the Laboratory; States of Matter; Elements, Compounds, Mixtures and Radicals; Physical and Chemical Changes; Air and Nitrogen; Oxygen and Ozone; Water; Hydrogen; Solutions, Solvents, and Crystallization; Removal of Spots and Stains; Combustion; Carbon and Its Oxids; Electrochemistry; Acids, Bases and Salts; Hydrochloric and Hydrofluoric Acid; Alkali Bases; Alkalin Earth Bases and Compounds; Quantitative Measurements; Oxidation and Reduction; Sulfur: Its Oxids and Metallic Sulfids; The Halogens; Phosphorus and Arsenic; A Chemical Excursion; Qualitative Analysis; Principles of Equation Writing; Qualitative Analysis of Bases and Acids—Reagent Method; Chemistry of Light; Hydrocarbons; Carbohydrates; Alcohols, Ethers, and Aldehydes; Organic Acids and Esters; Fats, Oils and Soap; Textile Fibers; Inks, Dyes and Paints; Milk, Butter and Oleomargarine; Cereals, Flour, Bread, and Baking Powder; Adulteration of Foods and Drugs; Chemistry of Digestion; Chemistry of Agriculture; Calibration, Standard and Normal Solutions; Burette Determination of Salt, Base and Acid; Estimated Reagents for First and Second Parts; Special Reagents.

Lamb, Arthur B. Laboratory Manual of General Chemistry. With exercises in the preparation of inorganic substances. Illustrated. 8 x 10. cloth. 172 pp. Cambridge, Mass., 1916. $1.45

Moore, F. J. Experiments in Organic Chemistry. 5 x 7¼. cloth. 37 pp. New York, 1915. $0.75

The book is designed as a Laboratory Manual to accompany "Outlines of Organic Chemistry."

Newth, G. S. Chemical Lecture Experiments. Non-Metallic Elements. Illustrated. 5¼ x 7¼. cloth. 347 pp. London, 1918. $2.25

Contents: Hydrogen; Hydrogenium; Oxygen; Ozone; Water; Hydrogen Peroxide; Chlorine; Hydrochloric Acid; Oxides and Acids of Chlorine; Bromine; Hydrobromic Acid; Iodine; Hydriodic Acid; Oxides and Oxyacids of Iodine; Fluorine; Hydrofluoric Acid; Silicon Fluoride; Nitrogen; Argon; Ammonia; Hydrazoic Acid; Nitrous Chloride; Nitrogen Iodide; Oxides of Nitrogen; The Atmosphere, Diffusion; Combustion; Carbon Dioxide; Carbon Monoxide; Methane (Marsh Gas); Ethylene; Acetylene; Flame, and Luminosity of Flame; Silicon; Silicon Hydride; Silicic Acid; Boron; Boric Acid; Phosphorus; Phosphoretted Hydrogen; Phosphorus Pentoxide; Phosphorus Oxide; Sulphur; Sulphuretted Hydrogen; Hydrogen Persulphide; Sulphur Dioxide; Sulphur Trioxide; Sulphuric Acid; Carbon Disulphide; Arsenic; Arseniuretted Hydrogen; Antimony; Antimoniuretted Hydrogen; Dissociation; Liquefaction of Gases; Experiments of Electrolysis; Lantern Illustrations; Appendix.

Newth, G. S. Smaller Chemical Analysis. 15 illustrations. 6 x 9. cloth. 149 pp. London, 1906. $0.75

Newth, G. S. A Manual of Chemical Analysis, Qualitative and Quantitative. 102 illustrations. 5 x 7½. cloth. 488 pp. London, 1918. $2.75

North, H. B. Laboratory Experiments in General Chemistry. *Second Edition, revised.* 37 illustrations. 5½ x 7¾. cloth. 211 pp. New York, 1914. net, $1.00

Contents: Causes of Chemical Change; Hydrogen; Oxygen and Ozone; Water and Hydrogen Peroxide; The Halogens; Acids, Bases and Salts; Nitrogen; Oxidation and Reduction; Sulphur; Carbon; Silicon and Boron; Phosphorus, Arsenis, Antimony and Bismuth; The Alkalies and Ammonium; The Alkaline Earths; Magnesium, Zinc, Cadmium and Mercury; Copper, Silver and Gold; Tin and Lead; Aluminum and Chromium; Manganese; Iron, Cobalt and Nickel; Platinum; Appendix.

Petty, C. L. Commercial Laboratory Notes. 5¾ x 7¾. loose leaf in flexible leather binder. 105 pp. Dayton, Ohio, 1919. $6.00

This volume covers the following subjects sufficiently well to be of great value to analytical chemists: Non-Ferrous Alloys, Paint, Oil, Rubber, Steel and Iron, as well as a collection of miscellaneous materials.

Ransom, James H. Experimental General Chemistry. *Second Edition.* Illustrated. 4¾ x 7¾. cloth. 191 pp. New York, 1917. net, $1.00

Rockwood, Elbert W. A Laboratory Manual of Physiological Chemistry. *Fourth Edition, revised and enlarged.* Illustrated. 5 x 7½. cloth. 323 pp. Philadelphia, 1919. $2.00

Silverman, Alex., and Harvey, A. W. Laboratory Directions and Study

Questions in Inorganic Chemistry. Illustrated. 8 x 10½. loose leaf. 110 pp. New York, 1919. $2.00

The directions in this manual have been selected as representative not only of the practical applications of chemistry, but as illustrating modern theories. Wherever possible the apparatus required has been simplified so as to avoid the necessity of having the student use elaborate forms. The directions are arranged in loose leaf form, so that they may be detached and submitted from day to day with results obtained in the Laboratory. The study questions which form the second part of the book follow closely the treatment of Inorganic Chemistry in the college texts.

Smith, Alexander. A Laboratory Outline of College Chemistry. Illustrated. 5 x 7. cloth. 211 pp. N. Y., 1916. $1.10

Smith, Alexander. Experimental Inorganic Chemistry. *Fifth Edition.* Illustrated. 5 x 7½. 178 pp. New York, 1917. $1.10

Steel, Matthew. A Laboratory Manual of Organic Chemistry for Medical Students. 6¼ x 9¼. cloth. 202 pp. New York, 1916. $1.50

Contents: Qualitative Analysis of Organic Compounds; Purification of Organic Substances; The Aliphatic Hydrocarbons; Halogen Derivatives of the Hydrocarbons; Alcohols; Ethers; Aldehydes and Ketones; Fatty Acids; Acid Chlorides, Acid Anhydrides, Esters and Mebcaptans; Amines, Amides, and Cyanogen Compounds; Lipins; Carbohydrates and Glucosides; Monobasic Unsaturated Acids; Saturated Dibasic Acids, and Hydroxy Acids; Carbocyclic Compounds; Heterocyclic Compounds; Vegetable Alkaloids; Proteins; Appendices.

Titherley, A. W. Laboratory Course of Organic Chemistry, including Qualitative Organic Analysis. Illustrated. 5¾ x 8¾. cloth. 240 pp. London, 1907. $2.50

Contents: Solubility; Filtration; Separation; Recrystallization; Melting Point; Boiling Point; Preparation and Purification of Organic Compounds; Hydrocarbons; Halogen Derivatives; Alcohols and Phenols; Aldehydes; Ketones and Quinones; Acids; Esters; Glycerides; Carbohydrates; Sulphur Compounds; Amines; Diazo-derivatives; Nitrites; Heterocyclic Bases; Amides; Ureides; Alkaloids; Determination of Carbon; Hydrogen; Nitrogen; Phosphorus; Sulphur and Halogens in Organic Substances; Investigation of Organic Compounds; Characteristic Qualities of the Main Classes; Tables.

QUALITATIVE ANALYSIS

Baskerville, C., and Curtman, L. J. A Course in Qualitative Chemical Analysis. *New Edition.* 6 x 9. cloth. 230 pp. New York, 1916. $1.90

Contents: The Metals; The Acids; Complete Analysis; Appendices.

Byers, H. G., and Knight, H. G. Notes on Qualitative Analysis. 6 x 9. cloth. 192 pp. New York, 1912.

New Edition in Preparation

Contents: Qualitative Analysis; Basis of Identification; Conditions Producing Reactions; Properties Used in Identification; Importance of various phases of Work; Chemical Prinples Involved in Qualitative Analysis; Definitions, Kinds, Phenomena and Hydrates in Solution; Hydration of Ions; Osmotic Pressure; Freezing and Boiling Points, Acids, Bases, and Salts in Solutions; Electrolysis; Qualitative Illustrations; Metal Analysis; Acid and Systematic Analysis; The Rare Metals; Appendices.

Eliot, C. W., and Storer, F. H. Compendious Manual of Qualitative Chemical Analysis. As revised by W. R. Nichols. Newly revised by W. B. Lindsay and F. H. Storer. *Twenty-second Edition.* 5 x 7½. cloth. 209 pp. New York, 1909. $1.50

Contents: Definition and Scope of Qualitative Analysis; Examples of the Separation; Chlorides Insoluble in Water and Acids; Sulphides Insoluble in Water, Dilute Acids and Alkalies; General and Special Tests for Non-Metallic Elements; Treatment of Substances of Unknown Composition; Reagents; Solutions of Known Composition; Utensils.

Fresenius, C. R. Manual of Qualitative Chemical Analysis. Translated by H. L. Wells. *New Edition, thoroughly revised.* Illustrated. 6¼ x 9¼. cloth. 765 pp. New York, 1915. net, $4.50

Contents: Preliminary Remarks; Reagents; Reagents in the Wet Way; In the Dry Way; Inorganic Acids; Organic Acids; Systematic Course of Qualitative Analysis; Appendix.

Gooch, F. A., and Browning, P. E. Outlines of Qualitative Chemical Analysis. *Fourth Edition, revised.* 5½ x 8¼. cloth. 159 pp. N. Y., 1917. net, $1.25

Contents: Introductory; The Basic Analysis; The Acidic Analysis; The Systematic Examination; Organic Compounds.

Hinds, J. I. D. Qualitative Chemical Analysis. From the standpoint of solubilities, ionization and mass action. *Second Edition.* 6 x 9. cloth. 274 pp. Easton, 1910. $2.50

Noyes, Arthur A. A Course of Instruction in the Qualitative Analysis of Inorganic Substances. *Seventh Edition, partly rewritten.* Illustrated. 6 x 9. cloth. 133 pp. New York, 1918. $1.90

Prescott, A. B., and Johnson, O. C. Qualitative Chemical Analysis. A guide in qualitative work, with data for analytical operations, and laboratory methods in inorganic chemistry. *Seventh Edition,* thoroughly revised by John C.

Olsen. 6½ x 9¼. cloth. 452 pp. New York, 1916. $4.00

Contents: Principles of Analytical Chemistry. The Chemical Elements and Their Atomic Weights; Periodic System; Classification of the Metals as Bases; Commonly Occurring Acids; Operations of Analysis; Solution and Ionization; Order of Laboratory Study. *The Metals.* The Silver, Tin, Copper, Iron, Zinc, Calcium and Alkali Groups. *The Non-Metals.* Systematic Examinations.

Prescott, A. B., and Sullivan, E. C. First Book in Qualitative Chemistry. For studies of water solution and mass action. *Eleventh Edition, entirely rewritten.* 6 x 9. cloth. 148 pp. New York, 1913. net, $1.50

Contents: Qualitative Chemistry; Equivalent Weights; Valence; Chemical Notation and Nomenclature; The Equation; Salts; Acids; Bases; Formulas; Reagents; Solutions; Manipulation; The Analytical Groups; Electrolytic Dissociation; Chemical Equilibrium; Methods of Making a Reaction Complete; Solubility; The Solubility Product; Equilibrium Between Substances with a Common Ion; Hydrolysis; The Periodic System of Elements; Tests for the Metals and the Non-Metals.

Scott, W. W. Qualitative Chemical Analysis. A laboratory guide. *Third Edition, completely revised and enlarged.* color plate. 5 x 7½. cloth. 361 pp. New York, 1918. $3.00

Contents: Introduction; The Metals; Hydrogen Sulphide Group; Ammonium Sulphide Group; Ammonium Carbonate Group; Soluble Basic Group; The Acids; Silver Nitrate Group; Barium Chloride Group; Soluble Acid Group; Organic Acids; Systematic Analysis of a Substance; Preliminary Examination of a Liquid; Analysis of the Acids; Table of Reactions of the Metals and the Acids; The Less Common Elements; Rarer Elements of the Ammonium Sulphide Group; The Rare Metals of the Alkali Group.

Treadwell, F. P. Analytical Chemistry. Translated and revised by W. T. Hall. *Fourth Edition.* Vol. I., Qualitative Analysis. 27 illustrations. 6 x 9¼. cloth. 551 pp. N. Y., 1916. $3.50

Contents: General Principles; Reaction of the Metals (Cations); Reaction of the Acid Constituents (Anions); Reaction of Some of the Rarer Metals.

Wells, H. L. A Laboratory Guide in Qualitative Chemical Analysis. 6¼ x 9¼. cloth. 196 pp. N. Y., 1913. net, $1.50

Contents: Analytical Course; Theory; Descriptive Part.

White, George F. A Laboratory and Class-room guide to Qualitative Chemical Analysis. 5¼ x 7½. cloth. 178 pp. New York, 1916. $1.40

Contents: Study of Reactions and Analytical Procedures. Introduction; Thories of Solutions; General Instructions; Reactions of the Base-forming Constituents and Basic Analysis; Reactions of the Acid-forming Constituents. *Systematic Analysis of Unknown Substances.* Preliminary Tests; Analysis of a Solution; Analysis of a Solid Substance for the Base-forming Constituents; Analysis of a Solid Substance for the Acid-forming Constituents. *Appendix.* Analytical Tables; Directions for the Preparation of Reagents and Test Solutions; Solubilities of Difficulty Soluble Compounds in Water; Relative Solubilities in Water and Acids; Percentage Ionization of Acids, Bases, and Salts; Table of the Elements Arranged According to the Periodic System; Table of Atomic Weights.

QUANTITATIVE ANALYSIS

Blasdale, Walter C. Principles of Quantitative Analysis. An introductory course. *Second Edition, revised and enlarged.* 70 illustrations. 5¼ x 7½. cloth. 414 pp. *(Van Nostrand's Textbooks.)* New York, 1917. net, $2.50

Contents: Introductory Statements and Definitions; Gravimetric Gas Evolution Processes; Gravimetric Precipitation Processes; Gravimetric Solution and Extraction Processes; Partition Processes; General Features of Volumetric Processes; Volumetric Processes Involving Precipitation; Volumetric Processes Involving Neutralization; Volumetric Processes Involving Oxidation; Physico-Chemical Processes; Appendices.

Boone, W. T. A Complete Course of Volumetric Analysis for Middle and Higher Forms of Schools. 15 illustrations. 5 x 7¼. cloth. 172 pp. London, 1918. $1.50

Contents: Introduction; Simple Apparatus for Measuring Liquids; Methods of Ascertaining when Reactions are Complete; End-Points; Common Indicators; Standard or Volumetric Solutions; Acidimetry and Alkalimetry; Methods Depending on Direct Oxidation and Reduction; Methods Involving Indirect Oxidation; Iodometry; Methods Involving Precipitation; Miscellaneous Exercises; Notes on Electrolytic Dissociation and Indicators; Table of Standard Solutions in Common Use; Table of Atomic Weights; Notes on the Exercises; Answers to Questions.

Classen, A., and Cloeren, H. Quantitative Analysis by Electrolysis. Revised English translation of the *Fifth German Edition.* 52 illustrations. 6 x 9. cloth. 359 pp. New York, 1919. $3.00

Contents: Introduction; Electro-Analytical Determination; Separation of Metals; Special Analysis.

Clowes, F., and Coleman, J. B. Quantitative Chemical Analysis. Adapted for use in the laboratories of colleges and schools. *Eleventh Edition.* Illustrated. 6 x 9. cloth. 594 pp. Philadelphia, 1918. $5.75

Contents: General Processes; Simple Gravimetric Estimations; Volumetric Analysis; General Quantitative Analysis; Organic Analysis and Molecular Weights; Volumetric Estimation of Gases; Tables for Reference.

Cumming, Alexander C., and Kay, Sydney A. A Text-Book of Quantitative Chemical Analysis. 96 illustrations. 6¼ x 9. cloth. 397 pp. N. Y., 1913. *Reprinting*

Contents: General Principles; Volumetric Analysis; Gravimetric Analysis; Colorimetric Methods; Systematic Quantitative Analysis; The Analysis of Simple Ores and Alloys; Gas Analysis; Water Analysis; Quantitative Analysis of Organic Substances; The Determination of Molecular Weights; Appendix.

Fresenius, C. R. Quantitative Chemical Analysis. Translated from the *Sixth Revised German Edition* by A. I. Cohn. 2 vols. 280 illustrations. 6 x 9. cloth. 2076 pp. New York, 1912, '15.

2 vols., net, $12.50

The table of factors and their multiples has also been entirely recalculated by the translator, and the latter has moreover added the logarithmic values of the factors. Two new tables of weights of gases per litre have been added to Table IX by the translator, both calculated on the atomic values used in the book, the object being to have all the values in each given table agree among themselves, whereby more consistent and uniform results may be obtained and fewer discrepancies are likely to occur.

When sold separately. Vol. I. net, $5.50
Vol. II. net, 7.50

Gooch, Frank A. Representative Procedures in Quantitative Chemical Analysis. 36 illustrations. 6 x 9. cloth. 273 pp. New York, 1915. $2.50

Contents: Process of Analysis; Weighing and Measuring; Procedures in Gravimetric Analysis; Procedures in Columetric Analysis; Systematic Analysis.

Hampshire, C. H. Volumetric Analysis for Students of Pharmaceutical and General Chemistry. 5¼ x 7¾. cloth. 112 pp. Philadelphia, 1912. $1.50

Contents: Acidimetry and Alkalimetry; Indicators: Sources of Error; Determinations with Sulphuric Acid and with Sodium Hydroxide; Determinations Involving Oxidation and Reduction; Potassium Permanganate; Potassium Dichromate; Iodine; Sodium Thiosulphate; Precipitation; Reactions; Miscellaneous Articles.

Kingscott, P. C. R., and Knight, R. S. C. Methods of Quantitative Organic Analysis. 51 illustrations. 5¾ x 8¾. cloth. 299 pp. London, 1914. $2.50

Contents: Introduction; International Atomic Weights, 1914; Determination of Molecular Weight, by Physical Methods; Ultimate Analysis; Estimation of Typical Groups; Estimation of Some Compounds of Technical Importance.

Mahin, Edward G. Quantitative Analysis. *Second Edition, revised and enlarged.* 122 illustrations. 5½ x 8. cloth. 605 pp. New York, 1919. $4.00

Mellor, J. W. A treatise on Quantitative Inorganic Analysis. With special reference to the analysis of clays, silicates and related minerals. Being Vol. I. of a Treatise on the Ceramic Industries. 206 illustrations, 2 colored plates. 6¾ x 9¼. cloth. 810 pp. London, 1913.

net, 9.00

Contents: Weighing; Measurement of Volumes; Volumetric Analysis; Colorimetry and Turbidimetry; Filtration and Washing; Heating and Drying; Pulverisation and Grinding; Sampling; The Reagents. *Typical Silicate Analyses —Clays.* Determination of Volatile Matters; Opening up Silicates; Determination of Silica; Ammonia Precipitate; Determination of Titanium, of Calcium and Magnesia, and of the Alkalies; Abbreviated Analyses and Analytical Errors; Electro-Analyses: Analyses of Glasses, Glazes, Colors, and Complex Silicates. *Special Methods.* Bases; Acids and Non-Metals; Appendix Tables.

Olsen, J. C. Textbook of Quantitative Chemical Analysis by gravimetric, electrolytic, volumetric and gasometric methods. With 74 laboratory exercises giving the analysis of pure salts, alloys, minerals and technical products. *Fifth Edition, revised and enlarged.* Illustrated. 6½ x 9¼. cloth. 576 pp. New York, 1916. $4.00

Contents: The Balance; General Operations; Determination of Water. *Determination of Metals.* As Oxide; As Sulphate and Sulphide; As Phosphate, Chromate and Chloride. *Determination of Acids.* Halogens, Sulphur and Nitrogen; Carbonic, Boric and Phosphoric Acids. *Analysis of Alloys.* Alloys of Silver, Copper, Lead, Bismuth, Cadmium and Tin; Of Alloys Containing Arsenic, Antimony and Tin; Of Alloys Containing Iron, Nickel and Zinc. *Analysis of Minerals.* Minerals Containing Iron, Aluminum and Chromium; Sulphides Containing Manganese, Nickel, Cobalt and Mercury; Carbonates Containing Calcium, Barium, Strontium and Manganese; Silicates; Separation of Sodium and Potassium. *Electrolytic Methods.* The Ionic Theory; Apparatus and Manipulation; Determination of Metals. *Volumetric Methods.* Calibration of Apparatus; Acidimetry; Standard Acids and Alkalies; Titration of Boric and Carbonic Acids. *Oxidation and Reduction Methods.* Potassium Permanganate and Dichromate Solutions; Iodometric Methods. *Precipitation Methods.* Determination of Chlorides, Cyanides and Silver; Phosphoric Acid. *Technical Analysis.* Iron, Steel, Coal; Water; Oils and Fats; Gas; Stoichiometry.

Schimpf, Henry W. Essentials of Volumetric Analysis. An introduction to the subject, adapted to the needs of students of pharmaceutical chemistry. *Third Edition, rewritten and enlarged.* 61 illustrations. 5½ x 8. cloth. 380 pp. New York, 1917. $2.00

Contents: General Principles of Chemical Combination; Volumetric or Standard Solutions; Indicators; Apparatus; Calculating Results; Analysis by Neutralization; Precipitation; Oxidation and Reduction; Estimation of Alkaloids; Assaying of Vegetable Drugs; Estimations Involving Use of Decinormal Bromin V. S.; Technical Methods for Fats, Oils and Waxes; Sugars; Formaldehyde; Alcohol; Nitrites; Hydrogen Dioxide; Soluble Carbonates, Urea.

Schimpf, Henry W. A Manual of Volumetric Analysis. For the use of pharmacists, sanitary and food chemists as well as students in these branches. *Fifth Edition, revised and enlarged.* 102 illustrations. 6 x 9. cloth. 745 pp. New York, 1909. *Reprinting*

Contents: Abbreviations; List of Elements and Their Atomic Weights; Tables of Multiples of Atomic Weights, etc.; Part I.—Introduction; General Principles; Volumetric or Standards Solutions; Indicators; Apparatus Used in Volumetric Analysis; On the Use of Apparatus; Weight and Measures Used in Volumetric Analysis; Methods of Calculating Analyses; Some Vicarious Volumetric Methods; Neutralization Analysis; Analysis by Precipitation; Analysis by Oxidation and Reduction. Part II.—Acetic Acids and Acetates; Acetic Acid Table; Boric Acid and Borates, Carbonic Acid and Carbonates; Chlorin, Bromin, and Iodin; Citric Acid and Citrates; Cyanogen and its Compounds; Nitrogen and its Compounds; Oxalic Acid and Oxalates; Oxygen and the Peroxids; Phosphoric Acid and Phosphates; Salicylic Acid and Salicylates; Sulphur and its Compounds; Aluminum; Ammonium; Antimony; Arsenic; Barium; Bismuth; Calcium; Copper; Gold; Iron; Lead; Magnesium; Manganese; Mercury; Silver; Strontium; Tin; Zinc. Part III.—Sanitary Analyses and Volumetric Analyses of Organic Medicinal Substances; Sanitary Analysis of Water; Milk; Butter; Some Technical Examination Methods for Fats, Oils, and Waxes; Analysis of Soap; Estimation of Starch in Cereals, etc.; Estimation of Sugars; Volumetric Estimation of Alkaloids; Volumetric Assaying of Vegetable Drugs; Assay of Galenical Preparations; Phenol; Glycerin; Tannin; Formaldehyde; Chloroform and Chloral Hydrate; Assaying Surgical Dressings; Estimation of Compound Ethers; Urine. Part IV.—A Few Gasometric Methods; The Nitrometer; Assay of Nitrites; Assay of Hydrogen Dioxid; Estimation of Soluble Carbonates; Estimation of Urea and Uric Acid.

Scott, Wilfred W. *(Editor).* Standard Methods of Chemical Analysis. A manual of analytical methods and general reference for the analytical chemist and for the advanced student. *Second Edition, revised.* 142 illustrations, 3 color plates. 7 x 9¼. cloth. 900 pp. New York, 1917. $7.50

(The following specialists have written chapters for this book: H. A. Baker, L. C. Barton, F. G. Breyer, B. S. Clark, Wallace G. Derby, Wm. F. Doerflinger, D. K. French, H. A. Gardner, A. H. Gill, I. E. Hale, R. E. Hickman, W. B. Hicks, R. K. Meade, J. C. Olsen, R. S. Owens, W. L. Savell, J. A. Schaefer.)

For contents see page

Sutton, Francis. A Systematic Handbook of Volumetric Analysis; or, the Quantitative Determination of Chemical Substances by Measure, Applied to Liquids, Solids and Gases. *Tenth Edition, revised throughout,* with numerous additions by W. Lincolne Sutton. 6¼ x 8¾. cloth. 635 pp. Philadelphia, 1911. *Reprinting*

Contents: Memorandum; General Principles, Alkalimetry; Acidimetry; Analysis by Oxidation or Reduction; Analysis by Precipitation; Application of the Foregoing Principles of Analysis to Special Substances; Urine Analysis; Water and Sewage Analysis; Special Index to Processes of Water and Sewage Analysis; Volumetric Analysis of Gases; Addenda and Corrigenda; List of Tables.

Thornton, Arthur, and Pearson, M. Notes on Volumetric Analysis. Illustrated. 5¾ x 9¼. paper. 80 pp. London, 1918. $0.75

Contents: Introduction; Apparatus; Conditions of Experiment; Neutralization; Oxidation; Iodometry; Precipitation Methods; Index.

Treadwell, F. P. Analytical Chemistry. Vol. II. Quantitative Analysis. Translated by William T. Hall. *Fourth Edition, thoroughly revised and enlarged.* 110 illustrations. 6¼ x 9¼. cloth. 797 pp. New York, 1915. 4.00

Contents: Introduction; Gravimetric Determination of the Metals; Gravimetric Determination of the Metalloids: Volumetric Analysis Alkalimetry and Acidimetry; Oxidation and Reduction Methods; Precipitation Methods; Gas Analysis.

BLOWPIPE ANALYSIS

Butler, G. Montague. Pocket Handbook of Blowpipe Analysis. Designed for the use of students and prospectors with the idea of making oral instruction unnecessary. *First Edition, corrected.* 4¼ x 7. cloth. 85 pp. N. Y., 1916. $1.00

Contents: Blowpipe Instrument, Reagents and Operations; Methods of Testing for the Various Elements with the Blowpipe; Outline for Qualitative Blowpipe Analysis; Index to all of the Tests yielded by the various Elements; The Determination of Minerals by means of the Blowpipe; The Elementary Principles of Chemistry; Table of Elements with their Symbols and Atomic Weights; Index.

Cornwall, H. B. Manual of Blow-pipe Analysis, Qualitative and Quantitative. With a complete system of determinative mineralogy. 69 illustrations. 6 x 9. cloth. 318 pp. N. Y., 1906. $2.50

Contents: Apparatus; Reagents; Operations; General Operations and Examinations in Qualitative Blowpipe Analysis; Special Tests Sometimes Necessary; Systematic Blowpipe Analysis; Analysis with the Aid of the Wet Way; Spectrum Analysis; Assaying; Important Ores and Coals Described; Determinative Mineralogy.

Getman, Frederick H. The Elements of Blowpipe Analysis. Illustrated. 5 x 7¼. cloth. 86 pp. N. Y., 1809. $1.25

Contents: Apparatus and Reagents; General Outline of Blowpipe Analysis; General Reactions for the Detection of the Metallic Elements in Simple Compounds; Behavior of Some of the Principal Ores Before the Blowpipe. Comparative Tables.

Landauer, J. Blowpipe Analysis. Translated by James Taylor. 19 illustrations. 5 x 7. cloth. 183 pp. London, 1901. $1.75

Contents: List of Elements and Atomic Weights; Historical Sketch of Blowpipe Analysis; Apparatus and Reagents; The Operations of Blowpipe Analysis; Bunsens Flame Reactions; Special Examination for Certain Elements in Combination; Systematic Examination of Compound Inorganic Substances; Condensed View of the Blowpipe Reactions; Tabular View of the Behaviour of the Alkalis, Earths and Metallic Oxides, Alone and with Reagents Before the Blowpipe.

Martin, F. W. A Laboratory Guide to Qualitative Analysis with the Blowpipe. 5 x 7¼. cloth. 53 pp. N. Y., 1903. $0.60

Plattner's Manual of Qualitative and Quantitative Analysis with the Blowpipe. Translated by Henry B. Cornwall, assisted by John H. Caswell. From the *Sixth German Edition,* by Prof. Friederich Kolbeck. *Eighth Edition, revised.* 87 illustrations. 6¼ x 9¼. cloth. 463 pp. N. Y., 1912. net, $4.00

Contents: Apparatus and Reagents. *Qualitative Blowpipe Analysis.* General Rules; Examination of Minerals, Ores and Metallurgical Products for Metallic and Non-Metallic Bodies; Examples Showing the Method of Detecting the Constituents of Various Compounds. *Quantitative Blowpipe Assays.* Preparation of Substances; Detailed Description of Assays of Silver; Gold; Copper; Lead; Bismuth; Tin; Cobalt and Nickel; Mercury and Their Alloys.

Ross, W. A. The Blowpipe in Chemistry, Mineralogy, and Geology. Containing all known methods of anhydrous analysis, many working examples, and instructions for making apparatus. *Second Edition.* 120 illustrations. 5 x 7½. cloth. 220 pp. London, 1912. $2.50

Contents: Manufacture of Blowing Apparatus; Construction of Pyrological Lamps; Supports and Apparatus, Auxiliary Apparatus; Structure and Management of Pyrocanes; On Pyrological Reagents; Reagents and Simple Mineral Analyses; First Operations; Aluminium-plate; Reactions of Metals and Alloys; On Pyrological Mineralogy and a New Specific Gravitometer; Inner Calcium; Pyroborate Balls, "Chemical Water," etc.; Rationale of Outer and Inner Ball Formation in Boric Acid Before the Blowpipe; Freiberg Qualitativs Examples; Appendix.

METALLURGICAL ANALYSIS—ASSAYING

Bauer, O., and Deiss, E. The Sampling and Chemical Analysis of Iron and Steel. Illustrated. 5 x 7½. cloth. 373 pp. New York, 1915. $3.00

Blair, Andrew A. The Chemical Analysis of Iron. A complete account of all the best known methods. *Eighth Edition.* 102 illustrations. 6¼ x 9. cloth. 318 pp. New York, 1918. $5.00

Contents: Apparatus; Reagents; Methods for the Analysis of Pig-Iron, Bar-Iron, and Steel; Alloy-Steels; Ferro-Tungsten and Tungsten Metal; Ferro-Molybdenum and Molybdenum Metal; Ferro-Vanadium; Ferro-Chrome; Ferro-Silicon; Ferro-Manganese and Manganese Metal; Ferro-Titanium; Ferro-Phosphorus; Iron Ores; Limestone; Clay; Slags; Fire Sands; Coal and Coke; Apparatus for the Determination of Metals by Electrolyis.

Brown, Walter Lee. Manual of Assaying. Gold, Silver, Lead and Copper. *Thirteenth Edition.* Illustrated. 5¼ x 7½. cloth. 590 pp. Chicago, 1914. $2.50

Contents: Apparatus and Re-agents Used in Assaying; Testing of Re-agents; Assaying of Gold, Silver, Copper and Lead Ores; Special Methods; Lists and References; Tables; Laboratory Tests in Connection with the Cyanide Process; Estimation of Copper by the Iodide Method; Volumetric Estimation of Lead by the Molybdate Method; Copper in Gold and Silver Ores; Chlorination Tests of Ores; Technical Estimation of Zinc.

Buskett, Evans W. Fire Assaying. A practical treatise on the fire assaying of gold, silver and lead, including description of the appliances used. 70 illustrations. 5 x 7½. cloth. 112 pp. New York, 1907. net, $1.25

Contents: Sampling; Reagents and Fluxes; Assay of Acid Ores; Lead Assay; Bullion Assay; Methods of Handling Work; Laboratory Tests.

Edwards, C. A. The Physico-Chemical Properties of Steel. *Second Edition.* 218 illustrations. 6½ x 9. cloth. 281 pp. London, 1920. $6.00

Contents: Constitution of Metallic Systems; Structure of Metals; Iron; Constitution of the Iron-Carbon System; Micro-Structure of Iron-Carbon Steels; Solidification of Steel Ingots; Iron-Carbon Steels; Phosphorus; Sulphur; Burning and Overheating of Steel; Deformation and Strain-Hardening of Metals; The Properties of Cold-Drawn Wire and the Effect of Acid Cleaning; Cementation and Case Hardening; Theories of Hardening by Quenching; Special Steels; Tungsten-Carbon Steels; High-Speed Tool Steel; Manganese; Chromium; Aluminum, Silicon and Vanadium Steels; Structural Constitution of Special Ternary Steels.

Fulton, Chas. H. Manual of Fire Assaying. *Second Edition, rewritten and enlarged.* Illustrated. 6 x 9. cloth. 219 pp. New York, 1911. $2.50

Giua, M., and Giua-Lollini, C. Chemical Combination Among Metals. Translated by Gilbert W. Robinson. 207 illustrations. 6¼ x 9½. cloth. 355 pp. Philadelphia, 1918. $8.00

Contents: Equilibrium Diagrams; Thermal Analysis; The Nature of Intermetallic Compounds; Physical Properties; Homopolar Intermetallic Compounds; Heteropolar Intermetallic

Compounds; Ternary Intermetallic Compounds; Tables.

Groth, P. An Introduction to Chemical Crystallography. Authorized translation by Hugh Marshall. 6 illustrations. 5 x 7¼ cloth. 134 pp. New York, 1906. $1.25

Heath, George L. The Analysis of Copper, and Its Ores and Alloys. 18 illustrations, 2 plates. 6¼ x 9¼. cloth. 300 pp. New York, 1916. net, $3.00

Heess, J. K. Practical Methods for the Iron and Steel Works Chemists. 6 x 9¼. clth. 65 pp. Easton, 1908. $1.25

Howe, Henry M. The Metallography of Steel and Cast Iron. 122 illustrations, 28 plates, 38 tables. 7¾ x 10¾. cloth. 670 pp. New York, 1916. net, $10.00

Contents: Historical Sketch; Thoughts of the Permanence of Our Supply of Iron; Outline of the Classification and Manufacture of Iron and Steel: Classification and Nomenclature; Outline of the Constitution of Iron; Sodium-Nitrate-Water Diagram; Introduction to the Carbon-Iron Diagram (Cementite-Austentite or Metastable Form); The Transformation in Steel; The Transformation Cast Iron; Graphitization; The Phase Rule; Evidence That the Structure of Metals is Crystalline; Further Evidence of the Crystalline Structure of Metals; General Considerations on Deformation; Specific Deformations: Slip Bands; Silhouettes; Slip Bands, Discussion; Bilby's Amorphous Theory; Plastic Deformation in Steel; Twins; The Neumann Bands or Mechanical Twins in Ferrite; Mechanism of Twinning; The X Bands; The Deformation Lines in Hadfield's Austenitic Manganese Steel; Is There Fluid as Well as Crystalline Motion in Metals?; Inter-Granular and Trans-Crystalline Rupture; Relative Preference of the Path of Rupture for Ferrite and Pearlite; Fracture; Ghosts and Other Elements of Fibre; Influence of Manufacturing Conditions on Fiber; Certain Crystalline Intersections; Appendices.

Ibbotson, Fred, and Aitchison, Leslie. The Analysis of Non-Ferrous Alloys. Illustrated. 5¾ x 9. cloth. 238 pp. New York, 1915. $2.75

Contents: Apparatus for Electrolytic Analysis; Electrolytic Analysis; Precipitations by Means of Hydrogen Sulphide; Lead; Copper; Bismuth; Antimony; Tin; Arsenic; Arsenic, Antimony, and Tin Separations; Aluminium and Chromium; Nickel; Cobalt; Zinc; Analysis of Commercial Alloys.

Johnson, Charles M. Rapid Methods for the Chemical Analysis of Special Steels, Steel-Making Alloys, and Graphite. *Second Edition, rewritten.* 39 illustrations. 6¼ x 9½. 450 pp. New York, 1914. *Reprinting*

Contents: Qualitative Tests for Chromium, Tungsten, Nickel, Molybdenum, etc.; Vanadium Steel and Ferro-Vanadium Analysis; Ferro-Titanium and Titanium Steel; Analyses of Tungsten Powder; Sampling of Tungsten Ores; Tungsten, Sulphur, Silicon, Manganese, and Phosphorus in Tungsten Steel and Chrome Tungsten Steel; Analysis of Low Per Cent Tungsten Steel; Molybdenum Powders; Analysis of Ferro-Chrome, Chrome Ores, and Carbonless Chrome; Aluminum in Steel; Copper in Steel and Pig Iron; Determination of Nickel in Presence of Chromium; Ferro-Manganese; Determination of Carbon in Iron and Steel; Carbon by Color; Uranium in Ferro-Uranium, Carnotite Ore, etc.; Qualitative and Quantitative Tests for Cobalt and Nickel in Steel; Determination of Nitrogen in Steel and Iron; Analysis of Graphite and Graphite Crucibles; Annealing of Steel; Complete Analysis of Limestone and Magnesite; Testing of Lubricating Oils; Percentage Reduction of a Substance, etc.; Automatic Steam Water Still.

Lord, N. W., and Demorest, D. J. Metallurgical Analysis. *Fourth Edition, revised and enlarged.* Illustrated. 5½ x 8. cloth. 342 pp. N. Y., 1916. $3.00

Low, A. H. Technical Methods of Ore Analysis. *Eighth Edition, revised and enlarged.* 6 x 9. cloth. 404 pp. New York, 1919. $3.25

Contents: Apparatus; Electrolysis; Logarithms; Aluminum; Antimony; Arsenic; Barium; Bismuth; Cadmium; Calcium; Chlorine; Chromium; Copper; Fluorine; Iron; Lead; Magnesium; Manganese; Mercury; Molybdenum; Nickel and Cobalt; Phosphorus; Potassium and Sodium; Silica; Sulphur; Tin; Titanium; Tungsten; Uranium and Vanadium; Zinc; Combining Determinations; Boiler Water; Coal and Coke; Testing Crude Petroleum; Miscellaneous; Tables; Appendix.

Lodge, Richard W. Notes on Assaying and Metallurgical Laboratory Experiments. *Third Edition, revised and corrected.* Illustrated. 6 x 9. cloth. 328 pp. New York, 1915. $3.50

Contents: Apparatus, Reagents and Materials; Sampling; Assay of Ores for Silver; Assay of Ores for Gold; Assay of Ores for Lead; Bullion; Assay of Ores for Copper and Tin; Platinum and the Platinum Group; Metallurgical Laboratory Experiments and Notes; The Effect of High Litharge in the Crucible Assay for Silver.

MacFarlane, Walter. Laboratory Notes on Iron and Steel Analysis. 25 illustrations. 5 x 7. cloth. London, 1909. net, $2.50

Macfarlane, Walter. A Practical Guide to Iron and Steel Works Analyses. Being selections from "Laboratory Notes on Iron and Steel Analyses." Illustrated. 5 x 7¼. cloth. 196 pp. New York, 1911. $3.25

Contents: Analyses of Steel; Estimation of Combined Carbon; Estimation of Sillicon; Estimation of Phosphorus; Estimation of Manganese; Estimation of Sulphur; Analysis of Pig Iron; Estimation of Combined Carbon; Of Graphitic Carbon; Of Sillicon; Of Phosphorus; Of Manganese; Of Sulphur; Analysis of Limestone; Analysis of Calcined Limestone; Analysis of Dolomite; Analysis of Solid Fuels; Estimation of Iron; General Notes on Laboratory Operations and Appliances; Notes on Preparing and Storing Solutions.

Macleod, W. A., and Walker, Chas. Metallurgical Analysis and Assaying. Illustrated. 6 x 9. cloth. 318 pp. Philadelphia, 1903. $4.50

Morgan, J. J. Tables for Quantitative Metallurgical Analysis. For laboratory use. 6 x 9. cloth. Phila., 1899. $1.75

Murdock, Joseph. Microscopical Determination of the Opaque Minerals. An aid to the study of ores. 6 x 9. cloth. 172 pp. New York, 1916. net, $2.00

Contents: Importance of the Subject; Previous Work; Scope of Present Work; Bibliography. *Technique of Mineralography.* Polishing; Mounting; Examination; Magnification; Photographing; Color Comparison; Hardness Determination; Micro-chemical Tests. *Mineral Composition and Identity.* Observed Mixtures; Probable Mixtures and Doubtful Minerals. *Plan of Classification.* Color; Hardness; Microchemical Tests; Explanation of Tables; Outline of the Classification. *Tables for Mineral Identification. Miscellaneous Tables.* Condensed Determinative Table; Odor and Streak of Minerals; Minerals Tabulated by Elements.

Park, James. A Textbook of Practical Assaying. For the use of mining schools, miners and metallurgists. Illustrated. 5 x 7½. cloth. 355 pp. London, 1914. $3.00

Park, James. Laboratory Instructions in Assaying and Practical Chemistry. *Second Edition.* 5¾ x 8½. cloth. 203 pp. Auckland, 1896. $3.50

Contents: Practical Assaying; Principles of Qualitative Analysis; Quantitative Analysis of Simple and Complex Substances; Volumetric Analysis Tables.

Phillips, F. C. (Editor). Methods for the Analysis of Ores, Pig Iron and Steel, in use at the laboratories of iron and steel works in the region about Pittsburgh, Pa. Contributed by the chemists in charge. *Second Edition.* Illustrated. 5¾ x 9. cloth. 177 pp. Easton, 1915. $1.00

Pickard, J. A. Modern Steel Analysis. A selection of practical methods for the chemical analysis of steel. Illustrated. 5¼ x 7½. cloth. 136 pp. Philadelphia, 1914. $2.25

Contents: General Procedure; Aluminium; Arsenic; Carbon; Chromium; Cobalt; Copper; Hydrogen; Manganese; Molybdenum; Nickel; Nitrogen; Oxygen; Phosphorus; Silicon; Sulphur; Titanium; Tungsten; Uranium; Vanadium; Note on the Estimation of Phosphorus in Steel Containing Arsenic; Atomic Weights; Solutions; Analysis of Different Steels and Alloys.

Pratt, A. E. Economic Metallurgy. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Rhead, E. L., and Sexton, A. H. Assaying and Metallurgical Analysis. For the use of students, chemists, and assayers. *Second Edition.* 105 illustrations. 6½ x 9. cloth. 461 pp. N. Y., 1914. $4.50

The object which the authors had in view in writing the present work was to provide the student, chemist, or assayer with a handbook sufficiently comprehensive to include the greater part of the work likely to be required in the Laboratory or Assay Office. Most of the approved modern methods in general use are included.

Rideal, E. K. The Rare Earths and Metals. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Sauveur, Albert. The Metallography and Heat Treatment of Iron and Steel. *Second Edition.* 438 illustrations. 7¾ x 10¾. cloth. 502 pp. Cambridge, Mass., 1918. $7.00

Contents: The Industrial Importance of Metallography; Apparatus for the Metallographic Laboratory; Manipulation; Pure Metals; Pure Iron; Wrought Iron; Low Carbon Steel; Medium High and High Carbon Steel; Impurities in Steel; The Thermal Critical Points in Iron and Steel: Their Causes and Effects; Cast Steel; The Mechanical Treatment of Steel; The Annealing of Steel; The Hardening of Steel; The Tempering of Hardened Steel; Theories of the Hardening of Steel; The Cementation and Case Hardening of Steel. *Special Steels.* General Considerations; Constitutions, Properties, Treatment, and Uses of Most Important Types; Cast Iron; Impurities in Cast Iron; Malleable Cast Iron; Constitution of Metallic Alloys; Equilibrium Diagram or Iron-Carbon Alloys; The Phase Rule; Nomenclature of the Microscopic Constituents.

Schoeller, W. R. The Analysis of Minerals and Ores of the Rarer Elements for Analytical Chemists, Metallurgists, and Advanced Students. 6 x 9. cloth. 249 pp. London, 1919. $5.00

Contents: Synopsis of Mineral Analysis. Mineralogical, Qualitative Chemical and Complete Chemical Analyses; Lithium; Rubidium; Caesium; Berylium; Radium; Scandium; Gallium; Indium; Thallium. *The Rare Earth Group.* Cerium; Rare Earth Metals Other Than Cerium; Titanium; Zirconium; Thorium; Germanium; Vanadium; Columbium; Tantalum; Selenium; Tellurium; Molybdenum; Tungsten; Uranium; Ruthenium; Rhodium; Palladium; Osmium; Iridium; Platinum; International Atomic Weights; Gravimetric Factors; Melting-Points; Index of Minerals; Index of Separations.

Seamon, W. H. A Manual for Assayers and Chemists. 5¼ x 8. cloth. 266 pp. New York, 1910. net, $2.50

Contents: Metallic Determinations. Aluminum; Antimony; Arsenic; Barium; Bismuth; Cadmium; Calcium; Chromium; Copper; Gold and Silver; Iron; Lead; Magnesium; Manganese; Mercury; Molybdenum; Nickel and Cobalt; Platinum; Potassium and Sodium; Tin; Tungsten; Uranium and Vanadium; Zinc. *Non-metallic Determinations.* Chlorine; Phosphorus; Selenium and Tellurium; Silica; Sulphur. *Miscellaneous.* Ce-

ments; Clays; Coal and Coke; Slag Analysis; Water; Methods of Assaying in Cyanide Plants; Analysis of Commercial Cyanide; Combining Determinations; Ore Testing; Suggestions for Young Assayers; Observations on Technical Methods; Ore Contracts and Mexican Taxation on Ore Production; Information for Shippers of Ores Concerning Processes of Sampling and Making Settlements. *Tables.*

Sexton, A. H. Chemistry of the Materials of Engineering. A handbook for engineering students. *Third Edition.* 35 illustrations. 5¼ x 7½. cloth. 347 pp. London, 1909. $3.00

Contents: The Sources and Chemistry of Iron; Pig Iron; Malleable Iron; Manufacture of Pig and Malleable Iron; Steel; Hardening and Tempering; Preparation; The Foundry; Working of Iron and Steel; Corrosion and Protection; Micro Structure; Copper; Lead, Zinc, Tin; Alloys; Wood; Stone; Clay; Mortars and Cements; Fuel; Water; Lubricants; Paints and Varnishes; Minor Materials.

Smith, Ernest A. The Sampling and Assay of the Precious Metals. Comprising gold, silver, platinum, and the platinum group metals in ores, bullion, and products. 166 illustrations. 6¼ x 9¼. cloth. 475 pp. London, 1913. $6.00

Contents: Introductory; The Design and Equipment of Assay Offices; Assay Office Records; Assay Furnaces; Furnace Implements; Apparatus Used in Furnace Operations; Balances and Weights for Weighing; Gold and Silver; Physical and Chemical Proerties; Precious Metal Ores; Fluxes and Other Materials Employed; Principles of Fluxing; Assay Slags; Assay Operations; The Assay of Silver Ores; The Assay of Gold Ores; The Assay of Complex Gold and Silver Ores; Special Methods of Ore Assay; Bullion; Valuation and Sampling; The Assay of Gold Bullion; Assay of Silver Bullion; The Assay of Base Bullion (Lead and Copper); The Assay of Industrial Gold and Silver Alloys; Assay Offices for Hall Marking; Assay of Auriferous and Argentiferous Metallurgical Products; Laboratory Work in a Cyanide Mill; Platinum and the Metals of the Platinum Group; The Assay of Platinum; Appendix; Index.

Smith, J. R. Modern Assaying. A concise treatise describing latest methods and appliances. Edited by F. W. Braun. 80 illustrations. 6 x 9. cloth. 145 pp. Philadelphia, 1910. $1.50

Contents: Selection and Preparation of Sample; Fire Assay for Gold and Silver; Scorification Assay; Assay of Gold Bullion; Fire Assay of Lead and Antimony; Weighing; Fluxes; Touch Stone and Test Needles; Volumetric Determination of Copper with Solution of Potassium Cyanide; Modification of Kerl's Swedish Copper Assay; Electrolytic Assaying with the Guess; Haultain Electrolytic Outfit; Wet Assay of Lead; Volumetric Determination of Lead by the Molybdate Method; Distilled Water; Mercury Determination by Distillatiol; Whitton's Method of Mercury Determination; Retorting Amalgam and Melting Bullion; Care of Muffle and Furnace; Accidents; Oxone; Reference Tables.

Stoughton, B. Metallurgy of Iron and Steel. With numerous tables and 305 figures and diagrams. *Second Edition, thoroughly revised and entirely reset.* 6 x 9. cloth. Illustrated. 549 pp. New York, 1913. $4.00

Contents: Iron and Carbons—Definitions of Materials; Manufacture of Pig Iron; Purification of Pig Iron in General; Manufacture of Wrought Iron and Crucible Steel; Bessemer Process; Open Hearth or Siemens-Martin Process; Defects in Ingots and Other Castings; Mechanical Treatment of Steel; Iron and Steel Founding; Solution Theory of Iron and Steel; Constitution of Steel; Constitution of Cast Iron; Malleable Cast Iron; Heat Treatment of Steel; Alloy Steels—Manufacture and Properties; Corrosion of Iron and Steel; Electro-Metallurgy of Iron and Steel; Metallography of Iron and Steel; Chemistry and Physics of Metallurgy.

White, Charles H. Methods in Metallurgical Analysis. 106 illustrations. 5¼ x 7½. cloth. 364 pp. New York, 1915. $3.00

(Author is assistant professor in mining and metallurgy in Harvard University and in the Massachusetts Institute of Technology.)

Contents: Definition of the Subject; Sampling; Necessity for Correct Sampling; The Operations of Analysis, Gravimetric, Polumetric Analysis; Calorimetry; Methods of Analysis in the Metallurgy of Iron and Steel; Moisture; Hydroscopic Water; Combined Water; Loss on Ignition; Iron in Ores; Silica, Sulphur, Phosphorous, Alumina, Manganese, Lime, Magnesia and Tibanium in Ore; Analysis of: Iron and Steel; Iron Slags; Limestone; Methods of Analysis in the Metallurgy of Copper, Lead, etc.; Copper, Lead, Zinc and Arsenio in Ore; Analysis of: Copper Matte; Chilled Blast Furnace Slags; Reverberatory Slags, Briquettes and other Copper Bearing Products; Copper Bullion; Alloys; Methods of Analysis in the Production of the Precious Metals; Analysis of Fluxes; Analysis of Fuels; Analysis of Clay; Methods for the Determination of Some of the Minor Metals; Methods for the Determination of Some of the Rarer Metals; Testing of Lubricating Oils; Examination of Boiler Water; Detection of the Metals; Tables; General References.

Williams, Robt. S. Principles of Metallography. 75 illustrations. 5¾ x 8½. cloth. 167 pp. N. Y., 1920. $2.00

Wraight, E. A. Assaying. In theory and practice. 68 illustrations. 5¼ x 8¼. cloth. 336 pp. New York, 1914. $3.40

Contents: Numerical Data, Laboratories and Their Equipment, and Table of Minerals; Dry Assaing; Wet Assaying; Cyanide and Mill Tests.

Wysor, Henry. Analysis of Metallurgical and Engineering Materials. A systematic arrangement of laboratory methods. Illustrated. 8¼ x 10½. cloth. 82 pp. Easton, 1912. net, $2.00

Ziegel, Henry. Brief Course in Metallurgical Analysis. 7 x 10. cloth. 78 pp. Easton, 1915. $1.25

ALLOYS

Brannt, W. T. The Metallic Alloys. A practical guide to the manufacture of all kinds of alloys, amalgams, and solders used by metal-workers; together with their chemical and physical properties and their applications in the arts and the industries; with an appendix on the coloring of alloys and the recovery of waste metals. With 45 engravings. *Third Edition, thoroughly revised and enlarged.* Illustrated. 6 x 9. cloth. 549 pp. Philadelphia, 1908. $5.00

Buchanan, John F. Practical Alloying. A compendium of alloys and processes for brass founders, metal workers and engineers. Illustrated. 6½ x 9. cloth. 205 pp. Cleveland, 1910. $2.50

Contents: Metal Refining—Ancient and Modern; History and the Peculiarities of Alloys; The Properties of Alloys; Some Difficulties of Alloying; Methods of Making Alloys; Color of Alloys; The Notation of Alloys; Standard Alloys; Foundry Mixtures; White Metals; Solders; Novelty Metals, etc.; Fluxes for Alloys; Gates and Risers for Alloys; About Crucibles; Testing Alloys; Tables.

Gulliver, G. H. Metallic Alloys: Their Structure and Constitution. *Third Edition.* 310 illustrations. 5¼ x 8. cloth. 436 pp. London, 1919. $3.75

Contents: Methods of Investigation; The Physico-Chemical Equilibrium of Mixed Substances; Binary Alloys in which no Definite Chemical Compounds are Formed; Binary Alloys which Show Evidence of the Formation of Definite Chemical Compounds; Transformations which take Place in Completely Solid Metals and Alloys; Equilibrium Conditions in Metallic Mixtures; The Structure of Metals and Alloys; The Bronzes, The Brasses, and Other Alloys of Copper, Steel and Other Alloys of Iron; Alloys of More Than Two Metals; The Microscope in Engineering Practice.

Hibbard, Henry D. Manufacture and Uses of Alloy Steels. 5¼ x 8. cloth. 110 pp. New York, 1919. $1.25

Contents: Introduction; List of Useful Alloy Steels; Simple Tungsten Steel; Simple Chromium Steel; Manganese Steel; Simple Nickel Steels; Silicon Steels; High-Speed Tool Steels; Chromium Vanadium Steels.

Law, Edward F. Alloys and Their Industrial Applications. *Fourth Edition.* Illustrated, folding plate. 5¾ x 8¾. cloth. 385 pp. London, 1919. $5.00

Contents: Introduction; Properties of Alloys; Methods of Investigation; Constitution; Influence of Temperature on Properties; Corrosion of Alloys; Copper Alloys (Bronze); Copper Alloys (Brass); Copper Alloys (Special Bronzes and Brasses); German Silver and Miscellaneous Copper Alloys; Antifriction Alloys; Aluminum Alloys; Silver and Gold Alloys; Iron Alloys; Miscellaneous Alloys.

Parry L. The Analysis of Ashes and Alloys. 6 x 9. cloth. 151 pp. London, 1908. $2.50

Contents: Determination of Individual Elements; Analysis of Ashes; Miscellaneous Analyses.

Parry, L. Notes on Alloys. 5½ x 7½. cloth. 60 pp. London, 1906. $3.50

Contents: Introduction; General Information About Metals and Alloys; Classification and Tabulation of Alloys; Analysis of Alloys; The Systematic Treatment of Metalliferous Waste.

Price, W. B., and Meade, R. K. Technical Analysis of Brass and the Non-Ferrous Alloys. *Second Edition, revised and enlarged.* Illustrated. 5¼ x 7¾. cloth. 385 pp. New York, 1917. net, $3.00

Contents: Engineering Alloys; Apparatus for Electrochemical Analysis; Determination of the Metals; Some Applied Examples of Alloy Analysis; Control and Analysis of Plating Solutions; Tables.

Sexton, A. H. Alloys (Non-Ferrous). 137 illustrations. 6 x 9. cloth. 298 pp. Manchester, 1909. $3.50

Contents: Properties of Alloys as Related to Those of Their Constituents; The Phenomena of Solidification; What the Microscope Can Teach; Changes in the Structure of Alloys in the Solid Condition; Metals Used in the Preparation of Alloys; The Brasses; The Bronzes; Machinery Brasses and Bronzes; Bearing Bronzes; Other Copper Alloys; White Alloys; White Antifriction Alloys; Light Alloys; Fusible Alloys; Nickel Alloys; Alloys of the Precious Metals; Preparation of Alloys.

MEDICAL AND PHYSIOLOGICAL

Abderhalden, E. Text-Book of Physiological Chemistry, in Thirty Lectures. Translated by William T. Hall and George Defren. 6 x 9. cloth. 722 pp. New York, 1908. net, $5.00

Autenrieth, W., and Warren, W. H. Laboratory Manual for the Detection of Poisons and Powerful Drugs. *Fifth Edition.* *In Preparation*

Contents: Test for Phosphorus and Other Poisons Volatile with Steam from Acid Solution; Detection of Those Organic Substances Which Are Not Volatile with Steam from Acid Solution; Examination for Metallic Poisons; Examination for Those Poisons Which Do Not Belong to the Three Main Groups of Poisons; Special Methods; Quantitative Examination of Alkaloids and Other Powerful Substances in Raw Materials and in Their Preparations; Detection of Carbon Monoxide Blood, Blood Stains and Human Blood; Preparation of Reagents.

Barrowcliff, M., and Carr, F. H. Organic Medicinal Chemicals. 5½ x 8¾. cloth. (Industrial Chemistry Series.)
In Press

Bechhold, H. Colloids in Biology and Medicine. Authorized translation from the *Second German Edition,* with notes and emmendations by Jesse G. M. Bullowa. 54 illustrations. 6¼ x 9¼. cloth. 478 pp. New York, 1919. $5.00

Contents: Introduction to the Study of Colloids. Introduction; What Are Colloids? Surfaces; Size of Particles, Molecular Weights, Osmotic Pressure, Conductivity; Phenomena of Motion; Consistency of Colloids; Optical and Electrical Properties of Colloids; Methods of Colloid Research. *The Biocolloids.* Introduction; Carbohydrates; Lipoids; Proteins; Food and Condiments; Enzymes; Immunity Reactions. *The Organism as a Colloid System.* Significance of the Colloidal Condition for the Organism; Metabolism and the Distribution of Material; Growth, Metamorphosis and Development; The Cell; The Movements of Organism; Blood, Respiration, Circulation and its Disturbances; Absorption; Secretion and Excretion; The Nerves; Toxicology and Pharmacology; Microscopical Technic.

Blyth, A. W., and Blyth, M. W. Poisons: Their Effects and Detection. *Fourth Edition, revised and rewritten.* 21 illustrations. 7 x 9¼. cloth. 804 pp. London, 1906. *Reprinting*

Contents: Introductory; Classification; Poisonous Gases; Carbon Monoxide; Chlorine; Hydric Sulphide; Acids and Alkalies; Volatile Poisonous Substances Separable by Distillation from Nentral or Acid Liquids; Alkaloids and Poisonous Vegetable Principles Separated by Alcoholic Solvents; Poisons Derived from Living or Dead Animal Substances; Oxalic Acid Groups of Poisons; Inorganic Poisons; Appendix.

Brundage, A. H. A Manual of Toxicology. A concise presentation of the principal facts relating to poisons, with detailed directions for the treatment of poisoning. Also a table of doses of the principal and many new remedies. *Eleventh Edition, revised and profusely illustrated.* 4½ x 7¼. cloth. 445 pp. New York, 1920. $3.00

Chittenden, R. H. *(Editor).* Studies in Physiological Chemistry. Being reprints of the more important studies issued from the Laboratory of Physiological Chemistry. Sheffield Scientific School of Yale University. 6 x 9. cloth. 441 pp. New York, 1901. net, $4.00

Fischer, Martin H. Fats and Fatty Degeneration. A physico-chemical study of emulsions and the normal and abnormal Distribution of fat in protoplasm. 65 figures. 6 x 9. cloth. 155 pp. New York, 1917. net, $2.00

Fuller, H. C. The Qualitative Analysis of Medicinal Preparations. 3 folding diagrams. 5¼ x 7½. cloth. 142 pp. New York, 1912. $1.50

Contents: Separation of Subjects into Groups; Tests for Individuals; Tables of Reactions of Anesthetics and Opium Alkaloids; Methods of Analysis; Scheme of Analysis for Rapid Detection of Inhibited Drugs; Reagents.

Halliburton, W. D. The Essentials of Chemical Physiology. For the use of students. *Tenth Edition.* 72 illustrations. 5¾ x 8¾. cloth. 335 pp. London, 1919. $2.50

Hammarsten, O., Hedin, S. G., and Mandel, John A. A Textbook of Physiological Chemistry. *Seventh Edition.* 6½ x 9¼. cloth. 1034 pp. N. Y., 1914. $4.50

Contents: General and Physico-Chemical; The Proteins; The Carbohydrates; Animal Fats and Phospatides; The Blood; Chyle, Lymph, Transudates and Exudates; The Liver; Digestion; Tissues of the Connective Substances; The Muscles; Brain and Nerves; Organs of Generation; The Milk; The Urine; The Skin and Its Secretions; Respiration and Oxidation; Metabolism.

Hawk, Philip B. Practical Physiological Chemistry. A book designed for use in courses in practical physiological chemistry in schools of medicine and of science. *Sixth Edition, revised and enlarged.* 185 illustrations. 6¼ x 9½. cloth. 675 pp. Philadelphia, 1918. $4.50

Jago, William. A Manual of Forensic Chemistry, dealing especially with Chemical Evidence, its Preparation and Adduction. 5¼ x 7⅝. cloth. 264 pp. London, 1909. net, $2.00

Contents: Introductory Matter; Adulteration of Food; Adulteration of Drugs; Use or Non-Use of New Manufacturing Processes; Use of Preservatives and Colouring Matters; More important Criminal Matters; Chemical Evidence in Civil Actions; Practice.

Lucas, A. Legal Chemistry and Scientific Criminal Investigation. 5½ x 8¾ cloth. 189 pp. London, 1920. $3.4

Contents: Introduction; Notes on Gases; Alcoholic Liquors; Antiquities; Blood Stains; Building Materials; Bullets and Other Projectiles fo Firearms; Clothing; Counterfeit Coins; Damag to Crops; Documents; Dust and Dirt; Explosive and Explosions; Fibres; Finger Prints; Fires Firearms; Foods and Drugs; Gold and Silve Wares; Hashish; Poisons; Pollution of Wate by Sewage; Robbery from Letters and Parcels Stains and Marks; String and Rope; Textil Fabrics; Tobacco; Traps for Criminals.

Nelson, Burt E. Introduction to the analysis of Drugs and Medicines. An el mentary handbook for the beginne 5 x 7½. cloth. 396 pp. New Yor 1910. net, $3.

Contents: Introduction; Apparatus and Operation; Ultimate Inorganic Analysis; Ultimate Organic Analysis; Determination of Molecular Weights; Conniron Radicles, and Chemical Formulæ; Principles of Drug Analysis—Methods; Analysis of Medicines Generally; The Principles of Microscopical Drug Analysis; Systematic Microscopical Drug Analysis; Assays of Chemicals, Crude Drugs, and Pharmaceutical Preparations; Pharmacological Methods.

Oppenheimer, Carl. Toxines and Antitoxines. Translated from the German by C. Ainsworth Mitchell. 5 x 7½. cloth. 274 pp. Phila., 1906. $2.75

Plimmer, R. H. A. Practical Physiological Chemistry. 49 illustrations. 6¼ x 9¾ cloth. 278 pp. London, 1910. **net, $1.80**

Rambousek, J. Industrial Poisoning from fumes, gases and poisons of manufacturing processes. Translated and edited by Thomas M. Legge. 59 illustrations. 5¾ x 8¾. cloth. 374 pp. London, 1913. $5.00

Contents: Description of the Industries and Processes Attended with Risk of Poisoning; Incidence of Such Poisoning; Pathology and Treatment of Industrial Poisoning; Preventive Measures Against Industrial Poisoning.

Rockwood, Elbert W. A Laboratory Manual of Physiological Chemistry. *Fourth Edition, revised and enlarged.* Illustrated. 5 x 7½. cloth. 323 pp. Philadelphia, 1919. $2.00

Salkowski, E. A Laboratory Manual of Physiological and Pathological Chemistry for Students of Medicine. Authorized translation from the *Second Revised and Enlarged German Edition.* 10 illustrations, 1 plate. 6 x 9¼. cloth. 273 pp. New York, 1904. **net, $2.50**

Contents: Examination of Milk; Examination of Muscular Tissue; Gastric Digestion; Examination of Blood; Pathological Transudates, Cystic Fluids; Saliva and Salivary Digestion; Examination of the Pancreas; Examination of Bile; Examination of Biliary Calculi; Examination of the Urine; Examination of Urinary Calculi; Examination of the Liver; Examination of Bone; Examination of Adipose Tissue; Yolk and White of the Egg; Examination of the Products of the Putrefaction of Proteids; Quantitative Analysis of some Inorganic Compounds; Analysis of the Urine; Analysis of the Fæces; Analysis of Meat; Analysis of Milk; Analysis of Bread; Analysis of Blood; Determination of Hydrochloric Acid in the Gastric Juice; Quantitative Digestion Experiments; Determination of Glycogen; Appendices; List of Reagents; Tables of Specific Gravities; International Atomic Weights.

Smith, J. G. Lecture Notes on Chemistry for Dental Students. Including Dental Chemistry of Alloys, Amalgams, etc. Such portions of organic and physiological chemistry as have practical bearing on the subject of dentistry. Qualitative analysis with specially adapted blowpipe and microscopical tests, and the chemical examination of urine and saliva. 32 illustrations, 10 plates. 6½ x 9½. cloth. 412 pp. N. Y., 1912. $3.50

Contents: Qualitative Analysis; Dental Metallurgy; Volumetric Analysis; Microchemical Analysis; Organic Chemistry; Physiological Chemistry; Digestion; Urine.

Spiegel, Leopold. Chemical Constitution and Physiological Action. Translated with additions from the German by C. Luedeking and A. C. Boylston. 5¼ x 7¾. cloth. 162 pp. New York, 1915. **net, $1.25**

Contents: Inorganic Compounds. *Organic Compounds. Apiphatic Series.* Aldehydes and Ketones; Acids and Derivatives. *Aromatic Series.* Hydroaromatic Compounds; Inner Disinfection. *Nitrogen Compounds.* Ammonia and Simpler Derivatives; Ammonium Bases; Cyclic Bases and Alkaloids; Atropine-Cocaine Group; Apium Alkaloids and Relatives; Veronal Group; Quinine and Relatives; Purine Group; Hydrazine and Hydroxylamine; Hyponitrous Acid Derivatives.

Underhill, Frank P. The Physiology of the Amino Acids. 13 illustrations, 1 plate. 5¼ x 7½. cloth. 182 pp. New Haven, Conn., 1915. **net, $1.50**

Contents: The Proteins and Their Derivatives; The Amino Acids; Digestion and Bacterial Activity in Relation to the Amino Acids; The Absorption of Proteins and Amino Acids; In What Form Does Ingested Protein Enter Circulation?; Theories of Protein Metabolism; The Further Fate of the Amino Acids; The Amino Acids in Relation to the Specific Dynamic Action of Proteins; The Amino Acids and Simpler Nitrogenous Compounds as Foodstuffs; The Specific Role of Amino Acids in Nutrition and Growth.

Walker, James. Organic Chemistry for Students of Medicine. 22 illustrations. 6 x 9. cloth. 340 pp. N. Y., 1914. $4.00

The time allotted in the ordinary medical curriculum is usually very short, yet the student, when he takes up physiology, pharmacology and pathology, is expected to possess a knowledge not only of the principles of chemistry, but of numerous substances and processes, many of them very complex. In this book the chemical substances considered in the course are selected not so much for their importance in systematic or synthetic chemistry as for their medical interest, in order that the student study the things that will be of some utility to him in the later portions of his professional education. The work will be found a useful reference volume for the physician.

PHARMACY—PHARMACEUTICAL CHEMISTRY

Alpers, Wm. C., and Kennedy, E. J. The Era Formulary for Manufacturers, Druggists, Physicians, Hospitals, Household Use and for Industrial Workers. *New and Enlarged Edition.* 6 x 9. cloth. 521 pp. New York, 1920. $6.00

Griffiths, T. M. Non-Secret Formulas. *Second Edition.* 6¼ x 9¼. cloth. 541 pp. St. Louis, 1910. net, $5.00

Contains over two thousand formulas of use to manufacturers of patent medicines, pharmaceuticals, bakers and confectioners, supplies, etc.

Hampshire, C. H. Volumetric Analysis for Students of Pharmaceutical and General Chemistry. 5¼ x 7¾. cloth. 112 pp. Phila., 1912. net, $1.25

Hiss, A. E., and Ebert, A. E. The New Standard Formulary. 6 x 9. cloth. 1256 pp. Chicago, 1915. $5.00

Kraemer, Henry. Scientific and Appllied Pharmacognosy. Illustrated. 6 x 9. cloth. 857 pp. N. Y., 1915. $5.00

May, Percy. The Chemistry of Synthetic Drugs. *Second Edition, revised and enlarged.* 6 x 9. cloth. 262 pp. London, 1918. $3.50

Contents: The Theory of the Action of Synthetic Drugs; The Effect of Various Elements and Radicles; The Chemical Changes of Drugs in the Organism; Narcotics and General Anæsthetics; Antipyretics and Analgesics; Alkaloids; Atropine and the Tropeines; Morphine Group and Isoquinoline Groups of Alkaloids; Adrenaline and Other Derivatives of Ethylamine; Derivatives of Phenol; Other Organic Antiseptics, Excluding Halogen Compounds; Halogen Antiseptics and Other Halogen Compounds; Inorganic Antiseptics and Metallic Compounds; Arsenic and Antimony Compounds; Purine Derivatives and Other Uric Acid Eliminants; Purgatives and Other Substances Acting on the Gastro-Intestinal Tract; Various Other Compounds of Interest.

Remington, Joseph P. The Practice of Pharmacy. A treatise on the modes of making and dispensing official, unofficial, and extemporaneous preparations, with descriptions of medicinal substances, their properties, uses and doses. Intended as a handbook for pharmacists and physicians and a textbook for students. *Sixth Edition.* Assisted by E. F. Cook. Illustrated. 6 x 9¼. cloth. 1987 pp. Philadelphia, 1917. $8.00

Ruddiman, E. A. Pharmacy, Theoretical and Practical. Including arithmetic and pharmacy. 5¼ x 8. cloth. 273 pp. New York, 1917. $2.25

Contents: Arithmetic of Pharmacy; Metrology; Theoretical Pharmacy; Definitions; Practical Pharmacy; Liquid Preparations for Local Application; Solid Preparations for Local Application; Solid Preparations for Internal Administration. Liquid Preparations Containing Undissolved Matter; Water and Glycerin Solutions; Alcoholic Solutions; Miscellaneous.

Ruddiman, E. A. Whys in Pharmacy. A compilation of reasons underlying the principles of pharmacy, supplemented by a table of equations. *Second Edition, rewritten.* 5¼ x 8. cloth. 188 pp. New York, 1917. $1.50

Ruddiman, Edsel A. Incompatibilities in Prescriptions. For students in pharmacy and medicine, and practicing pharmacists and physicians. *Fourth Edition, thoroughly revised.* 6 x 9. cloth. 317 pp. N. Y., 1917. $2.50

Sadtler, Samuel P., and Coblentz, V. A Text-book of Chemistry. For pharmaceutical and medical students. *Fifth Edition.* 6 x 9. cloth. 765 pp. Philadelphia, 1918. $5.50

Stevens, A. B. Arithmetic of Pharmacy. *Fourth Edition, revised and enlarged.* 5 x 7¾. cloth. 110 pp. New York. 1920. $1.50

Contents: Weights and Measures; Thermometers—Temperature; Specific Gravity; Specific Volume; Percentage Solutions; Alligation; Atomic and Molecular Weights; Volumetric Analysis; Measurements of Gases; Tables.

Pharmacopeia of the United States of America. *Ninth Decennial Revision.* Prepared by the Committee of Revision and published by the Board of Trustees of the United States Pharmacopeial Convention. 6½ x 9¼. 808 pp. Philadelphia, 1916.
cloth. $3.75

United States Dispensatory. Thoroughly revised and largely rewritten, on the basis of the new United States Pharmacopœia and the last edition of the British Pharmacopœia. It is up-to-date filled with information of a kind needed in the every-day work of the pharmacist, and includes the pure food and drugs act decisions. *Twentieth Edition.* 6 x 9. buckram. 2012 pp. Philadelphia, 1918. $12.00

The National Formulary, American Pharmaceutical Association. *Fourth Edition.* 6 x 9. 349 pp. Chicago, 1916
muslin, plain, $3.00
buckram, plain, $3.50
buckram, interleaved, $4.00

The official formulary to be used with the U. S. Pharmacopeia.

MICROSCOPY—BACTERIOLOGY

Barnard, J. E. Practical Photo-Micrography. 77 illustrations. 77 plates. 5¾ x 7¾. cloth. 334 pp. London, 1911. $5.75

Contents: Introductory; The Microscope; The Optical Equipment: Objectives and Oculars—Condensers and Collecting-Lenses; Sources of Illumination; The Photo-micrographic Camera; The Use and Manipulation of the Microscope; General Preliminary Preparations; Colour-Screens—Plates—Exposures; Photographic Processes; Some Special Processes; Some Progressive Examples; Appendices.

Buchanan, E. D. and R. E. Household Bacteriology. For students in domestic science. 360 illustrations. 5½ x 7¾. cloth. 552 pp. New York, 1913. $2.25

Carpenter, Wm. B. The Microscope and its Revelations. *Eighth Edition,* revised and enlarged by W. H. Dallinger. 900 illustrations, 22 plates. 6 x 9. cloth. 1200 pp. London, 1901. $13.00

Contents: Elementary Principles of Microscopical Optics; Principles and Theory of Vision with the Compound Microscope; History and Development of the Microscope; Accessory Apparatus; Objectives, Eye-Pieces, the Apertometer; Practical Microscope; Manipulation and Preservation of the Microscope; Preparation, Mounting, and Collection of Objects; Microscopic Forms of Vegetable Life; Fungi; Microscopic Structure of the Higher Cryptogams; of the Microscopic Structure of Phanerogamic Plants; Microscopical Forms of Animal Life; Animalcules-Infusoria and Rotifera; Foraminifera and Radiolaria; Sponges and Zoophytes; Echinoderma; Polyzoa and Tunicata; Mollusca and Brachiopoda; Worms; Crustacea; Insects and Arachnida; Vertebrated Animals; Application of the Microscope to Geological Investigation; Crystallization, Polarization, Molecular Coalescence.

Chamot, E. M. Elementary Chemical Microscopy. 136 illustrations. 6 x 9. cloth. 422 pp. New York, 1917. $3.50

Contents: Objectives and Oculars—the Conditions Affecting Their Selection for Use; Microscopes for General Purposes; Illumination of Objects; Illuminating Devices; Dark Ground Illumination—the Study of Ultra-microscopic Particles; Ultramicroscopes; The Examination of Opaque Objects; Vertical Illuminators; Metallographs; Microscope Accessories; Equipment of the Laboratory; Work Tables; Radiants; Micrometry; Micrometer Microscopes; Micrometric Methods; Polarized Light; Simple Polarizing Microscope; Application to Qualitative Analysis; Determinations of Refractive Indices by Means of the Microscope; Quantitative Microscopic Analysis; Determination of Melting Points; Subliming Points, Molecular Weights; Handling Minute Amounts of Material; Testing for Solubility; Decantation; Filtration; Sublimation; Qualitative Microchemical Analysis—Methods—Applications—Reagents; Preparing Opaque Objects for Examination; Appendix; Tables of Crystal Forms, Refractive Index, Melting Points, etc.

Curtis, H. J. The Essentials of Practical Bacteriology. An elementary laboratory book for students and practitioners. Illustrated. 5¾ x 8¾. cloth. 291 pp. London, 1900. $3.00

Contents: Manufacture of the Nutrient Media, and General Technique; Systematic Study of Micro-Organisms; Non-Pathogenic Organisms; Pathogenic Organisms; Appendices.

Fowler, Gilbert J. An Introduction to Bacteriological and Enzyme Chemistry. 4 plates. 5 x 7½. cloth. 335 pp. London, 1911. $2.75

Contents: Character of Chemical Action in Living Matter; Outlines of Bacteriological Technique; Some Leading Conceptions in Organic Chemistry; Space—Isomerism and the Chemistry of the Sugars; The Hydrolysis of Starch by Amylase; Conditions of Formation of Amylase in the Living Cell; Invertase and Maltase; Alcoholic Fermentation of Grape Sugar; Acid Fermentation of Alcohols and Carbohydrates; Fermentation of Cellulose and Allied Bodies; Miscellaneous Fermentations, Fat-splitting Enzymes, Oxidases, Clotting Enzymes; Outlines of the Chemistry of Albumins or Proteins; The Nitrogen Cycle; The Sulphur Cycle; Fermentation of Indigo, Tea, Cocoa, Coffee, and Tobacco; Bacteriological and Enzyme Chemistry in Relation to Agriculture; Chemistry of Sewage Purification; Bibliography.

Gage, Simon H. The Microscope. An introduction to microscopic methods and to histology. *Twelfth Edition.* 250 illustrations. 6¼ x 9¼. cloth. 481 pp. Ithaca, 1917. $3.00

Contents: Introduction; The Microscope and its Parts; Practical Work with the Parts of the Microscope; Adjustable and Immersion Objectives; Binocular Microscopes; Care of the Microscope and of the Eyes; Interpretation of Appearances Under the Microscope; Magnification and Micrometry with the Microscope; Drawing and Class Demonstrations with the Microscope and Projection Microscope; Photography with the Microscope and with Projection Apparatus; The Spectroscope and Polariscope and their Use with the Microscope; Some Optical Principles Involved in the Construction and Use of the Microscope; Materials of Microscopy; Mounting and Storing Microscopic Specimens; Fixing, Imbedding, Sectioning, Staining; Serial Selections and Models; Brief History of Lenses and Microscopes.

Giltner, Ward. Laboratory Manual in General Microbiology. 72 illustrations. 5¼ x 7¾. cloth. 434 pp. New York, 1917. net, $2.50

Contents: Part I, General Morphological and Cultural Methods; Part II, Physiology of Microorganisms; Part III, Applied Microbiology.

Hall, C. A. How to Use the Microscope. A guide for the novice. 25 illustrations, 20 plates. 5½ x 7½. cloth. 98 pp. London, 1912. $0.75

Hanausek, T. F. The Microscopy of Technical Products. Revised and translated by A. L. and K. B. Winton. 276

illustrations. 7 x 9¾. cloth. 482 pp. New York, 1916. $5.00

Contents: Apparatus and Methods. The Microscope; Microscopic Accessories; Micro-Technique—Reagents. *Microscopy of the Most Important Types of Technical Raw Materials.* Starch, Inulin; Vegetable Fibers; Animal Fibers, Mineral Fibers, Textiles; Stems and Roots; Leaves; Flowers and Parts of Flowers; Fruits and Seeds; Teeth, Bone, Horn, etc.; Microchemical Analysis.

Hind, H. Lloyd, and Randles, W. Brough. Handbook of Photomicrography. 44 plates, 8 three-color reproductions, 71 illusttrations. 6 x 8¾. cloth. 304 pp. London, 1914. $4.00

Contents: Photomicrographic Apparatus; The Microscope; Objectives and Eyepieces; Lamps and Illuminants; Condensers; Experiments on Illumination; Low Power Photomicrography; Critical Photomicrography; Color Screens and Color Sensitive Plates; Exposure; Oblique and Dark-Ground Illumination; Opaque Objects; Metallography; Color Photomicrography; Photographic Operations; Some Applications of Photomicrography; Appendix of Formula, etc.; Plates.

Heinemann, P. G. A Laboratory Guide in Bacteriology. *Second Edition.* 35 illustrations. 5¼ x 7½. cloth. 225 pp. Chicago, 1912. net, $1.50

Contents: Bacteriological Technic; General Bacteriology; Important Pathogenic Bacteria; The Bacteriological Examination of Water, Milk and Soil; Molds, Yeasts, Torulae, and Acetic; Acid Bacteria; Tables.

Howe, Henry M. The Metallography of Steel and Cast Iron. 122 illustrations, 28 plates, 38 tables. 7¾ x 10¾. cloth. 670 pp. New York, 1916. net, $10.00

Jordan, E. O. General Bacteriology. *New Sixth Edition.* Illustrated. 6 x 9. cloth. 691 pp. Philadelphia, 1918. $4.00

Treats fully of the bacteriology of plants, milk and milk products, dairying, agriculture, water, food preservation; also of leather tanning, vinegar making, tobacco curing; household administration and sanitary engineering.

Lee, Arthur Bolles. The Microtomist's Vade-Mecum. A hand-book of the methods of microscopic anatomy. *Seventh Edition.* Illustrated. 6 x 9¼. cloth. 536 pp. Philadelphia, 1914. net, $4.00

Microbiology. Laboratory Manual. Prepared by the Laboratory of Bacteriology, Hygiene and Pathology, Michigan Agricultural College. 73 illustrations. 5½ x 8. 436 pp. N. Y., 1916. net, $2.50

Contents: General Morphological and Cultural Methods; Physiology of Micro-organisms; Applied Microbiology; Air Microbiology; Dairy Microbiology; Plant Microbiology; Animal Diseases and Immunity; Appendix.

Marshall, C. E. (Editor.) Microbiology for Agricultural and Domestic Science Students. 128 illustrations. 5¾ x 8. cloth. 746 pp. Phila., 1911. $3.00

Contents: Morphology and Culture of Micro-organisms. *Physiology of Microorganisms.* Nutrition and Metabolism; Physical Influences; Chemical Influences; Mutual Influences; Microbiology of Air; Of Water and Sewage; Of Soil; Of Milk and Milk Products; Of Special Industries; Of the Diseases of Man and Animals; Microbial Diseases of Plants.

Muir, Robert, and Ritchie, Jas. Manual of Bacteriology. *Seventh Edition.* 200 illustrations, 6 color plates. 5 x 7½. cloth. 777 pp. London, 1919. $6.50

Contents: General Morphology and Biology; Methods of Cultivation of Bacteria; Microscopic Methods; Examination of Serum; Bacteria in Air, Soil, Water, Milk; Relations of Bacteria to Disease; Inflammatory and Suppurative Conditions; Gonorrhoea and Soft Sore; Tuberculosis; Leprosy; Glanders and Rhinoscleroma; Actinmycosis and Allied Diseases; Anthrax; Typhoid Fever; Diphtheria; Tetanus; Cholera; Influenza, Whooping-Cough, Plague, Malta Fever; Diseases Due to Spirochaetes; Pathogenic Fungi; Immunity; Appendices.

Osmund, Floris. The Microscopic Analysis of Metals. Edited by J. E. Stead. Revised and corrected by L. P. Sidney. *Second Edition, revised.* 195 illustrations. 6 x 8. cloth. 313 pp. London, 1913. $3.00

Contents: Metallography Considered as a Method of Assay; Definition; Subdivisions of Metallography; Anatomical Metallography; Biological Metallography; Pathological Metallography; The Science of Polishing; Grinding; Penetration; Scratches; Finishing; Scaling; The Micrographic Analysis of Carbon Steels; Rough Polishing; Fine Polishing; Apparatus Employed for Photomicrography; Practical Applications of Metallography; Primary Constituents of Carbon Steels; Micrographic Identification of Constituents; Detailed Examination of Selected Steels; Segregation in Steel and the Phenomena of Burning, Overheating; The Macrostructure of Steel, Sulphur Printing and Heat-Tinting; Conclusions, Theoretical and Practical; Pure Electro-Deposited Ferrite; The Nomenclature of the Microscopic Substances and Structures of Steel and Cast-Iron.

Sauveur, Albert. The Metallography and Heat Treatment of Iron and Steel. *Second Edition.* 438 illustrations. 7¾ x 10¾. cloth. 468 pp. Cambridge, Mass., 1918. $7.00

Tanner, Fred W. Bacteriology and Mycology of Foods. 97 illustrations. 6 x 9. cloth. 400 pp. New York, 1919. $6.00

Contents: Bacteriological Apparatus; General Technique; Enumeration of Bacteria, Anaerobic Methods; The Microscope and Microscopic Methods; Media and Their Preparation; Staining Technique; Classification and Description of Bacteria; Sterilization and Disinfection; Proteins and Carbohydrates; Yeasts and Molds; Intestinal Bacteria; Bacterial Examination of Air; Water; Hygiene; Milk and Milk Products; Bacteriology of Eggs; Meat and Meat Products; Food Preservation; Epidemiology; Appendix.

Whipple, George C. The Microscopy of Drinking Water. With a chapter on the use of the microscope. *Third Edition, rewritten and enlarged.* 73 illustrations, 7 plates, 19 colored plates. 6¼ x 9½. cloth. 460 pp. New York, 1914. net, $4.00

Winslow, Chas. E. Elements of Applied Microscopy. A textbook for beginners. 60 illustrations. 5 x 7¼. cloth. 190 pp. New York, 1905. $1.50

WATER PURIFICATION

American Public Health Association. Standard Methods for the Examination of Water and Sewage. *Third Edition,* revised by the Association. 7 x 10. cloth. 131 pp. Boston, 1917. net, $1.25

Booth, William H. Water Softening and Treatment, Condensing Plant, Feed Pumps and Heaters for Steam Users and Manufacturers. *Second Edition.* 92 illustrations. 5¾ x 8¾. cloth. 308 pp. London, 1920. $3.50

Contents: The Treatment of Water by Softening, Oil Separation and Filtration. Natural Waters; Water, Its Sources and Impurities; Salts in Water; Reactions of Salts in Solution; The Less Usual Reagents; Scale and Its Effects; Water Analysis; Apparatus in Commercial Use; Detartarizers; Filters; Boiler Compounds; Corrosion; Incrustation of Pipes; Oil Separation; Mechanical Boiler Cleaners; Pure Water. *Air Pumps, Condensers, and Circulating Pumps. Feed Heating-Stage Heating. Water Cooling. Feed Pumps, Injectors.*

Christie, W. W. Water. Its purification and use in the industries. 79 illustrations. 2 colored plates. 5½ x 8. cloth. 230 pp. New York, 1912. $3.00

Contents: Sources of Water; Impurities; Uses; Reagents; Water Softening; Cold and Hot Process Systems; Results Accomplished by Softening Systems; Pressure Filters; Aeration; Sterilization; Ozone; Ice; Drinking Water; Open Filters; Alum; Chloride of Lime; Tannin; Measurement of Water; Oil Filters; Boiler Water; Miscellaneous Tables.

Doles-Finch, W. Water, Its Origin and Use. Fully illustrated. 6 x 9 cloth. 540 pp. London, 1908. $3.50

Contents: Heat; Atmosphere; Clouds; Rain; Water; Forms of Water, etc.; Snow; Ice; Glaciers; Springs; Rivers; Waterfalls; Lakes; Ocean and Sea: Mountains and Volcanoes; Chalk; Denudation; Water, How Obtained; Use, Abuse and Waste; Lessons from Nature.

Dollet, H. Water Softening and Purification. The softening and clarification of hard and dirty waters. *Second Edition, revised.* 12mo. cloth. 170 pp. London, 1908. $2.50

Contents: Water Supplies; Water for Steam Boilers; Water for Manufacturing and Technical Processes; Chemistry of Water Softening; Reagents for Softening and Clarifying Water; Clarification; Drinking Water; Testing Water; Tables; Index.

De La Coux, H. Industrial Uses of Water. Translated from the French and revised by Arthur Morris. 135 illustrations. 6¼ x 9¾. cloth. 362 pp. London, 1903. $5.00

Contents: Water. Chemical Action of water in Nature and in Industrial Use; Composition of Waters-Origin of the Substances They Contain; Solubility of Certain Salts in Water Considered from the Industrial Point of View; Effects on the Boiling of Water. *Effects of Water in the Industries.* Difficulties with Water; Appropriate Remedies; Feed Water for Boilers; Water in Dye-Works, Print-Works and Bleach-Works; Water in the Textile Industries and in Conditioning; Water in Soap-Works; Water in Laundries and Warehouses; Water in Tanning; Water in Preparing Tannin and Dye-Wood Extracts; Water in Paper-Making; Water in Photography; Water in Sugar Refining; Water in Making Ice and Beverages; Water in Cider-Making; Water in Brewing; Water in Distilling. *Preliminary Treatment and Apparatus.* Substances Used for Preliminary Chemical Purification; Commercial Anti-Incrustors and their Use; Precipitation of Matters in Suspension in Water; Apparatus for the Preliminary Chemical Purification of Water; Industrial Filters; Industrial Sterilization of Water. *Residuary Waters and Their Purification.* Soil Filtration; Purification by Chemical Processes; Recovery of Glycerine. *Analysis.* Qualitative Analysis of Substances in Solution in Water; Hydrotimetric Analysis; Quantification of Substances in Solution in Water.

Don, John, and Chisholm, John. Modern Methods of Water Purification. *Second Revised and Enlarged Edition.* 106 illustrations. 6 x 9. cloth. 390 pp. London, 1913. $5.75

Contents: Introductory; Sources of Supply; Storage; Construction of Reservoirs and Care of Filtered Water; Sand Filtration; The Management of Sand Filters; Mechanical Filters; Purification by Ozone; Water-softening and Household Appliances; The Testing of Water; The Problems of Distribution; Useful Constants and Data Relating to Water Filtration and Measurements.

Ellms, Joseph W. Water Purification. Illustrated. 6¼ x 9¼. cloth. 495 pp. New York, 1917. $6.00

Jackson, Percy G. Boiler Feed Water. A concise handbook of water for boiler feeding purposes, its effects, treatment, and analysis. 5 x 7½. cloth. 111 pp. London, 1919. $2.00

Contents: Introductory; Mineral Constituents; Corrosion; Softening; Selection of Softening Plants; Priming; Scale, Grease, and Overheating; Methods of Analysis; Analysis of Scale;

Control Tests for Water Softening; Sampling; Solutions; Appendix: List of Factors; List of Atomic Weights; Clark's Table of Hardnesses.

Mason, Wm. P. Examination of Water. *Fifth Edition, revised.* Illustrated. 5 x 7¼. cloth. 192 pp. New York, 1917. $1.50

Contents: Introductry; Chemical Examination of Water; Bacteriological Examination of Water; Appendix A: Interpretation of Water Examination; Appendix B: Method of Treating Oysters for B; Coli.

Mitchell, C. A. Mineral and Aerated Waters. 111 illustrations. 6 x 9. cloth. 244 pp. New York, 1913. net, $3.00

Contents: Origin and Properties of Natural Mineral Waters; Gases in Natural Waters; Holy Wells; The Zem-Zem Well at Mecca; Spas and Their Springs; Natural Mineral Table Waters; Thermal Springs and Radioactivity; Temperatures; Helium and Niton in Mineral Waters; Measurement of Radioactivity Artificial Radioactive Mineral Waters; Carbon Dioxide, Its Preparation, Properties and Uses in the Mineral Water Factory; Artificial Mineral Waters; Early Forms of Carbonating Waters; The Machinery of To-day; Arrangement of a Soda Water Factory; Bottles and Bottling Machinery; Making of Ginger Beer; Examination of Mineral Waters; Bibliography.

Parr, S. W. The Chemical Examination of Water, Fuel, Flue Gases and Lubricants. A course for engineering students. 26 illustrations, 24 tables. 6¼ x 9¼. cloth. 130 pp. Urbana, Ill., 1916. net, $1.50

Contents: Lectures. Boiler Waters; Fuels; Flue Gases, Types and Properties of Lubricants. *Laboratory Methods.* Standard Solutions; Boiler Water Analysis; Proximate Fuel Analysis; Ultimate Analysis; Flue Gas Analysis; Oil Examination.

Paul, J. H. Boiler Chemistry and Feed Water Supplies. Illustrated. 6 x 9. cloth. 251 pp. London, 1919. $4.50

Contents: Earth, Air and Water; Acids, Bases and Salts; Constituents of Natural Waters; Scales and Deposits; Softening; Soluble Salts; Iron; Carbonic Acid; Concentration of Waters Containing Carbonate of Soda; Action of Carbonic Acid on Iron; Corrosion; Condensed Waters; The Superheater; Priming; External Deposits; Failure of Clean Tubes; Water Supplies; Appendix; Carbonic Acid in London Waters.

Prescott, Samuel C., and Winslow, Charles-Edward A. Elements of Water Bacteriology. With special reference to sanitary water analysis. *Third Edition, revised.* Illustrated. 5¾ x 8¼. cloth. 332 pp. New York, 1913. $2.25

Contents: The Bacteria in Natural Waters; Quantitative Bacteriological Examination of Water and Its Interpretation; Determination of the Number of Organisms Developing at the Body Temperature; Isolation of Specific Pathogenes from Water; Colon Group of Bacilli and Methods for Their Isolation; Significance of the Presence of the Colon Group in Water; Varieties of Colon Bacilli and Their Special Significance; Other Intestinal Bacteria; Significance and Applicability of the Bacteriological Examination; Bacteriology of Sewage and Sewage Affluents; Bacteriological Examination of Shellfish.

Purvis, J. E., and Hodgson, T. R. The Chemical Examination of Water, Sewage, Foods and Other Substances. 5¾ x 9. cloth. 236 pp. Cambridge. $3.00

Contents: Water; Sewage; Sewage Affluents; Milk, Cream; Condensed Milk; Butter; Margarine; Lard, Dripping, Suet; Cheese; Edible Oils; Tea; Coffee; Chicory; Cocoa; Wheat Flour; Bread; Rice; Starches; Pepper; Nutmeg; Cane Sugar; Golden Syrup and Treacle; Honey; Jam; Alcoholic Beverages; Vinegar; Lime and Lemon Juice; Poisonous Metals in Foods; Preservatives; Disinfectants; Air; Coal Gas; Other Gases; Rag-Flock; Urine; Bibliography; Addenda.

Race, Joseph. Chlorination of Water. 20 illustrations. 5¼ x 8. cloth. 166 pp. New York, 1918. $1.50

Contents: Historical; Modus Operandi; Dosage; Bacteria Surviving Chlorination; Complaints; Bleach Treatment; Liquid Chlorine; Electrolytic Chlorine and Hypochlorites; Chloramine; Results Obtained; Appendix.

Richards, Ellen H. Laboratory Notes on Industrial Water Analysis. A survey course for engineers. *Second Edition, revised, with additions.* 6 x 9. cloth. 59 pp. New York, 1910. *Reprinting*

Contents: Introduction; Boiler Waters and Waters for General Use; Dyeing, Textile Industries, Laundries, etc.; Chemical Manufacturing, Medicinal Preparations, Soda Water, etc., Preliminary Sanitary Analysis; Action on Metals; Improvement of Unsatisfactory Waters; Notes on Mineral Waters; Standard Solutions; Computation of Hypothetical Combinations; Percentage Composition of Salinity in Various Waters; Tables; Convenient Data; Some Useful References.

Savage, William G. The Bacteriological Examination of Food and Water. *Second Edition.* Illustrated. 5¾ x 8¼. cloth. 200 pp. Cambridge, 1917. $2.00

Contents: General Methods for the Isolation and Identification of Indicator Organisms; Water, Soil and Sewage; Shellfish; Milk; Modified Milk and Milk Products; The Bacteriology of Meat and Meat Products; Air; Determination of Antiseptic and Germicidal Power; Appendix.

Stein, Milton F. Water Purification Plants and Their Operation. *Second Edition.* 95 illustrations, 11 charts. 6 x 9. cloth. 255 pp. N. Y., 1920. $3.00

Contents: Water and its Impurities; Types of Purification Plants; Physical and Chemical Tests; Bacterial Tests; Interpretation of Tests; Coagulation and Sterilization; Water Softening; Sedimentation; Filtration and General Operation; *Appendix* A. Analysis of Coagulants; B, Standard Solutions; C, Specifications for Lime, Soda Ash and Aluminum Sulphate; D, Weir Table.

Stocks, H. B. Water Analysis for Sanitary and Technical Purposes. Illustrated. 5½ x 8. cloth. 144 pp. London, 1912. $2.00

Contents: Physical Examination; Chemical Examination; Quantitative Analysis for Sanitary Purposes; Quantitative Analysis of the Mineral Constituents; Deleterious Metals; Gases Contained in Solution; Appendices.

Wanklyn, J. A. Water Analysis. A practical treatise on the examination of potable water. *Eleventh Edition.* Revised by W. J. Cooper. Illustrated. Re-7¼. cloth. 240 pp. London. $2.00

Whipple, George C. Value of Pure Water. 5¼ x 8. 92 pp. N. Y., 1907. net, $1.00

Contents: Introduction; Pure and Wholesome Water; Sanitary Qualities; Attractiveness; Hardness; Temperature; Summary of Formulæ; Application of Formulæ; Effect of Contamination; Effect of Turbidity, Color, and Odor; Effect of Hardness; Benefits of Filtration: Sanitary Quality, Physical Quality, Water-softening; Cost of Filtration; Summary; Pure and Wholesome Water; Difficulty in Defining; Epithets Especially Applicable to Waters in a Natural State; Epithets Applicable to Water with Artificial Substances Admixed; The Disadvantages of Hard Water: Hard Waters, Use of Hard Water in the Household, Use of Hard Water in the Industries; Use of Hard Water in Steam-making, Financial Loss from the Use of Hard Boiler Water.

Whipple, George C. The Microscopy of Drinking Water. With a chapter on the use of the microscope. *Third Edition, rewritten and enlarged.* 73 illustrations, 7 plates, 19 colored plates. 6¼ x 9½. cloth. 460 pp. New York, 1914. net, $4.00

Contents: Object of the Microscopical Examination; Collection of Samples; Methods of Microscopical Examination; Microscope and Its Use; Microscopic Organisms in Water from Different Sources; Limnology; Dissolved Gases and Their Relations to the Microscopic Organisms; Occurrence of Microscopic Organisms in Lakes and Reservoirs; Seasonal Horizontal and Vertical Distribution of Microscopic Organisms; Odors in Water Supplies; Storage of Surface Waters; Soil Stripping; Storage of Ground Water; Copper Treatment for Algae; Purification of Water Containing Algae; Growth of Organisms in Water Pipes; Classification of the Microscopic Organisms; Diatomaceæ; Schizomycetes; The Iron Bacteria; Cyanophyceæ; Chlorophyceæ; Fungi; Protozoa; Rotifera; Crustacea; Bryozoa, or Polyzoa; Spongidae; Miscellaneous Organisms; Glossary; Tables and Formula.

FERMENTATION—DISTILLING—BEVERAGES

Brachvogel, John K. Industrial Alcohol, Its Manufacture and Uses. A practical treatise. 107 illustrations. 6 x 8½. cloth. 528 pp. New York, 1907. *Reprinting*

Contents: Industrial Value of Tax-free Alcohol and What it Means for Our Agricultural Interests; Summary of the Processes in Spirit Manufacture; Starch, How it is Formed, its Characteristics, and Changes it Undergoes in Spirit Manufacture; The Enzymes; Products of Fermentation; Starchy Raw Materials in Spirit Manufacture; Saccharifcrous Raw Materials; The Preparation of the Malt; Steaming the Raw Materials; Mashing Process and Apparatus; Preparation of Artificial Yeast in the Distillery; Fermentation in Practice; Distillation and Rectification; Arrangement of the Distillery; Alcohol for the Production of Power; Heating and Illuminating with Alcohol; Statistics of Alcohol Production; Appendix.

Brannt, William T. A Practical Treatise on the Manufacture of Vinegar. With special consideration of wood vinegar and other by-products obtained in the destructive distillation of wood; the preparation of acetates; manufacture of cider and fruit wines; preservation of fruits and vegetables by Canning and evaporation; preparation of fruit-butters, jellies, marmalades, pickles, mustards, etc.; preservation of meat, fish and eggs. *Third Edition, thoroughly revised and largely rewritten.* 101 illustrations. 6¼ x 9¼. cloth. 567 pp. Philadelphia, 1914. net, $6.00

Contents: Vinegar; Manufacture of Ciders, Fruit Wines, etc.; Canning and Evaporation of Fruit; Manufacture of Ketchups, Fruit Butters, Marmalades, Jellies, Pickles and Mustards; Preservation of Meats, Fruit and Eggs; Appendix.

Dumesny, P., and Noyer, J. Wood Products Distillates and Extracts. Translated from the French by Donald Grant. 170 illustrations, 59 tables. 6 x 9. cloth. 337 pp. London, 1913. $5.00

Contents: The Distillation of Wood. Generalties; Principal Methods of Carbonizing or "Coaling" Wood; The Acetic Acid Industry; Secondary Products of Wood Distillation; Analysis of Raw Materials and Finished Products; Destructive Distillation of Olive Oil Residuals; Table of Density of Methyl Alcohol. *Manufacture and Testing of Tan Wood in Extracts and Their Utilization in Modern Tanneries.* Chestnut Wood Extract; Specifications of a Model Type of Extract Factory; Capital Required; Number and Capacity of Extract Factories; Method of Using Chestnut Wood Extracts in Tanning; Manufacture and Use of Oak Wood, Quebracho, and Sumac Extracts; Khaki Substitute for Quebracho; Extracts from Various Tanning Substances and Their Uses: Divi-Divi, Valonia, Chinese Galls, Myrobolam, Palmetto, Mimosa, Tara, Mangrove, Manufacture and Use of Logwood Extract, Analysis of Tanning Substances.

Gienandt, F. L. The Twentieth Century Book for the Progressive Baker, Hotel Confectioner, Ornamenter and Ice Cream Maker. The most up-to-date and practical book of its kind. *Third Edition, revised and enlarged.* Illustrated. 7 x 10½. cloth. 280 pp. Boston, 1919. $6.00

Harden, Arthur. Alcoholic Fermentation. With tables. *Second Edition.* Illustrated. 6 x 9¾. boards. 164 pp. New York, 1914. $1.80

Hart, Richard N. Leavening Agents. 13

illustrations. 6 x 9. cloth. 94 pp. Easton, 1914. $1.50

Contents: Yeast; Fermentation and Its Cause; Life and Characteristics of Yeast; Activities of Yeast—Breathing, Nutrition, Fermentation; Selection—Hansen's Pure Culture; Keeping of Yeast; Tests for Yeast; Manufacture of Compressed Yeast; Old Vienna Process—Materials, Disturbance in Fermentation; Aeration Process—Materials, Disturbances in Fermentation; Yeast in Bread; Leaven and Homemade Yeasts; Salt-Rising Fermentation; Baking Powders; General; The Alkali; The Acid—Cream of Tartar, Phosphate, Aluminum Salts; Starch; General; Kind of Flour; Care of Baking Powders; Miscellaneous Substitutes; Residues in the Bread; Manufacture; Analysis; General; Aerated Bread; Milk Powder.

Hassack, Paul. Vinegar Bulletin. The manufacture of fermented vinegar. A complete illustrated encyclopedia covering all phases in the manufacture of spirit, cider, malt and grape vinegar. 130 illustrations. 9 x 12. half morocco. 250 pp. New York, 1918. $18.75

Contents: Theoretical Versa Practical Yield in the Oxydation of Alcohol into Acetic Acid by Fermentation; A Modern Automatic Device for Vinegar Generators of Large Diameter; Melon-Vinegar; The Manufacture of Malt Vinegar; The Utilization of the Apple; Acid Resisting Material Important in the Manufacture of Cider, Wine, Vinegar, the Canning, Preserving and Chemical Industries; The Manufacture of Spirit Vinegar; Wine or Grape Vinegar; Natural Fermented Syrup and Molasses Vinegar; Vinegar Specialties; Conclusion.

Herrick, R. F. Denatured or Industrial Alcohol. A treatise on the history, manufacture, composition, uses, and possibilities of industrial alcohol in the various countries permitting its use, and the laws and regulations governing the same, including the United States, with concise tables, methods and notes for the use of the engineer, chemist, manufacturers of alcohol and alcohol making and using apparatus, including alcohol motors, engines, illuminating lamps, and heating and cooking stoves. 163 illustrations. 6 x 9. 521 pp. New York, 1907. *Reprinting*

Contents: Composition, History and Use of Denatured Alcohol; The Manufacture of Alcohol; Distillation and Rectification; Alcoholometry; Cost of Alcohol and of Alcohol-distilling Plants; Alcohol as an Illuminant; The Fuel Value of Alcohol Compared with the Other Usual Liquid Fuels; Laws and Regulations for Denatured Alcohol; Denatured Alcohol in the United States; Appendix.

Jorgensen, Alfred. Micro-organisms and Fermentation. Translated by S. H. Davis. *Fourth Edition, completely revised.* 101 illustrations. 6 x 8. cloth. 489 pp. London, 1906. $6.00

Contents: Microscopical and Physiological Examination; Biological Examination of Air and Water, Bacteria, Moulds, Yeasts; The Pure Culture of Yeast on a Large Scale; Bibliography.

Klöcker, Alb. Fermentation Organisms. A laboratory handbook. Translated by G. E. Allen and J. H. Millar. Revised by the author. 146 illustrations. 5¾ x 8¾. cloth. 412 pp. London, 1903. $5.00

Contents: Introduction; The Laboratory; Nutrient Media, Methods; Micro-organisms of Most Importance in the Fermentation Industry; True Fungè; The Higher Fungè; Fission Fungè.

Lafar, Franz. Technical Mycology: The utilization of micro-organisms in the arts and manufactures. Translated by Charles T. C. Salter. In two volumes.

Vol. I. Schrzomycetic Fermentation. 99 illustrations, 1 plate. 6¾ x 9½. cloth. 312 pp. London, 1910. $6.00

Vol. II. Eumycetic Fermentation. 118 illustrations. 6¾ x 9½. cloth. 566 pp. London, 1911. $8.00

A practical handbook on fermentation and fermentative processes for the use of brewers and distillers, analysts, technical and agricultural chemists, pharmacists, and all interested in the industries dependent on fermentation.

McIntosh, J. G. Industrial Alcohol. The production and use of alcohol for industrial purposes, and as a source of motive power. 75 illustrations, 25 tables. 6 x 9. cloth. 260 pp. London, 1907. $3.50

Contents: Alcohol and Its Properties; Continuous Aseptic and Antiseptic Fermentation and Sterilization in Industrial Alcohol Manufacture; Manufacture of Industrial Alcohol from: Beets, Grain, Potatoes; Wine, Spoilt Wine, Wine Mares and Fruits; Sugar Cane and Sugar Cane Molasses; Plant for Manufacturing Alcohol; Uses of Alcohol in Industries; Manufacture and Uses of Various Alcohol Derivatives; Alcohol for Lighting; Heating and Motive Power.

Matthews, Charles G. Manual of Alcoholic Fermentation, and the Allied Industries. Illustrated. 5 x 7½. cloth. 311 pp. London, 1901. *Reprinting*

Contents: Alcoholic Fermentation; General Considerations Leading to Special Ones; Alcoholic Fermentation as a Property of Living Cells; The Saccharomycetes and Other Organisms Acting as Alcoholic Ferments; Effects of Physical and Chemical Influences on the Yeast Organism; Chemical Science; The Carbohydrates; Nitrogenous Substances and the Nutrition of Yeast; Wine—a Sketch of its Production, the Maladies That it is Subject to and Some Notes on Fruit Wines Generally; Introduction to the Malting and Brewing Processe and Description of the Malting Process; The Brewing Process; Manufacture of Spirit and Compressed Yeast; Sketch of the Lager Bee Process; Appendix.

Mitchell, C. A. Vinegar: Its Manufacture and Examination. 5 plates, 4 illustrations. 5¼ x 7¾. cloth. 217 pp. London, 1916. $3.5

Contents: Historical Introduction; Theories of Acetic Fermentation; Acetic Bacteria; Chemic Reaction in Acetification; Acetic Acid; Prepar tion of the Gyle; Acetification of the Gyle

Treatment of the Crude Vinegar; Methods of Examination; Characteristics of Different Vinegars.

Morris, G. S. The Bottlers' Formulary. Practical recipes, formulas and processes for making the Soluble flavors used in the manufacture of carbonated beverages. 5½x7¾. cloth. 87 pp. Kansas City, 1910. $5.00

Norton, C. Book on Modern Yeasting and Distillation. Illustrated. 6x8¾. cloth. 68 pp. Chicago, 1911. $10.00

Contents: Construction of Plants; Mashing; Yeasting; Fermentations; Distillation; Feed; Laboratory; Mycology.

Nowak, Carl A. New Fields for Brewers, and Others Active in the Fermentation and Allied Industries. Illustrated. 5½ x7¾. cloth. 300 pp. St. Louis, 1917. net, $3.00

Contents: Low Alcoholic Beers; Non-Malt Beverages and Fruit Juices; The Yeast Industry and Its Products; Vinegar; Malt Flour; Malt Extract and Diastatic Preparations; Industry of Breakfast Foods; Commercial Feeding Stuffs; Dairy Industry; Industrial Alcohol; Mechanical Appliances; Bibliography.

Oppenheimer, Carl. Ferments and Their Actions. Translated by C. A. Mitchell. 5¼ x7¾. cloth. 357 pp. London, 1901. $3.00

Contents: General Part. Introduction; Definition of the Conception of a Ferment; The Chemical Nature of Ferments; The Influence of External Factors upon Ferments; The Mode of Action of Ferments; The Physiological Action of Ferments; The Secretion of Ferments; The Importance of Ferments to the Vital Process. *The Hydrolytic Ferments.* The Proteolytic Ferments; Trypsin; Bacteriolytic and Hæmolytic Ferments; Proteolytic Vegetable Ferments; Coagulating Ferments; The Saccharifying Ferments; Animal Diastases; Ferments of the Polysaccharides, Resembling Diastase; Enzymes of the Dissacharides; Ferments Which Decompose Glucosides; Other Hydrolytic Ferments; The Lactic Acid Fermentation. *The Oxidizing Ferments.* Alcoholic Fermentation; The Biology of Alcoholic Fermentation; The Oxydases; Oxidizing Fermentations; Systematic Bibliography; Table of Abbreviations; Indices.

Plimmer, R. H. A. The Chemical Changes and Products Resulting from Fermentation. 6x9. cloth. 190 pp. London, 1903. $2.50

The chief object of this book is to demonstrate the various processes which take place in fermentation. Also a short account of fermentation and the theories concerning action of ferments.

Walter, Erich. Manual for the Essence Industry. Illustrated. 6¼ x9¼. cloth. 431 pp. N. Y., 1916. net, $4.00

Contents: The Taste, and the Transfer of Flavor to Foods and Beverages; The Raw Materials Yielding the Different Tastes; Laboratory Practice; Non-Alcoholic Beverages; The Manufacture of Liquors, Licqueurs, Spirits and Other Alcoholic Beverages; Confectionery, Bakery and Culinary Essences; Coloring Matters for Foods and Drinks; Cosmetic Essences.

Wiley, Harvey W. Beverages and Their Adulteration. The origin, composition, manufacture, natural, artificial, fermented, distilled, alkaloidal and fruit juices. 42 illustrations. 6x9. cloth. 436 pp. Philadelphia, 1919. $5.00

Contents: Introduction; Waters; Mineral Waters; Soft Drinks; Fruit Juices; Coffee; Tea; Cocoa and Chocolate; Wine; Beer, Ale, Porter and Stout; Whiskey; Brandy; Rum; Gin; Cordials and Liqueurs; Alcoholic Remedies; Beverages Containing Cocaine.

Wright, F. B. Distillation of Alcohol from Farm Products and De-Naturing. *Second Edition.* 60 illustrations. 5x7. cloth. 281 pp. N. Y., 1907. net, $1.50

Contents: Alcohol, its Various Forms and Sources; The Preparation of Mashes and Fermentation; Simple Distilling Apparatus; Modern Distilling Apparatus; Rectification; Malting; Alcohol from Potatoes; Alcohol from Grain, Corn, Wheat, Rice and Other Cereals; Alcohol from Beets; Alcohol from Molasses and Sugar Cane; Alcoholometry; Distilling Plants; Their General Arrangement and Equipment; De-natured Alcohol and U. S. Authorized De-naturing Formulæ; De-naturing Regulations in the United States.

FOOD—DRUGS

Amos, P. A. Processes of Flour Manufacture. 112 illustrations. 5¼ x7½. cloth. 290 pp. London, 1912. $2.20

Contents: Milling Conditions in England Past and Present; History of Flour Milling; The Wheat Berry; The World's Wheats and Wheat Lands; Parcels for Wheat Mixtures; Mill Planning and Construction; Grain Intake nd Stock Handling; Preliminary Cleaning of Wheat, Dust Collecting and Dust Extract Plants; Wheat Storage; Screening, Dressing; Grading Mediums; Dry Cleaning of Wheat; Washing and Whizzing; Drying and Conditioning; Handling of Screenings; Blends and Mixtures; Gradual Reduction Systems; Break System; Scalping and Grading; Sifters and Plansifters: Flow Sheet Design; Purification, Reduction; Flour Dressing; Flour; Offals, Grading and Packing of All Stocks; Mill Staffing and Management; Rules, Regulations and Accidents; Power and Power Transmission; Fire Risks and Safeguards; Capacities and Speed of Machines; General Data.

Bailey, E. H. S. The Source, Chemistry. and Use of Food Products. 75 illustrations. 6x8. cloth. 538 pp. Philadelphia, 1915. $2.00

Contents: Sources and Constituents of Foods; Composition of Cereals and the Manufacture of Starch; Bread and Other Cereal Products; Sugar and Other Saccharine Substances; Alcoholic Beverages; Roots, Tubers, Vegetables; Legumes; Cultivation, Preservation and Use of Fruits and Berries; Orchard and Vine Fruit; Berries; Garden and Miscellaneous Fruits; Mushrooms,

Truffles, Algae and Lichens; Animal and Vegetable Fats and Oils; Nuts and Nut Products; Meat and Meat Products; Fish and Shell Fish; Milk and Dairy Products; Egg and Egg Products; Spices and Other Condiments; Non-Intoxicating Beverages; Water and Effervescing Beverages.

Bennett, H. G. Animal Proteids. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Blyth, A. W., and Blyth, M. W. Foods: Their Composition and Analysis. A manual for the use of analytical chemists and others. With an introductory essay on the history of adulteration. *Sixth Edition, thoroughly revised, enlarged and rewritten.* Illustrated. 6¾ x 9¼. cloth. 645 pp. London, 1909. $8.50

Contents: History of Adulteration in Various Countries; Introductory; Carbo-Hydrates; Milk, Cream, Butter, Cheese; Tea, Coffee, Cocoa; Alcohol, Spirits, Fermented Liquors, Wine; Vinegar; Mustard, Pepper, Spices, Condiments; Examination and Water Analysis.

Bolton, E. R., and Revis, C. Fatty Foods. Their practical examination. A handbook for the use of analytical and technical chemists. 36 illustrations, 7 plates, one colored. 6 x 8½. cloth. 384 pp. Philadelphia, 1913. $4.50

Contents: Objects of Analysis of Oils, Fats and Fatty Foods; General Analytical Methods; Analytical Procedure and Its Interpretation; Beef Fat, Lard, Butter and Margarine, Ghee, Vegetable Oils and Fats; Rancidity; Cocoa, Chocolate and Milk Chocolate; Feeding Stuffs; Milk; Appendices.

Bruce, Edwin M. Detection of the Common Food Adulterants. *Third Edition, revised and enlarged.* 5¼ x 7½. cloth. 95 pp. New York, 1917. $1.40

Contents: Dairy Products; Meat and Eggs; Cereal Products; Leavening Materials; Canned and Bottled Vegetables; Fruits and Fruit Products; Flavoring Extracts; Spices; Vinegar; Fats and Oils; Beverages.

Canning. A Complete Course in Canning. Being a thorough exposition of the best practical methods of hermetically sealing canned foods, and preserving fruits and vegetables. Originally republished from the serial articles appearing in "The Canning Trade." *Fourth Edition, completely revised up-to-date.* Illustrated. 6¼ x 9½. cloth. 272 pp. Baltimore, Md., 1919. $5.00

Carrell, T. M. A Manual of Canning and Preserving. 5 x 7½. cloth. 108 pp. New York, 1919. $1.50

Dowd, M. T., and Jameson, J. D. Food, Its Composition and Preparation. A textbook for classes in household science. Illustrated. 5¼ x 7¾. cloth. 181 pp. New York, 1918. $1.50

Dunn, C. W. Pure Food and Drug Legal Manual. Federal, State and Territorial general and special food, drug, paint, oil, and turpentine laws, rules and regulations, food standards, food inspection decisions, and leading decisions of the courts. Uniformly classified and arranged cyclopedia of information. Two volumes. 6¾ x 9½.

Vol. I. is complete in itself. 2378 pp. cloth. New York, 1912. $12.00

Vol. II. In preparation.

Edelmann, R. Textbook of Meat Hygiene with Special Consideration of Antemortem and Postmortem Inspection of Food Producing Animals. *Fourth Revised Edition* by John R. Mohler and Adolph Eichhorn. 161 illustrations, 5 color plates. 6¼ x 9½. cloth. 472 pp. Philadelphia, 1919. $4.75

Foot, F. N. Baking Powder and Other Leavening Agents. 5 x 7. cloth. 88 pp. New York, 1908. $1.50

Frandsen, J. H., and Markham, E. A. The Manufacture of Ice Creams and Ices. 101 illustrations. 5¼ x 7¾. cloth. 329 pp. New York, 1916. net, $2.00

Contents: Origin of Frozen Desserts; The Cream Supply; Bacteriology of Ice Cream; Care of Milk and Cream at the Factory; Condensed Milk, Milk Powder, and Homogenized Cream; Stabilizers; Flavoring; Standardizing the Ice Cream Mixture; Preparing the Ice Cream Mixture; Classification of Ice Cream; Formulas; Water Ices and Sherbets; Fancy Molded Ice Creams and Ices; Freezing Process; Refrigeration; Economical Operation of the Refrigerating Plant; Scoring Ice Creams and Ices; The Ice Cream Factory, Its Location and Equipment; Factory Management; By-Products and Side Lines; Ice Cream as a Side Line in the Local Creamery; Appendix.

Friedman, Jacob. Common-sense Candy Teacher. With a supplement by Wm. H. Kennedy. *Second Edition.* 6 x 8¾. cloth. 391 pp. Chicago, 1911. net, $10.00

Contents: Common-Sense Talks; Talks on Material; Formulas; Cream Work; Gum Work; Ice Cream, Ices, Sherbets, etc.; Sensible Suggestions.

Gibbs, W. M. Spices and How to Know Them. Illustrated. Colored plates. 6¾ x 9⅞. cloth. 179 pp. Buffalo, N. Y., 1909. net, $3.50

Contents: Introduction; Early History of Spices; Adulteration of Spices: How to Detect Adulteration in Spices: their Formation and Analysis; Black Pepper; White Pepper; Long Pepper; Capsicum, or Cayenne; Pimento, or Allspice; Cinnamon and Cassia; Cloves; Ginger; Nutmegs; Mace; Mustard; Herbs.

Grant, J. The Chemistry of Breadmaking. *Second Edition.* 47 illustrations and 4 plates. 5 x 7½. cloth. 234 pp. New York, 1917. $2.00

Greenish, H. G. Microscopical Examination of Foods and Drugs. A practical introduction to the methods adopted in the microscopical examination of foods and drugs, in the entire, crushed and powdered states. *Third Edition.*

In Preparation

Contents: Starch; Hairs and Textile Fibres; Spores and Glands; Ergot; Woods; Stems; Leaves; Flowers; Barks; Seeds; Fruits Rhizomes; Roots; Adulterants of Powdered Foods and Drugs; Appendix.

Hausner, A. The Manufacture of Preserved Foods and Sweetmeats. Translated from the German of the third enlarged edition. *Second Edition.* 28 illustrations. 5¼ x 7½. cloth. 246 pp. London, 1912. $3.50

A handbook of all the processes for the preservation of flesh, fruit and vegetables, and for the preparation of dried fruit, dried vegetables, marmalades, fruit-syrups and fermented beverages, and of all kinds of candies, candied fruits, sweetmeats, rocks, drops, dragees, pralines, etc.

Jank, Jos. K. Spices: Their Botanical Origin; Their Chemical Composition, and Commercial Use. Seeds, herbs, leaves, etc. Their botanical origin and commercial use and technical advices and tables. 5¾ x 8¼. cloth. 122 pp. New York, 1915. net, $1.50

Kozmin, Peter A. Flour Milling. A theoretical and practical handbook of flour manufacture. For millers, millwrights, flour-milling engineers and others engaged in the flour-milling industry. Translated by M. Falkner and T. Fjelstrup. 543 illustrations. 7 x 10. cloth. 596 pp. London, 1917. $8.50

Contents: Historical Outline of Flour Milling; General Ideas of Raw Materials for Flour Production; Preparation of Grain for Grinding; Grinding the Grain; Grading the Product According to Size; Grading According to Specific Gravity; Accessory Appliances and Mechanisms; Milling Diagrams; Construction of Mill Buildings; Cost of Erecting and of Working Mills.

Leach, Albert E. Food Inspection and Analysis; for the use of public analysts, health officers, sanitary chemists, and food economists. *Fourth Edition,* revised and enlarged by Andrew L. Winton. 278 illustrations. 6½ x 10. cloth. 1109 pp. N. Y., 1920. $8.50

Contents: Food Analysis and Official Control; The Laboratory and Its Equipment; Food, Its Functions, Proximate Components, and Nutritive Value; General Analytical Methods; The Microscope in Food Analysis; The Refractometer; Milk and Milk Products; Flesh Foods; Eggs; Cereals and Their Products, Legumes, Vegetables and Fruits; Tea, Coffee, and Cocoa; Spices; Edible Oils and Fats; Sugar and Saccharine Products; Alcoholic Beverages; Vinegar; Artificial Food Colors; Food Preservatives; Artificial Sweeteners; Flavoring Extracts and Their Substitutes; Vegetable and Fruit Products; Determination of Acidity by Means of the Hydrogen Electrode; Appendix.

McCollum, E. V. The Newer Knowledge of Nutrition. The use of food for the preservation of vitality and health. Illustrated. 5 x 7½. cloth. 208 pp. New York, 1919. $1.50

Macewen, Hugh A. Food Inspection. A practical handbook. Illustrated. 8vo. cloth. 264 pp. Lond., 1910. net, $2.50

Contents: The Inspection of Meat, and the Diseases Commonly Met with in the Abattoir; The Construction and Management of Slaughter Houses and Public Abattoirs, and the Law Relating to Slaughter Houses and Markets; The Inspection of Fish, Poultry, Game, Vegetables, Fruit, etc., Considered from a Hygienic Standpoint and the Law Relating to Unsound Foods; Preservation and Storage of Meat and other Foods, and the Causes of Unwholesomeness in Food.

Moor, C. G., and Partridge, W. Aids to the Anaysis of Food and Drugs. *Fourth Edition.* 5 x 7. cloth. 279 pp. New York, 1918. $1.50

Muir, Robert, and Ritchie, Jas. Manual of Bacteriology. *Seventh Edition.* 200 illustrations, 6 color plates. 5 x 7½. cloth. 777 pp. London, 1919. $6.50

Olsen, John C. Pure Foods. Their adulteration, nutritive value, and cost. 30 illustrations. 5 x 7½. cloth. 215 pp. New York, 1911. net, $1.00

Contents: What is Food?; Pure Food; Standard Rations and the Cost of Food; Milk Bacteria in Milk; Fats and Oils; Butter and its Substitutes; Meats; Carbohydrates; Candies; Food Colors; Preservation of Foods; Fruits, Jams, Jellies; French and Canned Vegetables; Breads, Cereals; Spices, Flavoring Extracts.

Parry, E. J. Foods and Drugs. In two volumes. 6½ x 10. cloth. London, 1911.

Vol. I. The Analysis of Foods and Drugs. 59 illustrations. 752 pp. $9.00

Contents: Food: Tea, Cocoa, Chocolate, Cocoa Butter and Coffee; Milk, Cheese, Butter, Lard, Suet, Olive Oil; The Carbohydrate Foods; Spices, Flavoring Essences, etc.; Alcoholic Beverages; Flesh Foods, Extract of Meat, Gelatine; Microscopical Analysis. *Drugs:* Crude drugs; Drugs Containing Alkaloids, etc.; Capable Approximate Determination; Essential Oils, and the Fixed Oils, Fats, Waxes of the British Pharmacopœia; Chemicals of Pharmacopœia; Table of Chemicals.

Vol. II. The Sale of Food and Drugs Acts, 1875-1907. 184 pp. $3.50

Contents: Introduction; The Sale of Foods and Drugs Act, 1875; Amendment Act of 1879; Act of 1899; The Margarine Act, 1887; The Butter and Margarine Act, 1907.

Rideal, S. The Carbohydrates. 5½ x 8¾. cloth. (Industrial Chemistry Series.)

In Press

Sherman, Henry C. Food Products. 36 illustrations. 5¾ x 7¾. cloth. 606 pp. New York, 1914. $2.40

Contents: Principal Constituents and Functions of Foods; Food Legislation; Milk; Cheese and Miscellaneous Milk Products; Eggs; Meats and Meat Products; Poultry, Game, Fish, and Shellfish; Grain Products; Vegetables, Fruits, and Nuts; Edible Fats and Oils; Sugars, Sirups, and Confectionery; Food Adjuncts and Unclassified Food Materials; Rules and Regulations for the Enforcement of the Food and Drug Act; Food Inspection Decisions.

Sherman, H. Clapp. Chemistry of Food and Nutrition. *Second Edition, rewritten and enlarged.* Illustrated. 5 x 7. cloth. 558 pp. N. Y., 1918. $2.10

Thresh, J. C., and Porter, A. E. Preservatives in Food and Food Examination. 8 plates. 6¼ x 9½. cloth. 499 pp. London, 1906. $6.00

Contents: Preservation of Food; Chemical Preservatives; Boron Compounds; Salicylic and Benzoic Acids, etc.; Milk; Cream; Butter; Alcoholic Beverages; Fruit, Jams, and Vegetables; Meat, Game, Eggs, and Fish; Colouring Matters Used in Food and Drink; Mineral Poisons; Laws Relating to Food Inspection; Unsound Food; Animal Parasites; Fish; Milk and Dairy Products; Unsound Fruit; Examination of Food Suspected of Causing Disease, etc.

Vacher, Francis. The Food Inspector's Handbook. A practical guide for medical officers of health, meat inspectors, army officers, students, and others. *Seventh Edition, thoroughly revised and greatly enlarged.* *In Preparation*

Villavecchia, V. Treatise on Applied Analytical Chemistry. Methods and standards for the chemical analysis of the principal industrial and food products. Translated by Thomas H. Pope, University of Birmingham.

Vol. I. 58 illustrations. 6½ x 10. cloth. 491 pp. Philadelphia, 1918. $7.75

Contents: Meat and Its Preparations; Milk and Its Products; Flour, Starch, and Derived Products; Sugar and Products Containing Them; Beer; Wine; Spirits and Liqueurs; Essential Oils; Turpentine and Its Products; Varnishes; Rubber and Guttapercha; Tanning Products; Inks; Leather; Coloring Matters; Textile Fibres, Yarns, Fabrics.

Vol. II. 105 illustrations. 6½ x 10. cloth. 550 pp. Philadelphia, 1918. $7.75

Contents: Waters; Chemical Products; Fertilizers; Cement Materials; Metals and Alloys; Fuels; Coal-tar and its Products; Minenral Oils and Their Derivatives; Fatty Substances; Industrial Products from the Treatment of Fatty Matters.

Vulte, H. T. Household Chemistry. For the use of students in household arts. *Second Edition.* 5 x 7½. cloth. 249 pp. Easton, 1917. $1.50

Contents: Introductory; Atmosphere and Ventilation; Water; Metals; Glass, Pottery and Porcelain; Fuels; Carbohydrates; Fruits and Fruit Juices; Fats; Proteins; Baking Powders; Tea, Coffee, Chocolate and Cocoa, Ferments and Preservatives; Disinfectants and Disinfection; Cleansing Agents; Volumetric and Gravimetric Analysis; Reagents; Appendix.

Vulte, Hermann T., and Vanderbilt, Sadie B. Food Industries. An elementary text-book on the production and manufacture of staple foods. Designed for use in high schools and colleges. *Second Edition.* 80 illustrations. 6¼ x 9. cloth. 337 pp. Easton, Pa., 1916. $2.00

Wagner, E. Recipes for the Preserving of Fruit, Vegetables and Meat. Translated from the German by Chas. Salter. 14 illustrations. 5 x 7. cloth. 119 pp. London, 1908. net, $2.50

Contents. Preserved Fruits. Canned Fruits; Glazed and Candied Fruits; Marmalades, Jams, and Fruit Juices; Fruit Jellies; Fruit Pulp for Ices; Preserved Vegetables; Preserved Meats.

Whymper, R. Cocoa and Chocolate. Their chemistry and manufacture. 19 illustrations. 3 plates. 7¼ x 10¼. cloth. 330 pp. Philadelphia, 1912. *Reprinting*

Contents: History, Botany, and Agriculture of Cacao; Manufacture of Chocolates and Cocoa Powders; Chemistry of Cacao; Survey of the Components of Cacao and Chocolate; Methods of Analysis.

Wiley, Harvey W. Foods and Their Adulteration. Origin, manufacture, and composition of food products: infants' and invalids'; detection of common adulterations, and food standards. *Third Edition, revised.* 87 illustrations, 11 colored plates. 6¾ x 9¾. cloth. 653 pp. Philadelphia, 1917. $6.00

Contents: Introduction; Meats and Meat Products; Poultry and Eggs and Game Birds; Fish Foods; Milk and Milk Products and Oleomargarine; Cereal Foods Vegetables, Condiments and Fruits; Vegetable Oils and Fats, and Nuts; Fungi as Foods; Sugar, Sirup, Confectionery and Honey; Miscellaneous; Infants' and Invalids' Foods; Simple Methods for Detecting Food Adulterations; Food Standards.

Wiley, Harvey. 1001 Tests of Foods, Beverages and Toilet Accessories, Good and Otherwise. Why are they so? *Revised Edition.* 5 x 7½. cloth. 344 pp. New York, 1916. $0.75

Winton, A. L., and others. The Microscopy of Vegetable Foods. 589 illustrations. 6¾ x 10. cloth. 717 pp. New York, 1916. net, $6.50

Contents: Equipment, Methods, and General Principles; Introduction, Apparatus, Reagents, Collections, Preparation of Materials, Principal Histological Elements; Grain: Its Products and Impurities; Flour, Cattle Foods, Cereals, Buckwheats; Weed Seeds; Fungus Impurities; Oil Seeds and Oil Cakes, Legumes; Nuts; Fruit and Fruit Products, Vegetables; Alkaloidal Products (Tea, Coffee, Cocoa, Tobacco, etc.), and Their Substitutes; Spices and Condiments; Commercial Starches.

Winton, Andrew L. A Course in Food Analysis. 107 illustrations. 6 x 9. cloth. 261 pp. New York, 1917. $2.00

Contents: Introduction; Dairy Products; Meat and Fish; Natural Vegetable Foods and Mill Products; Microscopic Examination of Vegetable Foods; Saccharine Products; Fats and Oils; Fruits; Fruit Products; Liquors and Vinegars; Flavoring Extracts; Coffee, Tea, and Cocoa; Calculation Tables; Lists.

Woodman, A. G. Food Analysis. Typical Methods and the Interpretation of Results. 108 illustrations. 5¾ x 8¼. cloth. 520 pp. New York, 1915. $3.50

Contents: General Methods; Microscopical Examination of Foods; Food Colors and Preservatives; Milk and Cream; Edible Fats and Oils; Carbohydrate Foods; Cocoa and Chocolate; Spices; Cider Vinegar; Flavoring Extracts; Alcoholic Foods.

Zavella, Justo P. The Canning of Fruits and Vegetables. Based on the Methods in use in California, with notes on the control of the microorganisms effecting spoilage. 67 illustrations. 6 x 9. cloth. 226 pp. N. Y., 1916. net, $3.25

Zipperer, Paul. The Manufacture of Chocolate, and other Cacao Preparations. *Third Edition, rearranged, thoroughly revised, and largely rewritten.* Edited by Phil. Herm. Schaeffer. 132 illustrations, 21 tables, 3 plates. 7 x 10. leather. 345 pp. New York, 1915. $7.50

Contents: The Cocoa Tree; The Manufacture of Cacao Preparations; Ingredients Used in the Manufacture of Chocolate; Examination and Analysis of Cacao Preparations; Installation of a Chocolate and Cacao Powder Factory.

SUGAR

Abraham, K. Steam Economy in the Sugar Factory. Translated from the German edition by E. J. Boyle. 5¼ x 7¾. cloth. 101 pp. Interleaved. New York, 1912. net, $1.50

Contents: Steam Consumption of Individual Stations; The Distribution of Steam in the Factory.

Armstrong, E. F. The Simple Carbohydrates and the Glucosides. *Third Edition.* 6 x 9½. boards. 249 pp. London, 1919. $4.20

Contents: Introduction; Glucose; The Chemical Properties of Glucose and the Hexoses; The Hexoses, Pentoses and the Carbohydrate Alcohols; The Disaccharides; The Relation Between Configuration and Properties; Hydrolysis and Synthesis; Natural Glucosides; The Synthetic Glucosides; The Function of Carbohydrates and Glucosides in Plants.

Browne, C. A. Handbook of Sugar Analysis. A practical and descriptive treatise for use in research, technical and control laboratories. 200 illustrations, 25 tables. 6¾ x 9½. cloth. 980 pp. New York, 1912. net, $6.00

Contents: Physical and Chemical Methods of Sugar Analysis. Sampling of Sugar and Sugar Products; Determination of Moisture by Methods of Drying; Densimetric Methods of Analysis; Principles and Uses of the Refractometer; Polarized Light, Theory and Description of Polarimeters and Saccharimeters; Polariscope Accessories; Specific Rotation of Sugars; Methods of Simple and Invert or Double Polarization; Special Methods of Saccharimetry; Miscellaneous Physical Methods as Applied to the Examination of Sugars; Qualitative Methods for the Identification of Sugars; Reduction Methods for Determining Sugars; Special Quantitative Methods; Combined Methods and the Analysis of Sugar Mixtures; Miscellaneous Applications. *The Occurrence, Methods of Preparation, Properties and Principal Reactions of the Sugars and Allied Derivatives.* Classification of the Sugars and Their Formation in Nature; The Monosaccharides; Disaccharides; Trisaccharides and Tetrasaccharides; Amino Sugars and the Cycloses; The Sugar Alcohols and Sugar Acids; Appendix of Sugar Tables.

Browne, C. A. Sugar Tables for Laboratory Use. 6 x 9. cloth. 110 pp. New York, 1912. $1.25

Buehler, F. A. Filters and Filter Presses for the Separation of Liquids and Solids. With additional matter relating to The Theory of Filtration and Filtration in Sugar Factories and Refineries, by John J. Eastwick. 327 illustrations. 7¼ x 9¾. cloth. 192 pp. London, 1914. net, $4.50

Contents: Filters with Loose Filtering Layer; Filters with Woven or Felted Filtering Mediums; Filters with Rigid Filtering Layer; Separating Apparatus Without Filtering Layer; Presses for the Separation of Liquids and Solids; Filtration and Aids to Filtration as Applied to the Sugar Industry; Specifications of Sundry Filter Press Patents.

Classen, H. Beet-Sugar Manufacture. Translated by W. T. Hall and G. W. Rolfe. *Second Edition.* 6 x 9. cloth. 358 pp. New York, 1910. $3.50

Contents: Preface; Introduction; The Delivery, Receiving and Storage of Beets; Transportation and Washing the Beets; Weighing and Slicing Beets; Juice Extraction; Drying the Spent Chips; Diffusor Juice, its Preliminary Purification and Warming; Defecation; Carbonation; Treatment of the Sludge or Scums; Final Carbonation and Filtration; Other Purifying and Clarifying Agents; Evaporation; The Condensation of the Evaporation Vapors; Carbonation and Filtration of the Concentrated Juice or Sirup; Sugar-boiling; Working up the Massecuite; The Centrifugal Work; Raw Sugar and its Preparation; The Preparation of Sugar Crystals; Working up Centrifugal Sugar into After-products; The Purification of Centrifugal Sirup; Molasses and Utilization; The Boiler-house; The Lime-kilns; Heat Losses During the Process; Factory Control and Determination of Sugar-losses; General Suggestions Concerning the Fitting Up and

Running of a Beet-sugar Factory; The Utilization and Disposal of the Waste Products and Sweet Waters; Analysis of Beets, Sirup, and Sugar Products; Formulæ, Tables, and Numerical Data; Calculations for an Evaporating Plant and for the Steam Consumption in Working Up 100 Pounds of Beets; Comparison of Steam and Coal; Consumption in Different Systems of Evaporating and Heating.

Deerr, Noel. Cane Sugar. A text-book on the agriculture of the sugar cane, the manufacture of cane sugar, and the analysis of sugar house products; together with a chapter on the fermentation of molasses. 280 illustrations. 22 plates. 6¼ x 9½. cloth. 607 pp. Manchester, 1911. *Reprinting*

Contents: The Cane; Composition of the Cane; Range and Climate; Varieties of the Cane; Sugar Cane Soils; Manuring, Irrigation, Husbandry, Pests and Diseases, and Harvesting of the Cane; Extraction of Juice by Mills; Diffusion Process; Clarification and Defecation of the Juice; Carbonation Process; Filtration of the Juice; Evaporation of the Juice to Syrup; Concentration of the Syrup to Massecuite; Separation of the Crystals; Molasses; Megass as Fuel; Polariscope as Applied to Sugar Analysis; Optical Assay of Sugars; Determination of Reducing Sugars; Assay of Sugar House Products; Control of the Factory; Fermentation with Special Reference to the Sugar House; Appendix; Tables; Additional Notes Relating to Certain Portions of the Text.

Geerligs, H. C. Prinsen. Chemical Control in Cane Sugar Factories. *Revised and Enlarged Edition.* Illustrated, tables. 6½ x 10¼. cloth. 152 pp. London, 1917. $5.00

Contents: Analytical Methods. Cane; Bagasse; Mill Juices; Raw Juice; Clarified Juice. *Sweet-Waters from the Filter-Presses.* Filter-Press Cake; Syrup; Massecuites; Green Molasses; Final Molasses; First and Second Sugars; Molasses Sugar; Recapitulation of the Necessary Analyses. *Determination of Quantities.* Weights Directly Ascertained; Weights That Are Calculated. *Stocktaking.* Calculated Percentages. *Various Calculations.* Final Account of Sucrose Extracted and Lost. Native Assistance. *Factory and Laboratory Instruments.* Verification of Weighbridges, Measuring Tanks, and Instruments; Instruments and Utensils Required; Tables; Models of Books.

Geerligs, H. C. P. Practical White Sugar Manufacture. Or the manufacture of plantation white sugar directly from the sugar cane. 28 illustrations. 6¼ x 10¼. cloth. 196 pp. London, 1915. net, $5.00

Contents: Clarification of the Cane Juice. Color and Clearness of the Juice; Decomposition of Sucrose by Acids and Ferments; Requirements for the Various Processes of Clarification. *Defecation Methods.* Sulphitation; Clarification with the Aid of Phosphoric Acid and Its Salts; Heating the Tempered Juice to the Boiling Point; Separation of the Precipitated Impurities from the Clarified Juice. *Carbonatation Methods.* Methods in Which the Glucose is Left Intact as Far as Possible; Method in Which the Glucose is Destroyed; Separation of the Clarified Juice and the Scums. *Special Methods.* Methods for the Purification of the Molasses; Advantages and Disadvantages of the Different Processes; Costs and Yields of the Different Clarification Processes; Boiling, Curing and Finishing White Sugar; Schemes for the Manufacture of White Sugar of Different Descriptions, and the Necessary Capacity of the Plant Required. *Materials Employed in the Manufacture of Plantation White Sugar.* Lime; Milk-of-Lime; Limestone; Coke; Carbonic Acid; Sulphur; Sulphurous Acid Gas; "Blankit" or Sodium Hydrosulphite; Phosphoric Acid and Its Preparation; Sodium Phosphate; Animal Charcoal or Bone Black; Decolorizing Carbons; Hydrochloric Acid; Caustic Soda; Sodium Carbonate; Ultramarine; Indanthrene.

Geerligs, H. C. P. Cane Sugar and Its Manufacture. 7 x 10. cloth. 377 pp. Manchester, 1909. $6.00

Contents: The Raw Material. Constituents of Sugar Cane; Proportion and Distribution of the Constituents of Cane Sugar. *Sugar Manufacture.* Extraction of the Juice; Clarification; Concentration of the Juice; Curing Exhausted Molasses.

Geerligs, H. C. P. The World's Cane Sugar Industry, Past and Present. Illustrated. maps. 7½ x 10¼. cloth. 420 pp. New York, 1912. $6.00

Contents: General History of the Cane Sugar Industry; General Survey of the History of the Cane Sugar Industry from the Beginning Down to the Present Day; Condition of the Cane Sugar Industry in the Different Countries of Production; In British India; Straits Settlements; Cochin China; China; Japan; The Philippines; Java; Spain; United States of America; Mexico; Cuba; Santo Domingo; Porto Rico; British West Indian Islands; French Antilles; St. Croix; Central America; South America; Africa; Commonwealth of Anstralia; Hawaiian Islands; Fiji Islands; Tahiti; Text of the Brussels Sugar Convention; Appendix.

Given, A. Methods for Sugar Analysis and Allied Determinations. Illustrated. 6½ x 9½. cloth. 85 pp. Philadelphia. 1912. $2.50

The methods here presented are not set forth as the only methods applicable, but as those which the author, from practice on a very large variety of substances, considers to be best adapted for the purposes in hand.

Harloff, W. H. Th., and Schmidt, H. Plantation White Sugar Manufacture. Translated from the *Second Revised Dutch Edition* by J. P. Ogilvie. 5¾ x 8¼. cloth. 146 pp. London, 1913. $3.00

Contents: Chemistry of White Sugar Manufacture. Influence of Alkalies and Alkaline Earths on the Constituents of Cane Juice; Influence of Acids on the Constituents of Sugar Cane; Influence of Heating on the Constituents of Cane Juice; Coloring Substances of the Cane and Those Produced During Process of Manufacture; The Different Fermentations That May Occur in the Sugar Factory. *Manufacture of White Sugar.* Carbonic-Acid Saturation (Carbonatation); The Acid Thin-Juice Process; Raw Juice Sulphitation or Sulphurous Acid Saturation.

Harris, F. S. The Sugar-Beet in America. Illustrated. 5 x 7½. cloth. 360 pp. New York, 1919. $2.25

Hind, R. R. Heat Conservation in Cane Sugar Factories. Illustrated. 6 x 9. cloth. 150 pp. Honolulu, 1919. $2.00

Hawaiian Chemists' Association. Methods of Chemical Control in Cane Sugar Factories. Illustrated. 6 x 9. cloth. 103 pp. Honolulu, 1916. $2.00

Koppeschaar Edward. Evaporation in the Cane and Beet Sugar Factory. A theoretical and practical treatise. 31 illustrations, 9 plates. 6½ x 10. cloth. 126 pp. New York, 1914. $2.50

Contents: Study of Steam; Its Application to Evaporation in General, and to Multiple Effect Evaporation in Particular; Historical Development of Evaporation in the Cane and Beet Sugar Factory; Comparative Study of Evaporation; Multiple Effect Evaporating Apparatus; Fundamental Parts and Accessories of Evaporating Apparatus; The Control of the Evaporating Apparatus; Special Designs; Evaporating and Crystallization in Vacuum Pans; Tables.

McIntosh, John G. The Technology of Sugar. *Third Edition, revised and enlarged.* 244 illustrations. 6 x 8¾. cloth. 540 pp. London, 1916. $6.00

Contents: Beet Sugar. A Criticism of the Arguments of Present-Day Beet-Sugar Pioneers; Valuation and Purchase of Sugar Beets; Preliminary Treatment; Diffusion; Carbonatation and Filtration; Concentration of Beet Juice to Syrup in Multiple Effect Evaporation Vessels; Boiling Beet Syrup to Strike Point in Vertical and Horizontal Vacuum Pans; Centrifuging of Beet-Sugar; Extraction of All Available Sugar from Beet-Sugar Molasses. *Cane Sugar.* The Sugar Cane and Its Cultivation; Sugar-Cane Diffusion; Sugar Refining; The Chemistry of Sugars—Analysis of Commercial Sugars and of Merchandise, etc., Containing Sugars.

Mackenzie, John E. The Sugars and Their Simple Derivatives. Illustrated. 6¼ x 9 cloth. 258 pp. Philadelphia, 1914. $3.50

Contents: General Properties of Sugars; Synthetic Methods of Preparation; Occurrence of Physical and Chemical Properties of Sucrose, Maltose, Lactose; Occurrence, Chemical and Physical Properties of Glucose; Glucosamine: Configuration; Dioses, Trioses and Tetroses; Pentoses; Methylpentoses; Aldohexoses; Ketohexose, Disaccharides, Trisaccarides, Tetrasaccharides; Glucosides; Fermentation; Metabolism.

Maxwell, Francis. Sulphitation in White Sugar Manufacture. Illustrated. 5½ x 8¾. cloth. 84 pp. London, 1916. $4.00

Contents: Sulphur and Its Compounds in the Manufacture of Sugar; Sulphur; Sulphurous Acid; Generating Plants and Sulphitation Vessels; Control of the Sulphurous Acid Gas Generating Station; Analysis of Gas; Action of Acid on Juices; Principles of the Application of Sulphitation to Juice; Sulphitation of Syrups and Molasses; Sulphitation Process; Processes Adopted, Summary.

Mittelstaedt, Otto. Technical Calculations for Sugar Works. Translated from the *Third German Edition* by C. J. Bourbakis. 12mo. cloth. 128 pp. New York, 1910. net, $1.50

Contents: Fundamental Notions; General Methods of Calculation; Theoretical Calculation of the Work of a Raw Sugar Factory; Calculation of the Work of a Refinery; The Sugar Inventory.

Moeller-Krause, Werner. Practical Handbook for Beet-Sugar Chemists. Rapid methods of technico-chemical analysis of the products and by-products and of material used in the manufacture of beet-sugar. 19 illustrations, 7 tables. 6¼ x 9. cloth. 140 pp. Easton, Pa., 1914. $1.50

Morse, Irving H. Calculations Used in Cane Sugar Factories. A practical system of chemical control for Louisiana sugar-houses and cane-producing countries. *Second Edition.* 4 x 6¼. leather. 82 pp. New York, 1917. net, $2.00

Contents: The Sampling and Analysis of the Sugar Products; The Formula for Available Sugar-Mill Control; Calculations Used in the Manufacturing Processes; Stock on Hand Calculations; Laboratory Reports; The Calculated Commercial Yield per Ton of Cane; Manufacturing Economics; The Purchase of Cane by the "Unit" Method.

Newlands, J. A. R., and Newlands, B. E. R. Sugar. A handbook for planters and refiners. Illustrated. Many folding plates. 6 x 9. cloth. 912 pp. London, 1909. $8.00

A comprehensive treatise on the culture of sugar yielding plants, and the manufacture, refining and analysis of cane, beet, palm, maple, melon, sorghum, and starch sugars, with copious statistics of their production and commerce, and a chapter on the distillation of rum.

Nikaido, Y. Beet-Sugar Making and Its Chemical Control. 65 illustrations. 6 x 9. cloth. 366 pp. Easton, Pa., 1909 $3.50

Contents: Definitions of Chemical Terms; Non-Metallic Elements; Metallic Elements; Organic Chemistry; Cane-Sugar; Polariscope and Its Accessories; Chemical Apparatus and General Methods for Sugar Analysis; Practical Operation of Beet Sugar House; Special Analysis; Appendix.

Rolfe, G. W. The Polariscope in the Chemical Laboratory. An introduction to polarimetry and related methods. Illustrated. 5¼ x 7¾. cloth. 327 pp. London, 1905. net, $1.90

Contents: Fundamental Principles; The Polariscope; The Saccharimeter; Accuracy of Saccharimeter Measurements; General Notes on Apparatus, and Laboratory Manipulation; Notes Applying to Special Instruments; Polarization of Cane Sugar—General Commercial Methods; Determination of Sucrose in Presence of Other Optically Active Substances; Sugarhouse and Refinery Methods; Chemical Methods of Determining Sugars; Starch and Starch Products; Miscellaneous Saccharine Products; Application of the Polariscope in Scientific Research; In Chemical Analysis; Other Than Carbohydrate Determinations.

Rolph, Geo. N. Something About Sugar. Its history, growth, manufacture and distribution. Illustrated. 6 x 9. cloth. 341 pp. San Francisco, 1917. $5.00

Gives a history of the commodity and its production in different parts of the world, and shows the various steps by which sugar from cane or beets is prepared for the consumer.

Spencer, G. L. A Handbook for Cane-Sugar Manufactures and Their Chemists. *Sixth Edition, enlarged.* 97 illustrations. 4 x 6¾. flexible fabrikoid. 576 pp. New York, 1917. $4.00

Contents: Manufacture of Cane-Sugar; Extraction of the Juice; Purification of the Juice; Filtration of the Juice and Scums; Chemical Reagents used in Purifying the Juice; Evaporation of the Juice; Preservation of the Juice and Syrup; Crystallization of the Sugar; Curing the Sugars; Composition of the Sugar-Cane and Molasses; General Analytical Work.

Spencer, G. L. A Handbook for Chemists of Beet-Sugar Houses. 74 illustrations. 4 x 6½. fabrikoid. 485 pp. New York, 1910. $4.00

Contents: Sugar-house Control; Weights and Measures; Estimation of Losses of Sucrose; Sugar Analysis, Optical Methods; Sugar Analysis, Chemical Methods; Sampling and Averaging; Density Determinations, Apparatus and Methods; Analysis of the Beet; Analysis of the Juice; Analysis of the Sirup; Analysis of the Massecuites and Molasses; Analysis of Sugar; Analysis of Filter Press-cake; Residues from the Mechanical Filters; Analysis of the Wash and Waste Waters; Analysis of the Exhausted Cossettes; Definitions of the Coefficients and Terms Used in Sugar Analysis; Determination of the Marc; Viscosity of Sugar-house Products; Control of the Osmosis Process; Analysis of Saccharates; Examination of Bone-black; Analysis of the Lime-kiln and Chimney-gases; Analysis of Limestone; Analysis of Lime; Analysis of Sulphur; Analysis of Coke; Lubricating Oils; Analysis and Purification of Water; Seed-selection; Seed-testing; Miscellaneous Notes; Sugar-house Notes; Special Reagents; Reference Tables; Blank Forms for Use in Sugar-house Work.

Spencer, G. L. Manual de Fabricantes De Azucar De Cana Y Quimicos Azucareros. Traduccion Autorizada de la 6a. Edicion Inglesa por el Dr. Gaston A. Cuadrado. Illustrated. 4 x 6¾. leather. 617 pp. New York, 1918. net, $5.00

This is a translation into Spanish of Spencer's "A Handbook for Cane Sugar Manufacturers and Their Chemists."

Surface, George T. The Story of Sugar. Illustrated. 4¾ x 7½. cloth. 238 pp. New York, 1910. net, $1.00

Tucker, J. H. A Manual of Sugar Analysis. Including the applications in general of analytical methods to the sugar industry. *Seventh Edition.* 42 illustrations. 6 x 9. cloth. 353 pp. New York, 1912. net, $3.50

Contents: Chemistry of Sugars as a Class; Cane Sugar or Saccharose; Dextrose, Levulose and Invert Sugar; Lactose or Milk Sugar; Determination of Specific Gravity: Optical and Chemical Methods of Determining of Cane Sugar; Determination of Dextrose and Invert Sugar; Analysis of Raw Sugar, Molasses and Syrups, Cane and Cane Juice, Beet and Beet Juice, Waste Products, Commercial Glucose or Starch Sugar; Estimation of Milk Sugar; Estimation of Dextrose in Diabetic Urine; The Chemistry and Analysis of Animal Charcoal.

Wallis-Tayler, A. J. Sugar Machinery. A descriptive treatise devoted to the machinery and apparatus used in the manufacture of cane and beet sugar. *Second Edition, revised and enlarged.* 56 illustrations. 5½ x 7½. 390 pp. London, 1912. $3.00

Contents: Complete Factories; Extraction of the Juice from the Raw Material; Raising or Pumping and Weighing the Juice or Liquor; Heating and Clarification or Defecation of the Juice or Liquor; Mechanical Purification of the Liquor; Evaporation, Concentration, and Granulation under Atmospheric Pressure and in Vacuo; Evaporation and Concentration in Vacuo; Curing or Extracting the Molasses from the Sugar; Extraction of the Waste Sugar from the Molasses; Formation of Crystals from Sugar Solutions; Treatment of Saccharine Liquids by Electricity; Tests; Transport of Canes; Repairs and Renewals; Specimen Forms for Use in Sugar Factories; Useful Tables, Memoranda, etc.; Technology of Sucrose.

Ware, Lewis S. Beet Sugar Manufacture and Refining. 2 vols.

Vol. I. Extraction and Epuration. 262 illustrations. 6 x 9. cloth. 569 pp. New York, 1905. *Reprinting*

Contents: Practical Considerations Respecting the Beet-sugar Industry; Explanations Relating to the Abbreviations Used. *Preliminaries.* Delivery, Unloading and Tare Estimation; Siloing and Changes During Keeping; Transportation (Flumes); Beet-washing—Waste-water; Weighing of Beets. *Extraction.* Beet-slicers—Knives; Diffusion—Slice-carriers, Diffusors, Calorizators; Diffusion Battery; Water in Diffusion; Working of a Diffusion Battery—Continuous Diffusion, Testing the Working of a Battery; Perturbations in the Working of a Diffusion Battery; Exhaustion of Cossettes and Their Drying; Preliminary Epuration and Heating of Diffusion Juices. *Epuration.* Limestone and Limekilns; Liming; Carbonatation; Filter-presses; Second Carbonatation; Mechanical Filtration of Juices and Syrups; Sulphuring of Juices and Syrups; Other Epurating Agents; Electrical Epurating Processes.

Vol. II. Evaporation, Graining and Factory Control. 225 illustrations. 6 x 9. cloth. 653 pp. N. Y., 1907. net, $5.00

Contents: Evaporation; General Considerations; Evaporators; Multiple Effects; Multiple-effect Accessories; Condensation; Air Pumps; Multiple Reheating; Practical Considerations; Perturbations; Stoppage and Cleaning of a Multiple Effect; Calculations Relating to the Evaporation; Calculations Relating to Multiple-effect Reheating; Calculations Relating to Various Portions of a Multiple Effect; Condensers; Manufacture of Raw Sugar; Graining; Vacuum Pans;

Crystallization; Preparing of the Massecuite for Curing; Curing; Trausportation and Storage of Sugar; Working After-products; Crystallizing Tanks; Crystallization in Motion; Graining After-product; Epuration and Return of After-product into the Juices; Return of After-product into the Graining Pan and Crystallizators; Curing After-products; Manufacture of White Sugar; Granulated Sugar; Loaf-sugar Manufacture; Sugar in Cakes and Bars; Sawing, Breaking, and Crushing Sugar; After-products and Sugar Losses by Refining; Utilization of Residues; Extraction of Sugar from Molasses by Osmosis; Elution; Substitution and Separation; Strontia and Baryta Processes for Desugarization of Molasses; Desugarization of Molasses by Means of Lead Salt and Electrolysis; Other Modes of Molasses Utilization; Residuary Water; Steam Economy; Boilers; Steam Engines and Centralization of Motive Power; Heat Losses; Practical Work of a Beet-sugar Factory; Hints Respecting General Management; Controls; Slicing Stations; Summer Work; Calculations for a Beet-sugar Factory, and Formulæ; Some of the Factories Visited; Appendix; Tables.

Wiechmann, Ferdinand G. Sugar Analysis. For Cane-Sugar and Beet-Sugar Houses, Refineries and Experimental Stations, and as a handbook of instruction in school of chemical technology. *Third Edition, rewritten.* 5¾ x 8¼. cloth. 321 pp. N. Y., 1914. **net, $3.00**

Contents: Instruments Used in Sugar Laboratories; Polariscopes and Accessories; Sucrose Determination of Optical and Chemical Analysis; Sucrose Determination by Optical and Chemical; Constituents of Sugar Other Than Sucrose; Materials Used in the Sugar Industries; Analytical Control in Cane-Sugar and Beet-Sugar Manufacture; Analytical Control in Refineries; Resumé of the Work of the International Commission for Uniform Methods of Sugar Analysis.

EXPLOSIVES

Barnett, E. deB. Explosives. 33 illustrations. 5½ x 8½. cloth. 256 pp. London, 1919. (Industrial Chemistry Series.) $5.00

Contents: Introduction; Gunpowder; Explosive Compounds; Smokeless Propellants; Blasting Explosives; Safety Coal Mine Explosives; Percussion Caps, Detonators and Fuzes; Matches, Pyrophoric Alloys and Pyrotechny; Explosive Properties; Sensitiveness and Stability.

Bernadou, John B. Smokeless Powder, Nitro-Cellulose and Theory of the Cellulose Molecule. Illustrated. 5¼ x 7¾. cloth. 210 pp. N. Y., 1908. **net, $2.50**

Contents: Origin; Nomenclature, Definitions, Earlier Views as to Nitro-Cellulose Composition and Constitution; Conception of Progression in Relation to Composition and Constitution; Solutions of Nitro-Cellulose; Theory of the Cellulose Molecule; Researches Upon the Nitration of Cotton, by M. Vielle; Pyrocollodion Smokeless Powders, by D. Mendeleef; Nitration of Cotton, by M. Bruley; Development of Smokeless Powder.

Berthelot, M. Explosives and Their Powers. Translated and condensed from the French by C. Napier Hake and William MacNab. Illustrated. 6 x 9. cloth. 563 pp. London, 1892. $12.00

The translation of this well known work of the celebrated French chemist, M. Berthelot, president of the Commission des Substances Explosifs, is published with his sanction.

Bichel, C. E. New Methods of Testing Explosives. Translated and edited by Axel Larsen. 19 illustrations. 6¼ x 9 cloth. 62 pp. London, 1905. $2.75

Contents: Testing-stations; Power-Gauges; Products of Combustion; Heat of Decomposition; Rate of Detonation; Length and Duration of Flame; After-flame Ratio; Transmission of Explosion; Conclusions; Efficiency.

Brunswig, H. Explosives. A synoptic and critical treatment of the literature of the subject as gathered from various sources. Translated and annotated by C. E. Munroe and A. L. Kibler. 45 illustrations. 6 x 8¼. cloth. 365 pp. London, 1912. $3.75

Contents: General Behavior of Explosive Systems; Velocity of Explosive Reactions; Explosions Pressure; Temperature of Explosions; Gases from Explosive Reactions; Explosions by Influence; Flame of an Explosion; Characteristics of Particular Explosives; Propellants; Blasting Explosives.

Chalon, P. F. Les Explosifs Modernes. *Third Edition.* 217 illustrations. 7 x 9¾. cloth. 789 pp. Paris, 1911. **net, $7.50**

Colver, E. deW. S. High Explosives. A practical manual. 155 illustrations. 6½ x 10. cloth. 850 pp. London, 1918. $12.50

Contents: Historical; The Raw Materials; Recovery of the Simple Aromatic Hydrocarbons from Coal-Tar; Recovery of the Phenols; Resorcin; Naphthol; Recovery of the Amines; American and Russian Petroleum; Testing and Analysing the Raw Materials; Nitration of Aromatic Compounds in General; Specific Gravities and Concentrations of the Nitric and Sulphuric Acids as Used for the Purposes of Nitration; Testing and Analysis of Nitric Acid; Analysis of Sulphuric Acid and Oleum; Testing Waste Acid; Regeneration of the Waste Acid; Recovery of the Nitrous Fumes as Nitric Acid; Nitrobenzene; Dinitrobenzene; Trinitrobenzene; Nitrotoluene; Dinitrotoluene; Trinitrotoluene; Nitro Compounds of the Higher Homologues of Benezene; Nitronaphthalene; Dinitronaphthalene; Trinitronaphthalene; Tetranitronaphthalene; Properties and Uses of the Nitronaphthalenes: Nitrophenol; Dinitrophenol; Picric Acid; Derivatives of Picric Acid; Nitrocresols; Nitroresorcins and Nitronaphthols; Hexanitrodiphenylamine, Polynitroanilines; Nitro Aromatic Compounds of Various Compositions; Nitroparaffins; Rules and Regulations Regarding the Manufacture of Nitro Compounds; The Toxic Effect of Nitrous Fumes, Nitrohydrocarbons and Picric Acid, and

Its Prevention During the Manufacture of Explosives; Methods of Manipulation; Use and Application of Explosives; Projectiles; Detonators and Ignition; Products of Explosion; Poisonous Action of the Products of Explosion; General Properties of Explosives; Pressure of the Gases of Explosion; Heat of Combustion and Temperature of Explosion; Velocity of Detonation; Sensitivity of Explosives; Character and Duration of Flame; The Energy of Explosives; Appendix: Review of Patents Dealing with Nitro Compounds; Specifications.

Daniel, D. J. Poudres et Explosifs. Dictionaire des Matières Explosives. Préface de M. Berthelot. Illustrated. 6½ x 9½. cloth. 825 pp. Paris, 1902. net, $10.50

Durnford, E. Manufacture of Nitro-Lignin and Sporting Powder. Illustrated. 5¾ x 9. cloth. 90 pp. London, 1912. net, $1.90

The book is divided into parts which deal briefly with the Manufacture of Nitro-Lignin, as a base for sporting powder, and the Manufacture of Sporting Powder, respectively.

Eissler, Manual. Modern High Explosives. Nitro-Glycerine and Dynamite. Their manufacture, use, and application to mining and military engineering. Pyroxyline, or Gun-cotton. Fulminates, Picrates and Chlorates. *Third Edition.* 6 x 9. cloth. 406 pp. N. Y., 1914. $5.00

Contents: Chemistry and Analysis of Various Bodies Which Enter Into the Manufacture of the High Explosives; Nitro-glycerine: Its Manufacture, Chemical and Physical Properties; The Various High Explosives Prepared with Nitro-glycerine, and Their Properties; Other Varieties of High Explosives; Pyroxyline, Gun-cotton, Nitro-cellulose; Fulminating Compounds; Analysis of Nitro-glycerine Compounds; Directions for Using the High Explosives; Electricity as Applied to Blasting Operations; Principles of Blasting Force and Effect of Explosive Bodies; Mining and Engineering Problems; Large Mines; Destruction of Walls, Obstructions to Navigation, Iron Plates, and Cannons;; The Application of High Explosives in Agriculture; Blasting of Trees, Grubbing of Stumps, Blasting of Piles; Submarine Mines; The Application of the High Explosives for Military Purposes; Appendix: Questions Relating to the Preservation of Nitro-glycerine Compounds; Proofs of Stability; Dynamite with Nitrate of Ammonium Base; Nitro-gelatine; Gun-cotton; The Qualities of Explosive Bodies; Explosions by Influence; The Origin of the Nitrates.

Guttmann, Oscar. The Manufacture of Explosives. A theoretical and practical treatise on the history, the physical and chemical properties, and the manufacture of explosives. 2 vols. 328 illustrations. 6 x 9. cloth. 819 pp. London, 1895. $20.00

Contents: Prime Materials and Ingredients of Explosives; General Properties of Explosives; Black Powder; Explosives Related to Black Powder; Absorbing Powders for Dynamite; General Remarks on Black Powder Factories; Properties of Black Powder; Gun-cotton; Other Kinds of Nitro-cellulose; Explosives Derived from Sugars; Nitro-glycerin; Explosives from Aromatic Hydrocarbons; Fulminate of Mercury, of Silver, of Gold; Utilization of Waste Acids; Dynamite; Blasting Gelatine and Gelatine Dynamite; Sprengel's Explosives and Safety Blasting Materials; Smokeless Powders; Caps and Detonators; Fuses; Apparatus for the Examination of Explosives; Storage and Carriage of Explosives; Heat Tests as Applied to Explosives of the Nitro-compound Class; Electric Lighting of Factories and Magazines for Explosives.

Guttmann, Oscar. The Manufacture of Explosives. Twenty years' progress. Four Cantor lectures delivered at the Royal Society of Arts in 1908. 12 illustrations. 6 x 9. cloth. 92 pp. London, 1909. $2.00

Koppe, S. W. Glycerine. Its introduction, uses and examination. For chemists, perfumers, soapmakers, pharmacists, and explosives technologists. 7 illustrations. 5¼ x 7½. cloth. 260 pp. New York, 1915. $3.50

Contents: Chemical Properties of Glycerine; Compounds and Decomposition Products of Glycerine; Products and Properties of Glycerine; Nitro-Glycerine; Properties of Nitro-Glycerine; Dynamite; Lead Glyceride (Glycerine Cement); Glycerine as a Softening Substance; Preparations of Glycerine and Glue; Glycerine Applied to the Manufacture of Inks; Glycerine as a Solvent; Various Applications of Glycerine; Chemical Analysis of Glycerine; Investigation of Nitro-Glycerine and Dynamite.

MacDonald, G. W. Historical Papers on Modern Explosives. With an introductory by Sir Andrew Noble. Illustrated. 5½ x 8½. cloth. 200 pp. London, 1912. net, $2.75

Contents: Howard's Discovery of Fulminate of Mercury; Beaconnot's Discovery of Nitro-starch; Schonbein's Discovery of Guncotton; Guncotton in France, Scotland and England; The Patents of Schonbein, Tonkin, and Abel; Letters from Berzelius, Hall and Schonbein on Guncotton; The British Association Committee on Guncotton; The Manufacture of Guncotton in Austria and at Waltham Abbey; Abel's Work on Guncotton; Sobrero's Discovery of Nitro-glycerin; Nitroglycerin in Holland and England; Nobel's Patents for the Manufacture of Nitro-glycerin, Dynamite, Straight Dynamite, Blasting Gelatine and Gelignite and Ballistite; The Analysis and Composition of Nitroglycerin; The Decomposition of Nitroglycerin by Caustic Potash; Certain Chemical Decomposition of Nitro-glycerin.

Marshall, Arthur. Explosives. *Second Edition.* 2 vols. 157 illustrations. 7¾ x 10. cloth. 518 pp. Philadelphia, 1917. $22.00

Vol. I. History and Manufacture.

Contents: Historical; Early History; Development of Gunpowder; Progress of Explosives in the Eighteenth and Nineteenth Centuries; Manufacture of Saltpetre, Charcoal and Sulphur; Manufacture of Gunpowder; Acids; Nitric Acid; Mixed and Waste Acids; Manipulation; Nitric Esters of Carbohydrates; Theory of Nitration of Cellulose; Cellulose; Manufacture of Nitro-Cellulose; Stabilization of Nitro-Cellulose; Ni-

tric Esters of Other Carbohydrates; Nitric Esters of Glycerine; Manufacture of Nitro-Glycerine; Low-freezing Nitro-Glycerine; Nitro-Aromatic Compounds; By-products of Coal Distillation; Nitro-Derivatives of Aromatic Hydrocarbons; Other Nitro-Aromatic Compounds; Smokeless Powders; Slow-Burning Smokeless Powders; Requirements of a Slow-Burning Smokeless Powder; Fast-Burning Smokeless Powders; Solvents; Blasting Explosives; Nitro-Glycerine High Explosives; Chlorate Explosives; Ammonium Nitrate Explosives.

Vol. II. Properties and Tests.

Contents: Properties of Explosives; Physical Characters and Tests; The Pressure and Heat of Explosion; Power and Violence of Explosion; Ignition and Detonation; Some Special Explosives, etc.; Fuses; Naval and Military Explosives; Commercial High Explosives; Coal-Mine Explosives; Fireworks; Stability Buildings; Stability Tests; Materials and Their Analysis; Appendices.

Marshall, Arthur. A Short Account of Explosives. 29 illustrations. 7½ x 10. cloth. 104 pp. Phila., 1917. $1.75

Contents: Introductory; Black Powder and Similar Mixtures; Nitrocellulose; Nitroglycerine and Nitroglycerine Explosives; Military High Explosives; Commercial High Explosives; Smokeless Powders; Fireworks; Properties of Explosives; Ignition and Detonation; Precautions.

Marshall, John A. The Manufacture and Testing of Military Explosives. 59 illustrations. 5½ x 8¼. cloth. 270 pp. New York, 1919. $3.00

Martin, G., and Barbour, Wm. Industrial Nitrogen Compounds and Explosives. A practical treatise on the manufacture, properties, and industrial uses of nitric acid, nitrates, nitrites, ammonia, ammonium salts, cyanides, cyanamide, etc., including the most recent modern explosives. *Second Edition.* Illustrated. 6½ x 10. cloth. 125 pp. New York, 1917. $4.00

Ramsay, A. R. J., and Weston, H. C. A Manual of Explosives. Illustrated. 5 x 7. cloth. 127 pp. New York, 1916. net, $1.00

Rise and Progress of the British Explosives Industry. Published under the auspices of the Seventh International Congress of Applied Chemistry by its Explosives Section. Illustrated. 10 x 12. cloth. 432 pp. London, 1909. net, $5.25

Sanford, P. G. Nitro-Explosives. A practical treatise concerning the properties, manufacture, and analysis of nitrated substances, including the fulminates, smokeless powders and celluloid. *Second Edition, revised and enlarged.* 60 illustrations. 6 x 8¾. cloth. 312 pp. London, 1906. net, $4.00

Contents: Introduction; Nitro-Glycerine; Nitro-Cellulose; Dynamite; Nitro-Benzol; Roburite, Bellite, Picric Acid; Smokeless Powders in General; Analysis of Explosives; Firing Point of Explosives; Heat Tests; The Determination of the Relative Strength of Explosives.

Schwartz, Dr. Von. Fire and Explosion Risks. Translated by C. T. C. Salter. 6½ x 9. cloth. 378 pp. London, 1917. $6.00

A handbook dealing with the Detection, Investigation and Prevention of Dangers Arising from Fires and Explosions of Chemico-Technical Substances and Establishments.

Smith, G. Carlton. Trinitrotoluenes and Mono- and Dinitrotoluenes. Their manufacture and properties. 5¼ x 8. cloth. 140 pp. N. Y., 1918. $2.00

Contents: Introduction; Historical; The Theory of the Nitration of Toluene; The Manufacture of TNT; The Purification of TNT; Inspection and Testing of TNT; Properties of the Trinitrotoluenes; Properties of the Mono- and Dinitrotoluenes; Accidents in TNT Plants; TNT Diseases.

Weaver, E. M. Notes on Military Explosives. *Fourth Edition, revised and enlarged.* Illustrated. 6 x 9. cloth. 390 pp. New York, 1917. $3.75

Contents: Principles of Chemistry; Substances Used in the Manufacture of Explosives; General Remarks on Explosives; Progressive Explosives; Service Tests of Explosives; Storage of Explosives; Handling High Explosives; Demolitions; Appendix.

CELLULOSE—CELLULOID

Bockmann, F. Celluloid; Its Raw Material, Manufacture, Properties and Uses. A handbook for manufacturers of celluloid and celluloid articles, and all industries using celluloid; also for dentists and teeth specialists. Translated from the *Third Revised German Edition.* 49 illustrations. 6¼ x 9¼. cloth. 120 pp. London, 1907. $2.50

Contents: Raw Materials for the Manufacture of Celluloid; The Manufacture of Celluloid; Employment of Pyroxylin for Artificial Silk; Properties of Celluloid; Testing; Application and Treatment.

Cross, C. F., and others. Cellulose. An outline of the chemistry of the structural elements of plants. With reference to their natural history and industrial uses. *New Edition.* Illustrated, plates. 6 x 9. cloth. 344 pp. New York, 1916. $5.50

Contents: Typical Cellulose and the Cellulose Group; Compound Celluloses; Experimental and Applied; Appendix, I Photo-Micrographs; Appendix, II Index by Author and by Subjects.

Cross, C. F., and Bevan, E. J. Researches on Cellulose. *Second Edition.* 3 vols.
Vol. I. *(1895-1900).* 5½ x 8. cloth. 192 pp. London, 1907. *Reprinting*
Vol. II. *(1900-1905).* 5½ x 8. cloth. 195 pp. London, 1913. $3.25
Vol. III. *(1905-1910).* 5½ x 8. cloth. 183 pp. London, 1912. $3.25

Masselon, Roberts et Cillard. Le Celluloid, Fabrication, Applications Substituts. 159 illustrations, 7 plates. 5½ x 9. hf. morocco. 534 pp. Paris, 1911. net, $6.75

Masselon, Roberts and Cillard. Celluloid. Its manufacture, applications and substitutes. Translated from the French by H. H. Hodgson. 160 illustrations, 7 plates. 6½ x 9. cloth. 367 pp. London, 1912. *Reprinting*

Contents: Manufacture. Composition, Origin and Properties; Nitrocellulose; Commercial Nitration Processes; Rationale of Nitration; Bleaching of Nitrocellulose Used in Celluloid Manufacture; Drying of Nitrocellulose; Steeping the Nitrocellulose; Staining of Celluloid; Rolling, Compression, Cutting and Dressing; Manufacture of Tubes; Utilization of Waste; General Organization of a Celluloid Works; Analysis Required in a Celluloid Works; Mechanical Tests on Celluloid; Effect of External Influences on Celluloid; Inflammability; Precautions to be Exercised in Celluloid Works. *Applications of Celluloid.* Manufacture of Celluloid Combs; Handles of Sticks and Umbrellas; Manufacture of Hollow Articles; Celluloid Linen; Printers' Blocks; Stamps; Artificial Teeth; Phonographic Cylinders; Beads and Buttons; Celluloid Solutions and Lacquers; Coating of Objects with Celluloid; Use of Celluloid in Photography; Decoration and Various Uses of Celluloid. *Unflammable Celluloids and Substitutes.* Replacement of Camphor; Acetates of Cellulose.

Sindall, R. W., and Bacon, W. Wood and Cellulose. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Worden, Edward C. Nitrocellulose Industry. A compendium of the history, chemistry manufacture, commercial application and analysis of nitrates, acetates and xanthates of cellulose as applied to the peaceful arts with a chapter on gun cotton, smokeless powder and explosive cellulose nitrates. Two volumes. 324 illustrations. 6½ x 9½. cloth. 1239 pp. net, $10.00

Contents: Cellulose; The Cellulose Nitrates (Theory); Nitration of Cellulose (Practice); Cellulose Nitrate Solvents and Non-solvents; Fusel Oil, Natural and Synthetic; Amyl Alcohols; Manufacture and Properties of Amyl Acetat; Natural, Artificial, Synthetic Camphor; Camphor Substitutes; Paint Removers; Turpentine Substitutes; Pyroxylin Solutions; Pyroxylin Lacquers; Bronzing Liquids; Waterproofing Compositions; Artificial Leather, Fur, Skin, Feathers, Rubber; Pyroxylin-Coated Leather and Splits; Patent and Enameled Leather; Celluloid, Pyralin, Xylonite, Viscoloid; Pyroxylin Plastics; Celloidin and Cellulose Nitrates in Microscopy; Collodion and Celluloid Nitrates in Pharmacy, Medicine; Film Manufacture and Photography; Artificial Silk, Whalebone, Gorse, Horsehair; The Cellulose Acetates; Gun Cotton and the Explosive Cellular Nitrates; Viscose, Viscoid, and the Cellulose Xanthates; Denatured Ethyl Alcohol; Patent, Author, and Subject Index.

Worden, Edward C. Technology of Cellulose Esters. A theoretical and practical treatise on the origin, history, chemistry, manufacture, technical application and analysis of the products of acylation and alkylation of normal and modified cellulose. Including Nitrocellulose, Celluloid, Pyroxylin, Collodion, Celloidin, Guncotton, Acetylcellulose and Viscose, as applied to Technology, Pharmacy, Microscopy, Medicine, Photography and the Warlike and the Peaceful Arts. In ten volumes. Each sold separately.

Vol. VIII., Carbohydrate Carboxylates (Cellulose Acetate). Illustrated. 6½ x 9½. cloth. 611 pp. New York, 1916. net, $5.00

Contents: Raw Materials; Manufacture of Cellulose Esters; Cellulose Acetate Solvents, Non-Solvents, and Plastic Inducing Bodies; Commercial Application of the Uninflammable Cellulose Esters; Analysis of the Uninflammable Cellulose Esters.

In Preparation.

Vols. I. to VII., and Vols. IX. and X.

PAPER

Andes, L. E. Treatment of Paper for Special Purposes. A practical introduction to the preparation of paper products for a great variety of purposes. Translated from the German by Charles Salter. 48 illustrations. 5 x 7. cloth. 239 pp. London, 1908. $3.00

Contents: Parchment Paper, Vegetable Parchment; Paper for Transfer Pictures (Metachromotypes); For Preserving and Packing Purposes, Grained Transfer and Fireproof and Antifalsification Paper, Paper Articles; Gummed, Hectograph, Insecticide, Chalk and Leather, Luminous, Blue Print, Blotting; Metal and Medicated, Marbled, Tracing and Copying, Photographic, Fumigating and Test Papers; Papers for Cleaning and Polishing Purposes; Lithographic Transfer, Sundry Special and Waterproof Papers; The Characteristics of Paper—Paper Testing.

Beadle, Clayton. Chapters on Papermaking. *Second Edition.* 5 vols. 4¾ x 7¼.

Vol. I. Comprising a Series of Lectures delivered on behalf of the Battersea Institute. 152 pp. London, 1908. $2.50

Vol. II. Answers to Questions on Papermaking. 182 pp. $2.50

Vol. III. A short Treatise in which Boiling, Bleaching, Loading, etc., are discussed. 142 pp. $2.50

Vol. IV. Water Supplies and the Management of the Paper Machine, etc. 164 pp. $2.50

Vol. V. Concerning the Theory and Practice of Beating. 189 pp. $2.50

Beveridge, James. The Papermakers' Pocketbook. Specially compiled for paper mill operatives, engineers, chemists, and office officials. *Second and Enlarged Edition.* Illustrated. 4¼ x 6½. cloth. 270 pp. London, 1911. net, $4.00

The book in its present form contains much new matter of a technical character, especially that relating to the preparation of paper-making fibres from wood and other raw plants by the sulphite, soda, and sulphate processes. That part dealing with the Soda Recovery and the preparation and the composition of the Soda lyes has been greatly amplified. A new chapter has been added on the subject of loadings and their properties, etc. Special care has been devoted to the technical data culled from different sources, and only those items have been given which have been found to be reliable.

Bromley, Henry A. Outlines of Stationery Testing. A practical manual. Illustrated, 6 plates. 4½ x 7. cloth. 82 pp. London, 1915. $1.25

Contents: Paper: Its Physical, Microscopical, and Chemical Examination; Characteristics and Requirements of Special Papers; Parchments, Vellums, and Leather; Writing Inks; Sealing Waxes, Gums, and Office Paste; Miscellaneous Articles of Stationery.

Chalmers, T. W. Paper Making and its Machinery. Including chapters on the tub sizing of paper, the coating and finishing of art paper and the coating of photographic paper. 144 illustrations, folding plates. 8 x 11. cloth. 190 pp. London, 1920. $8.00

Contents: Introductory; Cutting, Cleaning and Boiling; Washing, Breaking and Bleaching; Purifying and Pulping; Beating; Refining; The Fourdrinier Machine; Fourdrinier Driving Arrangement; Details of Fourdrinier; Pulp Strainers; Tub Sizing; Calendering, Cutting and Winding; Wood Pulp; The Coating of Art Paper; The Finishing of Coated Art Paper; The Coating of Photographic Paper.

Clapperton, George. Practical Paper-Making. A manual for paper-makers and owners and managers of paper mills. With useful tables, calculations, etc. *Second Edition, revised and enlarged.* 15 illustrations. 5 x 7½. cloth. 236 pp. London, 1907. *Reprinting*

Contents: Chemical and Physical Properties of Various Fibers; Cutting and Boiling of Rags; Jute Boiling and Bleaching; Wet Picking; Washing, Breaking and Bleaching; Electrolytic Bleaching; Antichlor; Cellulose; Wood Pulp; Esparto and Straw; Beating; Loading; Starch; Coloring Matter; Resin Size and Sizing; Fourdrinier Machine; Animal Sizing; Drying; Glazing; Burnishing; Cutting; Finishing; Microscopical Examination; Tests; Recovery of Soda.

Cross, C. F., and Bevan, E. J. A Text-Book of Paper-making. *Fourth Edition,* with collaboration of J. F. Briggs. 16 plates, 99 illustrations. 5¾ x 8¾. cloth. 516 pp. N. Y., 1916. *Reprinting*

Contents: Introductory; Cellulose, Physical Structure of Fibres, Scheme for the Diagnosis and Chemical Analysis of Plant Substances; An Account of the Chemical and Physical Characteristics of the Principal Raw Materials; Special Treatment of Various Fibres; Boilers, Boiling Processes, etc.; Bleaching, Beating, Sizing; Loading, The Colouring of Paper Pulp, Paper Machines; Hand Made Paper, Calendering; Cutting, etc.; Caustic Soda, Recovered Soda, etc.; The Qualities of Paper Referred to the Structural and Chemical Characters of its Fibres, Paper Testing, General Chemical Analysis for Paper Makers, Site for Paper Mill; Water Supply; Water Purification, etc., Special Manufactures, Statistics, Bibliography.

Cross, C. F., Bevan, E. J., and Sindall, R. W., with the collaboration of W. N. Bacon. Wood Pulp and Its Uses. *Second Edition.* 25 illustrations. 5¾ x 8½. cloth. 275 pp. N. Y.. 1918. $3.50

Contents: The Structural Elements of Wood; Cellulose as a Chemical Individual and Typical Colloid; Sources of Supply of Wood Pulps; Manufacture of Mechanical Wood Pulp; Chemical Wood-Pulp; News and Printings; Wood Pulp Boards; Utilization of Wood Waste; Pulp for Moisture; Wood Pulps and The Textile Industries; Specimen Pages and Various Types of Paper; Bibliography.

Dawe, Edward A. Paper and Its Uses. A treatise for printers, stationers and others. With 34 samples of paper. 5¾ x 7½. cloth. 238 pp. New York, 1914. $4.00

Maddox, H. A. Paper; Its History, Sources, and Manufacture. Illustrated, tables. 5 x 7. cloth. 167 pp. New York, 1916. $1.00

Sindall, R. W. Paper Technology. An Elementary manual on the manufacture, physical qualities and chemical constituents of paper and of paper-making fibres. *Second Editon, revised.* 13 plates, 158 illustrations. 6 x 9. cloth. 284 pp. London, 1910. *Reprinting*

Contents: Introduction; Technical Difficulties Relating to Paper; Rag Papers; Esparto; Straw; Notes on Beating; Wood Pulp; Wood Pulp Papers; Packing Papers; "Art" Papers; Physical Qualities of Paper; Chemical Constituents of Paper; Microscopes; Fibrous Materials Used in Paper-Making; Analysis of a Sheet of Paper; The C. B. S. Units; Cellulose and its Derivatives.

Sindall, R. W. The Manufacture of Paper. 58 illustrations. 5¼ x 8½. cloth. 285 pp. New York, 1919. $3.00

Contents: Historical Notice; Cellulose and Paper-making Fibres; The Manufacture of Paper from Rags; Esparto and Straw; Wood Pulp and Wood Pulp Papers; Brown Papers and Boards; Special Kinds of Paper; Chemicals Used in Paper-making; The Process of "Beating"; The Dyeing and Coloring of Paper Pulp; Paper-mill Machinery; The Deterioration of Paper; Bibliography of Works Relating to Cellulose and Paper-making.

Sindall, R. W., and Bacon, W. N. The Testing of Wood Pulp. A practical handbook for the pulp and paper trades. Illustrated. 5¾ x 8¾. Cloth. 150 pp. London, 1912. net, $2.50

Contents: Moisture in Wood Pulp. Selection of Boles: Methods of Sampling; "Wedge" System; Systems Used in Other Countries; Some Experimental Results; Measurement of Probable Errors; Apparatus for Testing Pulp; Wood Pulp Contract Notes of Various Countries; Useful Tables. *Bleaching Qualities of Wood Pulp.* Post Samples and Trial Deliveries; Mill Practice and Deliveries; Other Conditions Which Affect Bleach Consumption; Laboratory Methods and Experiments; Question of a Standard Color; Measurement of Color; The Tintometer; Standard Methods of Testing; Chemistry of Bleaching Powder; Bleach Liquors; Oxidation of Cellulose.

Sindall, R. W., and Bacon, W. Wood and Cellulose. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Stevens, Henry P. The Paper Mill Chemist. *Second Edition, revised and enlarged.* 67 illustrations. 4½ x 6½. cloth. 325 pp. London, 1919. $4.00

Contents: English and Metrical Systems of Weights and Measures; Methods of Chemical Analysis; Fuels; Water; Raw Materials and Detection of Adulterants; Fibrous Raw Materials—Half-Stuffs and Their Treatment; Paper Analysis and Paper Testing; Sizes and Weights of Papers; Paper Trade Customs.

Strachan, James. The Recovery and Re-Manufacture of Waste-Paper. A practical treatise. Illustrated. 6½ x 10. cloth. 167 pp. Aberdeen, Scotland, 1918. $5.00

Contents: Recovery of Waste-Paper Stock. Historical; The Advantages and Disadvantages of Waste-Paper as a Raw Material; Sources of Supply; Sorting and Grading of Waste-Paper; Standard Grades of Waste Paper; Packing and Stocking of Waste Paper; Waste Paper Prices and Values. *Re-Manufacture—Mechanical Treatment.* General Principles; Dusting and Cleaning of Waste Paper; Disintegration of Waste Paper; Beating and Refining of Waste Paper; Consumption of Power and Steam in Treatment of Waste Paper; Composition and Treatment of Various Grades; Special Treatment of Miscellaneous Waste-Paper; Furnishing Waste-Paper Stock. *Re-Manufacture—Chemical Treatment.* Removal of Ink and Color from Waste-Paper; Historical, Various Processes; Theoretical Considerations, Choice of Plant and Process. *Re-Manufacture—Miscellaneous.* Typical Waste-Paper Furnishes; Manipulation of Waste Paper Stock on the Paper Machine; Mill Control in the Re-Manufacture of Waste Paper; Miscellaneous Applications of Waste-Paper; Analysis of Paper Containing Waste-Paper Stock.

Thomas, C. W. Paper Makers' Handbook. New York, 1917. *In Press*

Watt, Alexander. The Art of Paper-Making. With a description of the machinery and appliances used. *Fourth Edition.* 82 illustrations. 5¼ x 7¾. cloth. 272 pp. London, 1911. $4.00

Contents: Cellulose; Materials Used in Paper-making; Treatment of Rags; Treatment of Esparto; Treatment of Wood; Treatment of Various Fibres; Bleaching; Beating or Refining; Loading; Sizing; Coloring; Making Paper by Hand; Making Paper by Machinery; Calendering, Cutting, and Finishing; Colored Papers; Miscellaneous Papers; Machinery Used in Paper-making; Recovery of Soda from Spent Liquors; Determining the Real Value or Percentage of Commercial Sodas, Chloride of Lime, etc.; Useful Notes and Tables.

Weichelt, August. Buntpapier Fabrikation. 178 illustrations. 6¼ x 9¼. cloth. 331 pp. Berlin, 1919. $5.00

COAL TAR DYES AND PRODUCTS

Barnett, E. D. Coal Tar Dyes and Intermediates. 5½ x 8¾. cloth. 229 pp. London, 1919. (Industrial Chemistry Series.) $3.50

Contents: Introduction. *The Intermediate Compounds.* Nitration; Amidation; Sulphonation; Hydroxylation; Miscellaneous Intermediates. *The Dyestuffs.* The Nitroso-Dyes; The Nitro-Dyes; The Azo-Dyes; The Diphenylmethane Dyes; The Triphenylmethane Dyes; The Indamines and Indophenols; The Azines; The Oxazines; The Thiazines; The Indigoid Dyestuffs; The Anthraquinone Dyes; The Quinoline Dyes; The Acridine Dyes; The Sulphur or Sulphide Dyes.

Barnett, E. DeB. Synthetic Dyes. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Beacall, T., Challenger, F., Martin, G., and Sand, H. J. S. Dyestuffs and Coal-Tar Products. Their chemistry, manufacture and application. 29 illustrations. 6½ x 10. cloth. 166 pp. New York, 1915. $5.00

Contents: Industry of Coal-Tar and Coal-Tar Products; Industry of the Synthetic Coloring Matters; The Industry of Natural Dyestuffs; The Dyeing and Color-Printing Industry; Modern Inks; Saccharine and Other Sweetening Chemicals; Industry of Modern Synthetic Drugs; Industry of Photographic Chemicals.

Cain, John C. The Manufacture of Intermediate Products for Dyes. *Second*

Edition. 25 illustrations. 5¾ x 8¾. 284 pp. London, 1919. $3.75

In the short period since this book was first published considerable additions have been made to the scientific and technical literature of the subject, particularly in America. These have been incorporated in the present revision of the book. Several of the descriptions have also been expanded, and some useful suggestions made by the reviewers have been adopted.

Christopher, J. E. Coal Distillation Gassification and By-Products. 41 illustrations. 5½ x 8¼. cloth. 98 pp. London, 1915. $2.00

Contents: Coal Distillation; Manufacture of Coal Gas; Coke Manufacture; Producer Gas; By-products; Tar; Ammonia; Benzol; By-products from Blast Furnaces.

Fay, Irving W. The Chemistry of Coal-Tar Dyes. *Second Edition, revised and enlarged.* 6 x 9. cloth. 500 pp. New York, 1919. $5.00

Contents: Introduction; Coal-Tar and Its Products; Hydrocarbons and Their Derivatives; Nitro and Nitroso Dyes; Triphenylmethane Dyes; Classification of the Coal-Tar Dyes; The Azo Dyes; The Seven Food Colors; The Pyronines; The Indamines, Indophenols, Thiazines, Oxazines; The Eurhodines and Safranines; The Quinoxaline, Quinoline, and Acridine Dyes; Aniline Black; The Alizarin Dyestuffs; Indigo; The Sulphur Dyes; Mordants; Vat Dyes; Thiazol Dyes; Experimental Work.

Findlay, Alexander. The Treasures of Coal Tar. Illustrated. 5 x 7½. cloth. 137 pp. New York, 1917. $2.00

Contents: The Production of Coal Tar; The Distillation of Coal Tar; The Constituents of Coal Tar and Their Applications in the Raw State; Molecular Architecture; The Production of Dyes from Coal Tar; Azo Dyes; Anthracene Dyes and Vat Dyes; Indigo and Its Derivatives; Drugs; Perfumes and Photographic Developers; Explosives.

Gardner, Walter M. The British Coal-Tar Industry. Its origin, development and decline. Illustrated. 6 x 8½. cloth. 446 pp. Philadelphia, 1915. $3.75

Contents: Aniline or Coal-Tar Colors; Artificial Production of Alizarine; History of Alizarine and Allied Coloring Matters; Newer Artificial Coloring Matters Derived from Benzine; Indigo and Its Artificial Production; Coloring Matters Produced from Coal-Tar; Recent Progress in the Coal-Tar Industry; Scientific Development of the Coal-Tar Color Industry; Origin of the Coal-Tar Color Industry, and the Contribution of Hoffman and His Pupils; The Synthesis of Indigo; Relative Progress of the Coal-Tar Industry in England and Germany During the Past Fifteen Years; The Indigo Crisis; Applied Chemistry, English and Foreign; The Relation Between Scientific Research and Chemical Industry; History of the Coal-Tar Color Industry Between 1870 and 1885; Note on the Perkin Jubilee; Perkin Obituary Notice; The Founding of the Coal-Tar Color Industry; Letter from Prof. H. Caro to Prof. R. Meldola; Tinctorial Chemistry; Patent Law in Relation to the Dyeing Industry; The Coal-Tar Color Industry of England; The Artificial Color Industry and Its Position in This Country; The Supply of Chemical to Britain and Her Dependencies; Britain and Germany in Relation to the Chemical Trade; The Manufacture of Aniline Dyes in England; German Chemical Industry Thirty Years Ago; The Manufacture of Dyestuffs in Britain; The Chemical Industries of Germany; Patent Law Reform; The Supply of Dyewares; The Position of the Organic Chemical Industry; Index of Names; Index of Coloring Matters; Tabular and Statistical Information.

Lange, K. R. The By-Products of Coal-Gas Manufacture. Translated by Chas. Salter. 13 illustrations. 5 x 7½. cloth. 162 pp. London, 1915. $2.50

Contents: Production of Coal Gas; Coke; Retort Graphite; Gas Tar; The Gas Liquor; Treatment of the Gas-Purifying Agents; Treating the Cyanogen Sludge; Treating the Crude Liquors; Treatment of the Crude Ammonium Thiocyanate and Cuprous Thiocyanate; Potassium Ferricyanide; The Cyanogen Pigments; Sulphur and Sulphuric Acid.

Lunge, George. Coal-Tar and Ammonia. *Fifth and Enlarged Edition.* Three volumes, not sold separately. Illustrated. 6 x 9. 1687 pp. New York, 1916. $25.00

Abridged Contents: Coal Tar. Introductory; Processes for Obtaining Coal-Tar; The Properties of Coal-Tar and Its Constituents; The Applications of Coal-Tar Without Distillation; The First Distillation of Coal-Tar; Pitch; Anthracene Oil; Creosote Oil; Carbolic Oil (Middle Oil); Light Oil; Working-Up the Light Naphtha into Final Products. *Ammonia.* Historical Notes on Ammonia; Sources from Which Ammonia is Obtained; The Composition and Analysis of Ammoniacal Liquor, and Properties of Its Constituents; The Working-Up of Ammoniacal Liquor into Concentrated Liquor and Liquid Ammonia; Manufacture of Sulphate of Ammonia; Other Technically Important Ammonium Salts.

Nickals, Benj. Coal Tar Products. Genealogical tree, showing the more important compounds existing in and derived from coal tar. Revised by Wallace C. Nickals. 24¾ x 33. Chart, Mounted on buckram. London, 1915. $3.00

Ramsey, A. R. J., and Weston, H. C. Artificial Dye-Stuffs, Their Nature, Manufacture and Uses. Illustrated. 5¾ x 8¾. cloth. 221 pp. London, 1917. $2.00

Contents: Introduction; Distillation of Coal and Coal-Tar; Aniline and the Azo Dye-Stuffs; Anthracene Dyes; Artificial Indigo and Allied Dyes; Arylmethane Dyes; Azine and Heterocyclic Ring Dyes; Sulphide and Miscellaneous Dyes; Application of Artificial Dye-Stuffs.

Warnes, Arthur R. Coal Tar Distillation and Working Up of Tar Products. *Second Edition, revised and enlarged.* 78 illustrations. 6 x 9. cloth. 315 pp. London, 1917. $5.00

Contents: Coal Tar Composition; Effect of Nature of Raw Material and Heat of Carbonization on Physical Properties and Chemical Composition of Tar; Results of Practical Distillation; How Tar is Received from Gas Works; Tar

Tips; Storage of Tar; Construction of Storage Tanks; Pumps; Plant Used in the Distillation of Coal Tar; Distillation of Coal Tar; Plant for and Recovery of Cresylic and Carbolic Acids from Oil; Plant for and the Recovery of Benzols, Naphthas, etc.; First Distillations and Washings; The Rectification of Benzols and Naphthas; Plant for the Working Up of and Pyridine from Pyridine Acid; Recovery and Rectification of Pyridine Bases; Plant for the Manufacture of Crude Naphthalene and Anthracene; Pitch and Pitch Getting; Creosote; Gas Stripping; Tarworks' Tests; Appendix.

Warnes, Arthur R. Coal Tar and Some of its Products. Illustrated. 5 x 7½. cloth. 127 pp. N. Y., 1919. $1.00

Whittaker, C. M. The Application of the Coal Tar Dyestuffs. The principles involved and the methods employed. 5½ x 8¾. cloth. 225 pp. London, 1919. *(Industrial Chemistry Series.)* $3.00

Contents: General Survey of Dyeing; The Varied Uses of the Basic Dyestuffs; The Application of the Acid Dyestuffs; The Turkey-Red Industry, and Other Uses of the Alizarine Dyestuffs; The Application of the Direct Cotton Dyestuffs, Including Those Which Develop on the Fibre; The Azo-coloring Matters and Their Special Use in Dyeing; The Properties of the Resorcine Dyestuffs; The Application of the Sulphur Dyestuffs; The Application of the Vat Dyestuffs; The Dyeing of Union Materials, Including Garments; Colors Produced on the Fibre by the Oxidation of Coal Tar Products; Other Uses of Coal Tar Dyestuffs; Dyestuffs Other Than Coal Tar Dyestuffs Still in Use; The Valuation and Detection of Dyestuffs.

Zerr, George. Tests for Coal-Tar Colors in Aniline Lakes; a review of the coal-tar coloring matters generally used in the lake industry and their behavior with distinct chemical reagents. Translated by Charles Mayer. 6½ x 9. cloth. 230 pp. London, 1910. $6.00

PAINTS AND VARNISHES

Andes, Louis E. Iron Corrosion, Anti-Fouling and Anti-Corrosive Paints. Translated from the German by Charles Salter. *Second Edition, revised and enlarged,* by H. B. Stocks. 62 illustrations. 5½ x 8¾. cloth. 308 pp. London, 1918. $6.00

Contents: Introduction; Iron Rust and its Formation; Rust Prevention; Anti-Corrosive (Paint-Preventing) Paints; Linseed Varnish and Wood Oil; Pigments; The Influence of the Proportion of Drying Oil on the Durability of the Paint; The Preparation of Anti-Corrosive Paints, Paint Mixing and Grinding Machines; Anti-Corrosive Paints; Testing Paints; Official Standard Specifications for Ironwork Paints in Various Countries.

Andes, Louis, E. Oil Colors and Printers' Inks. A practical handbook treating of linseed oil, boiled oil, paints, artists' colors, lampblack and printers' inks, black and colored. Translated from the German. *Second Edition,* revised and enlarged by H. B. Stocks. 57 illustrations. 6 x 9. cloth. 235 pp. London, 1918. $4.00

Bersch, J. Manufacture of Mineral and Lake Pigments. Containing directions for the manufacture of all artificial artists' and painters' colors, enamel colors, soot and metallic pigments. Translated from the *Second Revised Edition* by Arthur C. Wright. 43 illustrations. cloth. 476 pp. London, 1901. $6.00

Contents: Physico-chemical Behavior of Pigments; Raw Materials Used in the Manufacture of Pigments; Assistant Materials; Metallic Compounds; The Manufacture of Various Mineral Pigments; Manufacture of Pigments of Organic Origin; Water Colors; Crayons; Confectionery Colors; Preparation of Pigments for Painting; Examination of Mineral Pigments; Examination of Lakes; Testing Dye Woods; Design of a Color Works; Commercial Names of Pigments.

Bottler, Max. German Varnish-Making. Translated, with notes on American varnish and paint manufacture, by A. H. Sabin. 50 illustrations. 5½ x 8. cloth. 370 pp. N. Y., 1912. $3.75

Contents: Introductory and Historical; Classification of Lacquer and Varnish; Raw Material for Making Lacquer and Varnish; Making Lacquer and Varnish; Oil-varnish and Oleo-resinous Varnish; Turpentine and Benzine Varnishes; Alcoholic and Other Volatile and Non-volatile Varnishes; The Coloring, Bleaching, and Filtering of Lacquers and Varnishes; Manufacturer of Printers' Ink, Lithographic Varnish, Soap, Resin and Casein Lacquers; Notes on Varnish Making; Paint: Its Constitution and Nature. *Appendix.* I. Notes on Analytical Methods; II. Crockett's Varnish Formulas.

Brannt, Wm. T. Varnishes, Lacquers, Printing Inks and Sealing Waxes. Illustrated. 6 x 9. cloth. 338 pp. New York, 1893. $3.00

Church, Arthur H. Chemistry of Paints and Painting. *Fourth Edition, revised and enlarged.* 5 x 7½. cloth. 388 pp. New York, 1915. $2.50

Dieterich, K. Analysis of Resins, Balsams, and Gum Resins: Their Chemistry and Pharmacognosis. With a bibliography. Translated from the German by Chas. Salter. 5¾ x 8½. cloth. 340 pp. New York, 1901. $3.50

Contents: General Discussion and Exposition; Origin, Habitat, General Properties, Commercial Varieties, Adulterants, Analysis and Bibliography of All Balsams, Resins and Gum Resins.

Fleury, P. The Preparation and Uses of White Zinc Paints. Translated from

the French by Donald Grant. With 32 tables. 5 x 7½. cloth. 279 pp. London, 1912. $3.00

Contents: Painting on Woodwork, Outside and Inside; Better Class Painting on Woodwork, Indoors and Outdoors; Painting on Plaster, on Mortar, and on Soft and Porous Ceilings; Hints on Painting with White Zinc; Testing Commercial Zinc Whites; The Experiments on the Dutch Commission Officially Entrusted to Make Comparative Trials between White Lead and White Zinc; Results and Criticisms of the Experiments of the Dutch Commission; Final Report of October 5, 1909; Manufacture and Different Treatments of White Zinc—Its Modifications and Improvements; The Legislative History of White Zinc Paint; Legislation. *Methods of Qualitative Analysis.* Examination of Paints; Fixed and Essential; Oils; Waxes; Formula for Encaustic and Waterproof Paints; Analysis of Paints; White Paints; Analysis of White Lead and White Zinc; Blacks; Red Pigments; Carmine and Lakes; Yellow Colors; Green and Blue Pigments; Brown Colors; Analysis of Binders or Liquids; Testing Preservation and Improvement of Varnishes by Ageing; Analysis of Yellow and White Wax; Selected Furniture Polish Recipe; Normal Polish for Floors, Parquets and Woodwork; Virgin Wax Polish for Flatting of Paints or Polishing of Varnishes; Formula for a Waterproof Composition for Plaster and Stone and Damp Walls; Special and More Economical Formula for Waterproofing Plaster.

Friend, J. N. The Corrosion of Iron and Steel. Illustrated. 5½ x 8. cloth. 315 pp. London, 1911. $2.50

Contents: History and Economic Value of Iron; Action of Air, Water and Steam on Iron; Various Theories of Corrosion; Essentiality of Acid to Corrosion; Factors Influencing the Rate of Corrosion of Iron Exposed to Natural Forces; Action of Acids, Alkalies and Oils upon Iron Influence of Aqueous Solutions of Single Salts; Influence of Aqueous Solutions of two or more Electrolytes; Passive State; Influence of Chemical Composition Upon the Corrodibility of Iron; Electrical and Galvanic Action; Relative Rate of Corrosion of Iron and Steel.

Friend, J. N. An Introduction to the Chemistry of Paints. 20 illustrations. 5 x 7½. cloth. 204 pp. London, 1910. $1.50

Contents: Air; Pigments Containing Oxide of Iron; Miscellaneous Oxide Pigments; Sulphur and Sulphide Pigments; Sulphate Pigments; Carbon and Carbon Blacks; Carbonate and Chromate Pigments; Prussian Blue and Ultramarine; Pigments Containing Copper; Organic Coloring Principles; The Lakes; Paint Vehicles; Driers and Linseed Oil; Resins and Gums; Varnishes; Testing Painters' Materials.

Gardner, Henry A. Paint Researches and Their Practical Applications. 155 illustrations. 6 x 9. cloth. 363 pp. Washington, 1917. net, $5.00

Contents: Growth of the Prepared Paint Industry and Its Relation to the Work of the Painter: White Pigment Industry; Physical Characteristics of Pigments and Paints; Tests of Lithopone; Washington Paint Oil Tests; Paint Protection for Portland-Cement Surfaces; Paints to Prevent Electrolysis in Concrete Structures; Paints for Metal; Marine Paints; Arlington Paint Tests; Observations on Painted Lumber; Impregnated Panel Tests; Fire Retardant Paints for Shingles and Other Wooden Structures; Composition of Paint Vapors; Toxic and Antiseptic Properties of Paints; Light-Reflecting Values of White and Colored Paints; Formation and Inhibition of Mildew in Paints; Fungi on Painted Surfaces; Changes Occurring in Oils and Paste Paints, Due to Autohydrolysis of the Glycerides; Effect of Pigments Upon the Constant of Linseed Oil; Storage Changes in Vegetable and Animal Oils; Paint Dryers and Their Application; Miscellaneous Oil Investigations; Application of Paints and Finishes to Wood.

Gardner, Henry A. Paint Technology and Tests. Illustrated. 6 x 9. 256 pp. New York, 1911. $4.00

Contents: Paint Oils and Thinners; A Study of Driers and Their Effects; Paint Pigments and Their Properties; Physical Laboratory Paint Tests; The Theory and Practice of Scientific Paint Making; The Scope of Practical Paint Tests; Conditions Noted at Inspection of Tests; Results of Atlantic City Tests; Results of Pittsburg Tests; A Laboratory Study of Test Panels; Additional Tests at Atlantic City and Pittsburg; North Dakota Paint Tests; Tennessee Paint Tests; Washington Paint Tests; Cement and Concrete Paint Tests; Structural Steel Paint Tests; The Sanitary Value of Wall Paints.

Gardner, H. A., and Schaeffer, J. A. The Analysis of Paints and Painting Materials. Illustrated. 6⅜ x 9⅜. cloth. 109 pp. New York, 1911. $2.00

Hall, C. H. Chemistry of Paints and Paint Vehicles. Illustrated. 5¼ x 7½. cloth. 140 pp. N. Y., 1906. net, $2.00

Contents: Determination of the Elementary Constituents of Paints; Raw Materials; Properties, Tests, and Methods of Analysis; Analysis of Dry Colors, Pastes, and Liquid Paints; Matching of Samples. *Paint Vehicles.* Oils, Varnishes, Japans and Driers; Thinners.

Hasluck, Paul N. Painters Oils, Colours, and Varnishes. Illustrated. 5 x 7½. 160 pp. N. Y., 1905. net, $1.00

Contents: Painters Oils and Vehicles; Colour and Pigments; White, Blue Chrome, Lake, Green, etc., Pigments; Driers; Paint Grinding and Mixing; Gums, Oils, and Solvents for Varnishes; Varnish Manufacture.

Hoff, J. N. Paint and Varnish Facts and Formulas. A handbook for the maker, dealer, and user of paints and varnishes. Containing over 600 recipes. 6 x 9. cloth. 179 pp. Newark, 1905. $2.00

Contents: White Paints and Pigments; The Oxides of Iron; The Chemical Colors; Classification of Pigments; Colors in Oil, Japan and Water; Oils and Solvents; Varnishes; Ready Mixed Paints; Kalsomines; Paint and Varnish Troubles and Their Remedies; Painting and Decorating; Formulas.

Holley, C. D. Analysis of Paint and Varnish Products. Illustrated. 5¼ x 8. cloth. 300 pp. N. Y., 1912. net, $2.50

Contents: Separation of Vehicle from Pigment; Estimation of Water in Paints; Water Emulsions and Emulsifiers; Estimation of Lin-

seed Oil and Its Adulteration in Mixed Paints; Determination of the Purity of Linseed Oil; Analysis of the Volatile Oils; Turpentine Thinners; Turpentine Substitutes; The Inert Pigments; Analysis of White Lead; Analysis of Sublimed White Lead and the Zinc Pigments; Determination of Fineness, Covering Power and Tinting Strength of Pigments; The Practical Testing Out of Paints; Analysis of White Paints; Analysis of White Paints According to Thompson; Kalsomine, Cold-water Paints, and Flat Wall Finishes; Composition of Colored Paints; Analysis of Indian Reds, Red Oxides, and Ochres; Analysis of Black Pigments and Paints; Analysis of Brown Pigments and Paints; Analysis of Blue Pigments and Paints; Analysis of Yellow, Orange, and Red Chrome Leads, Analysis of Vermilions; Analysis of Red Lead, Orange Mineral, and Litharge; Analysis of Paints for Manufacturing Purposes; Composition and Analysis of Fillers; Shingle Stains, Barn and Roof Paints; Analysis of Japans and Driers; Analysis of Shellac and Spirit Varnishes; Analysis of Oil Varnishes; The Practical Testing of Varnishes; Varnish Stains and Color Varnishes; Enamels and Varnish Specialties.

Holley, C. D. Lead and Zinc Pigments. 85 illustrations. 5¼ x 8. cloth. 359 pp. New York, 1909. net, $3.00

Contents: White Lead in Ancient Times; Development of the White Lead Industry in the United States; Brands, Production and Prices of White Lead; The Modern Application of the Dutch Process in the United States; The Carter Process; The Mild Process (Rowley); Matheson Process; The Sublimed Lead Pigments; White Lead Manufacture in Europe; Properties of White Lead; Lead Poisoning; Manufacture of Zinc Oxide; Properties and Uses of Zinc Oxide; Manufacture of Leaded Zinc; Zinc-Lead White; The Oxides of Lead; The Lead Chromates; Lithopone Physical Properties of White Lead; Practical Tests; The Art of Grinding White Lead, Pastes and Paints; Analysis of Commercially Pure White Leads; Analysis of the Zinc Pigments; Analysis of White Lead and Paints in Oil; Estimation of Water in White Lead and Paints; Qualitative Analysis of Combination White Leads and Pastes; Quantitative Analysis of Combination White Lead and Paints; Laboratory Equipment and Manipulation. Appendix.

Hurst, Geo. H. A Manual of Painters' Colors, Oils and Varnishes. For students and practical men. *Fifth Edition,* revised by Noel Heaton with a chapter on varnishes by M. B. Blackler. 89 illustrations. 5½ x 8. cloth. 540 pp. London, 1913. $4.50

Contents: Introductory; The Properties of Pigments in General; White Pigments—The Lead and Zinc Whites; Mineral Whites; Red Pigments; Orange and Yellow Pigments; Green Pigments; Blue Pigments; Brown Pigments; Black Pigments; Organic Pigments and Lakes; Oils and Solvents; Gums, Glues, and Resins; Varnishes; Paint; Appendix.

Hurst, G. H. Dictionary of Chemicals and Raw Products Used in the Manufacture of Paints, Colors, Varnishes and Allied Preparations. *Second Edition,* revised and enlarged by H. B. Stokes. 6 x 8¾. cloth. 378 pp. London, 1917. $5.00

Ingle, Harry. A Manual of Oils, Resins, and Paints. For students and practical men. Vol. I., Analysis and Valuation. 8 tables. 5¼ x 7¾. cloth. 129 pp. London, 1915. $2.00

Contents: Introduction; Introduction to the Chemistry of Oils; Physical Tests; Chemical Tests; Qualitative Tests for Oils; The Classification of Oils; The Systematic Examination of Oils, Fats and Waxes; Technological Analysis; Table of Oil Constants; Index.

Jennings, A. S. Paints and Varnishes. with Special Reference to Their Properties and Uses. 12 illustrations. 5 x 7¼. cloth. 116 pp. London, 1920. $1.00

Contents: The Characteristics of a Good Paint; Principal Pigments Used in Paint Making; Thinners Used in Paint; Paint-Mixing; The Application of Paints; Whitewashes and Distempers; Service Tests of Paints and Varnishes; Machinery Used in Paint-Making; Varnishes and Enamels; Tables.

Jennings, A. S. Paint and Color Mixing. A practical handbook. For painters, decorators, paint manufacturers, artists and all who have to mix colors. *Fifth Edition.* 17 plates. 5½ x 8¾. cloth. 255 pp. London, 1915. net, $2.50

Contents: Paint and Color Mixing; Introduction; Straining Paint; Colors or Stainers; Color Nomenclature; Matching and Mixing Colors; Reds and How to Mix Them, etc.; Ground Coats and Flattings; Putty, Hand-stopping, Knife and Brush Filling; Black Japan in Color Mixing; Glazing; Graining and Marble Grounds and Colors; Mixing Paints and Colors on the Manufacturing Scale; Water Paints, Distempers, etc.; Artists Water Colors and How to Mix Them; Testing Colors; Notes on Color Harmony; Proportions of Materials; Notes, etc.

Jennings, Arthur S. Commercial Paints and Painting. A handbook for architects, engineers, property owners, painters and Decorators, etc. 5¾ x 8½. cloth. 236 pp. (Van Nostrand's Westminster Series.) N. Y., 1914. $2.50

Contents: Object of Painting; Durability of Paint; Cost of Cheap and Superior Paints Compared; Cost of Keeping Property Painted; Specifying Paints; The Materials Used in Painting; Conditions which Determine the Economic Value of the Paint; Simple Tests for Painters' Materials; The Paint Most Suitable for Different Surfaces; How Paint and Varnish Should be Applied; Paint and Color Mixing; Tools and Plant; Defects in Painters' Work; Specifications for Painters' and Decorators' Work; Painting by Mechanical Means.

Jennison, F. H. The Manufacture of Lake Pigments from Artificial Colors. A useful handbook for color manufacturers, dyers, color chemists, paint manufacturers, drysalters, wallpaper-makers, Enamel and surface-paper makers. *Second Revised Edition.* 9 plates, 57 colored patterns. 5¾ x 8¾. cloth. 180 pp. London, 1920. $6.00

Contents: Introduction; Classification of Artificial Coloring Matters; The Nature and Manip-

ulation of Artificial Colors; Lake-forming Bodies for Acid Colors; Lake-forming Bodies for Basic Colors; Lake Bases; The Principles of Lake Formation; Red, Orange, Yellow, Green, Blue, Violet, and Black Lakes; The Production of Insoluble Azo Colors in the Form of Pigments; The General Properties of Lakes Produced from Artificial Colors; Striking, Washing, Filtering, and Finishing; The Matching and Testing of Lake Pigments; Sketch of Organic Combinations.

Jones, M. W. The Testing and Valuation of Raw Materials Used in Paint and Color Manufacture. 5 x 7½. cloth. 88 pp. London, 1900. $2.50

Contents: Compounds of: Aluminum; Iron; Potassium; Chromium; Tin; Copper; Lead; Zinc; Arsenic; Antimony; Calcium; Barium; Cadmium; Mercury; Cobalt; Carbon; China Clay; Ultramarine; Oils.

Laurie, A. P. The Pigments and Mediums of the Old Masters. With a special chapter on the microphotographic study of brushwork. 34 plates. 5¾ x 8¾. cloth. 210 pp. London, 1914. net, $3.75

Contents: Table of Pigments Prepared from Literary Sources; Methods of Examination of the Painted Surface by Means of the Microscope; On the Properties and Reactions of Certain Pigments Which Are of Importance in the History of Art; Examination of Illuminated Manuscripts from 700 to 1500 A.D.; Examination of Venetian Ducali and Coram Rege Rolls; Examination of Pigments on Pictures of Various Dates; On the Materials Used for Preparing Mediums; Methods of Examination and Detection of Mediums; Historical Information as to Methods Used; On the Examination of the Mediums Used on Certain Pictures; Microphotography of Brushwork.

McIntosh, J. G. Manufacture of Varnishes and Kindred Industries. Based on and including the "Drying Oils and Varnishes," of Ach. Livache. In three volumes. Illustrated. 8¾ x 8¾. cloth.

Vol. I. The Crushing, Refining and Boiling of Linseed Oil and Other Varnish Oils. *Third Edition, revised and enlarged.* 114 illustrations. 506 pp. London, 1919. $7.00

Contents: Historical Note; Properties of Drying Oils; Production of Linseed Oil; Composition of Linseed Oil; Refining and Bleaching Linseed Oil; Chemical Reaction of Linseed Oil; Linseed Oil FattyAcids; Testing of Linseed Oil; The Physical Properties of Linseed Oil; The Adulteration of Linseed Oil; The Technical Chemistry of Linseed Oil; Technical Chemistry of Linseed Oil and the Manufacture of Blown Oils and Linoleum; The Technical Chemistry of Linseed Oil; Time of Drying and Chemistry of Drying Process; Boiled Oil; Durability of Paint; Drying Oils other than Linseed Oil.

Vol. II. Varnish Materials and Oil Varnish Making. Illustrated. 216 pp. London, 1908. *Reprinting*

Contents: Amber and Amber Oil Varnishes; Asphaltum; Coal Tar, Bone and Stearine Pitch; India Rubber; Gutta Percha; Paraffin Wax; Cleaning, Assorting and Fusing Resins; Oil Varnish Making; Copal Oil Varnishes; Kauri Copal Varnishes; Brunswick Black; Super Black Japan; Testing Varnish; Utilization of Residues; Utilization of Varnish Makers' Waste Products.

Vol. III. Spirit Varnishes and Spirit Varnish Materials. 64 illustrations. 492 pp. London, 1911. *Reprinting*

Contents: Solvents; Characteristics of Spirit Varnish Solvents; Source, Preparation and Use of Various Solvents; Alcohol, Ether, and Ethereal Salts. *Oleo-Resinous Pine Products—Terpenes—Camphors.* The Oleo-Resiniferous Conifers; Sources and Methods of Obtaining Turpentine; Distillation of Turpentine; Testing and Substitutes; Distillation and Chemistry of Resin; Rosin Spirit—Rosin Oil; Chemistry of the Terpenes; Wood Tar, Wood Turpentine, Wood Creosote, etc. *Spirit Varnish Resins and Coloring Matters.* Benzoin; Dammar, Kauri, etc.; Dragons' Blood; Japanese, Chinese and Burmese Lacquers; Manilla Copal; Shellac; Colors and Stains. *Methods of Manufacture.* Principles of Spirit Varnish Manufacture; Amber and Asphaltum, Collodion, and Celluloid Spirit Varnishes; Copal Spirit Varnishes, Dammar Spirit Varnishes; India-Rubber Insulating, Mastic, and Matter Spirit Varnishes; Rosin Spirit Varnishes. *Spirit Varnishes, Analysis and Testing.* Technical Valuation; The Determination of the Resins and Solvents in Spirit Varnishes.

Maire, F. Colors, What They Are and What to Expect of Them. A series of practical treatises on development of the color making industry; preliminary study of colors; natural earth colors; chemical made colors; various division of groups of colors; black group of colors; brown group of pigments; raw and burnt umber; the mining of earth colors; the blue group of pigments; also the green, red, yellow and white; vehicles or thinness of pigments; system of grinding. Illustrated. 4½ x 8¾. cloth. 103 pp. Chicago, 1911. $0.60

Maire, Frederick. Modern Pigments and Their Vehicles. Their properties and uses, considered mainly from the practical side, and how to make tints from them. 5 x 7¼. cloth. 277 pp. New York, 1908. net, $2.00

Contents: Preface; Preliminaries; White Pigments; Yellow Pigments; Red Pigments; Green Pigments; Blue Pigments; Brown Pigments; Black Pigments; Synonyms; Vehicles Used in Grinding Pigments and in Applying Them; Substances Used as Correctives and Binders; Substances Used to Bind Pigments in Connection with Vehicles; Driers and Siccatives; The Compounding of Pigments; A List of the Principal Tints and of Pigments Required to Make Them.

Morrell, R. S., Waele, A. E., and Rideal, S. Rubber, Resins, Paints and Varnishes. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Parry, E. J., and Coste, J. H. Chemistry of Pigments. Illustrated. 6 x 8½. cloth. 288 pp. London, 1902. $5.00

Contents: Uses of Pigments; Methods of Application of Pigments; Inorganic Pigments; Organic Pigments.

Petit, G. Manufacture and Comparative Merits of White Lead and Zinc White Paints. Translated from the French by Donald Grant. 5½ x 8¾. cloth. 95 pp. London, 1907. net, $2.00

Recipes for the Color, Paint, Varnish, Oil, Soap and Drysaltery Trades. Compiled by an analytical chemist. *Second Revised and Enlarged Edition.* 5½ x 8½. cloth. 332 pp. London, 1912. $5.00

Contents: Pigments or Colors for Paints, Lithographic and Letterpress Printing Inks, etc.; Mixed Paints, Paint Removers and Preparations for Paint Making, Painting, Lime Washing, Paper Hanging, etc.; Varnishes for Decorators, Coach Builders, Cabinet Makers, Woodworkers, Metal Workers, Photographers, etc.; Soaps for Toilet, Cleansing, Polishing, etc.; Perfumes; Lubricating Greases, Oils, etc.; Cements, Pastes, Glues and Other Adhesive Preparations; Writing, Marking, Endorsing, Stencil and Other Inks, Sealing Wax and Other Requisites; Preparations for the Laundry, Kitchen, Stable and General Household Uses; Disinfectant Preparations and Sheep Dips; Leather Greases, Varnishes, Dressings, Polishes, etc.; Miscellaneous Preparations.

Sabin, Alvah H. The Industrial and Artistic Technology of Paint and Varnish. *Second Edition, revised.* Illustrated. 6 x 9. cloth. 483 pp. New York, 1917. net, $3.50

Contents: Early History; Varnish; Origin of the Name; Linseed-oil; Linoleum; Manufacture of Varnish; Tung-oil; Japans and Driers; Rosin; Spirit Varnishes; Pyroxylin Varnishes; Oil Paints and Paints in Japan; Varnish or Enamel Paints; Chinese and Japanese Lacquers; Protection of Metals Against Corrosion; Water-pipe Coating; Ship's-bottom Paints; Ship and Boat Painting; Carriage-painting; House-painting; Furniture Varnishing.

Sabin, A. H. White-Lead, its Use in Paint. 5 x 7½. cloth. 142 pp. New York, 1920. $1.25

Schweizer, Victor. The Distillation of Resins, and the Preparation of Rosin Products, Lamp-Black, Printing Inks, etc. *Second English Edition,* revised and rewritten by H. B. Stocks. 68 illustrations. 5¼ x 8¾. cloth. 220 pp. London, 1917. $5.00

Contents: Resins and Their Use; Resins, Their Sources and Properties; Rosin or Colophony; Hard Resins; Distillation of Hard Resins; Manufacture of Illuminating Gas from Rosin; Rosin Oils; Nature of the Crude Product; Rectification of Rosin Oil; Manufacture of Patent Lubricants; Rosin Soaps or Resinates; Manufacture of Resinate Varnishes, of Lamp-Black; Lamp-Black Chambers; Making Lamp-Black Pigments; Manufacture of Printing Inks; Other Lamp-Black Inks; Inks for Typewriting Machines.

Scott, W. G. White Paints and Painting Materials. Source and manufacture, composition and properties; uses and formulas; physical tests and chemical analysis. 62 illustrations. 6⅝ x 9½. cloth. 527 pp. Chic., 1910. *Reprinting*

Smith, J. Cruikshank. The Manufacture of Paint. A practical handbook for manufacturers, merchants, and painters. *Second Revised and Enlarged Edition.* 80 illustrations. 5¼ x 8¼. cloth. 288 pp. New York, 1915. $5.00

Contents: Scope of Subject and Definition of Terms; Storing and Handling Raw Material; Testing and Valuation of Raw Material; Plant and Machinery; The Grinding of White Pigments; Of Earth Pigments, Of Oxide of Iron Pigments, Of Black Pigments, Of Chemical Pigments, Of Pigments in Water, Of Pigments in Turpentine, Gold Size and Special Mediums; Mixed or Prepared Paints; Enamels and Enamel Paints; Modern Conditions Which Affect the Selection and Application of Paint; The Designing, Testing, and Matching of Paints; Economic and General Considerations.

Smith, J. C. Paint and Painting Defects. Their detection, cause and cure. 5 x 7½. cloth. 178 pp. London, 1913. net, $1.00

Contents: Users' and Manufacturers' Concern on the Investigation of Defects; Fair-Minded Investigation and Exact Statement of Facts Necessary; Defects May be Inevitable; Chief Causes of Defects; On Fixing Responsibility; Cause of Defect Investigations; Statement of Essential Facts; Logical Reasoning Necessary; Alphabetical List of Faults and Defects with Notes on Materials and Processes.

Toch, Maximilian. The Chemistry and Technology of Paints. *Second Edition, revised and enlarged.* 83 photomicrographic plates. Illustrated. 6½ x 9¼. cloth. 366 pp. N. Y., 1916. $4.50

Contents: The Manufacture of Mixed Paints; The White Pigments; The Oxids of Lead Litharge—Red Lead—Blue Lead; The Red Pigments; The Brown Pigments; The Yellow Pigments; The Blue Pigments; The Green Pigments; The Black Pigments; The Inert Fillers and Extenders; Mixed Paints; Linseed Oil; Chinese Wood Oil; Soya Bean Oil; Fish Oil; Miscellaneous Oils. Herring Oil—Corn Oil; Turpentine; Pine Oil; Benzine; Turpentine Substitutes, Benzol—Toluol—Xylol—Solvent Naphtha; Cobalt Driers; Combining Mediums and Water; Fine Grinding; The Influence of Sunlight on Paints and Varnishes; Paint Vehicles as Protective Agents Against Corrosion; The Electrolytic Corrosion of Structural Steel; Painters' Hygiene; The Growth of Fungi on Paint; Analysis of Paint Materials; Appendix.

Toch, Maximilian. Materials for Permanent Painting. A manual for manufacturers, art dealers, artists and collectors. Illustrated. 5¼ x 7¾. cloth. 207 pp. New York, 1911. $2.50

Contents: History of Painting; Pigments Used by the Ancients; Sinopia, the Search of the Masters' Secret; Photo-Chemical Deterioration of Oil Paintings; Cause of the Cracking of Paints and the Remedies; Canvas, Wood, and Metal as Foundations; Preparation of Canvas in Commercial Practice; Renovation and Cleaning of Pictures; The School of Impressionism; Volatile Solvents; Picture Varnishes; Driers; Linseed Oil

and Other Drying Oils; Classification of the Pigments and Their Description; The Permanent Colors; Pigments Dangerous to Health; Pigments Affected by Coal Smoke, etc.; Water in Tube Colors; Pigments Which Are Permanent, etc.; Pigments Which Dry Slowly; The Failure of Sir J. Reynold's Paintings.

Uebele, Charles L. Paint Making and Color Grinding. A practical treatise for paint manufacturers and factory managers. 6½ x 9½. cloth. 484 pp. New York, 1914. **net, $10.00**

Contents: The Factory and Arrangement. *White Pigments and White Bases.* White Lead Mixing and Grinding; Lithopone White; Grinding White Bases and Pigments; Extenders and Fillers and Their Uses. *Color Grinding in All Its Branches.* Mixing and Grinding Black, Blue, Brown, Green, Red, and Yellow Pigments. *Paint Vehicles and Thinners.* Linseed Oil; China, Wood or Tung Oil; Paint Oils Other Than Linseed; Paint Thinners and Solvents; Varnishes, Driers, and Japans. *Liquid Paints Ready for Use.* Building Paints; Floor Paints; Floor Paints for Interiors and Porches; Metal Preservative, Cement and Concrete Coatings; Barn and Roof Paints; Shingle Stains; Stains Dipping Paints; Modern Flat Wall Finishes; White and Colored Enamel Paints; Liquid and Paste Wood Fillers; Iron Fillers and Machinery Paints; Putties and Cements. *Casein and Cold Water Paints.* Origin and Uses of Casein; Tests for and Manufacture of Cold Water Paint; Uses of Casein and Cold Water Paints; Practical Recipes and Working Formulas.

Wright, A. C. Simple Method for Testing Painters' Materials. Illustrated. 5¼ x 7½. cloth. 160 pp. London, 1903. $2.50

Contents: Apparatus; Reagents. *Practical Tests.* Dry Colors; Stiff Paints; Liquid and Enamel Paints; Oil Varnishes; Spirit Varnishes; Driers; Putty; Linseed Oil; Turpentine; Water Stains. *Chemical Examination.* Dry Colors and Paints; White, Yellow, Blue, Green, Red, Brown, and Black Pigments and Paints; Oil Varnishes; Spirit Varnishes; Linseed Oil; Turpentine.

Zerr, G., and Rubencamp, R. A Treatise on Colour Manufacture. A guide to the preparation, examination and application of all the pigment colours in practical use. Authorized *English Edition* by Charles Mayer. Illustrated. 6 x 9. cloth. 619 pp. London, 1908. $11.50

Contents: The Artificial Mineral Colors; Raw Materials Used in Manufacture; The Natural Mineral Colors; Black Pigments; Organic Coloring Matters and Their Utilization in Making Lake Pigments; Uses of Colors.

GLUES AND CEMENTS

Dawidowsky, F. Glue, Gelatine, Animal Charcoal, Phosphorous, Cements, Pastes and Mucilages. Edited by Wm. T. Brannt. *Second Edition, revised and largely rewritten.* Illustrated. 6 x 9. cloth. 282 pp. New York, 1905. $3.00

Fernbach, R. L. Glue and Gelatine. A practical treatise on the methods of testing and use. 5½ x 8. cloth. 218 pp. New York, 1907. $3.00

Contents: Classification and Testing of Glues; Analysis of Glues and Gelatines; Substitutes; Foreign Glues; Selection of Glues for Various Industries; How Glue Should be Used; Commercial and Legal Aspects; Manufacturing Receipts; Analytical Methods.

Glue Book, The. How to select, prepare and use glue. A short practical discussion of matters important to every glue user. Illustrated. 5¼ x 7¾. cloth. 85 pp. Toledo, Ohio, 1913. $1.00

Lambert, Thomas. Glue, Gelatine, and Their Allied Products. A practical handbook for the manufacturer, agriculturist and student of technology. 12 tables, 25 illustrations. 5½ x 8¾. 165 pp. London, 1905. $2.00

Contents: Historical; Glue; Gelatine; Size and Isinglass; Treatment of Effluents Produced in Glue and Gelatine Making; Liquid and Other Glues, Cements, etc.; Uses of Glue and Gelatine; Residual Products from Glue and Gelatine; Analysis of Raw and Finished Products; Appendix.

Parry, Ernest J. Gums and Resins. Illustrated. 5 x 7. cloth. 106 pp. New York, 1918. $1.00

Redgrave, G. R., and Spackman, C. Calcareous Cements. *Second Edition, revised.* Illustrated. 6 x 9. cloth. 310 pp. Philadelphia, 1905. $4.50

Rideal, Samuel. Glue and Glue Testing. *Second Edition, revised and enlarged.* 14 illustrations. 5¾ x 9. cloth. 196 pp. New York, 1914. $5.00

Contents: Constitution and Properties; Raw Materials and Manufacture; Uses of Glue; Gelatine; Glue Testing; Commercial Aspects.

Standage, H. C. Agglutinants of All Kinds for All Purposes. 6 x 9. cloth. 267 pp. London, 1907. $3.50

Contents: Resinous Cements; Agglutinants of Different Kind for Use by Carpenters, Painters, Decorators, Bricklayers, Plasterers and Stonemasons; Agglutinants Adapted for Use in Paper, Printing, Photographic, Leather and Kindred Trades; Compounds Used in Textile Industries; Cements for the Metal Worker; Notes on the Materials Used.

Standage, H. C. Cements, Pastes, Glues, and Gums. A practical guide to the manufacture and application of the various agglutinants required in the building, metal, wood and leather trades,

etc. With upwards of nine hundred recipes and formulae. 4¾ x 7. cloth. 171 pp. London, 1916. $1.25

Contents: Hints on the Application of Cements; Acid, Spirit and Water-proof Cements; Building Cements, Plasters, etc.; Cements and Pastes for Chemists, Electricians, Naturalists, etc.; Cements for China, Glass and Earthenware; Cements and Glues for the Leather Trades; Cements for the Metal-Workers' Use; For Wood-Workers; Glues for Various Purposes; Office Paste, Gums and Wafers; Miscellaneous Recipes.

Standage, H. C. Sealing Waxes, Wafers, and Other Adhesives. For the household, office, workshop and factory. 5¼ x 7½. cloth. 96 pp. London, 1902. $2.50

Contents: Sealing Waxes and Their Manufacture; Wafers; Notes on the Nature of the Materials Used in Making Adhesive Compounds; Cements for Use in the Household; Office Gums, Pastes and Mucilages; Adhesive Compounds for Factory and Workshop Use.

INKS

Andes, Louis E. Oil Colors and Printers' Inks. A practical handbook treating of linseed oil, boiled oil, paints, artists' colors, lampblack and printers' inks, black and colored. Translated from the German. *Second Edition, revised and enlarged* by H. B. Stocks. 57 illustrations. 6 x 9. cloth. 235 pp. London, 1918. $4.00

Contents: Linseed Oil; Poppy Oil and Walnut Oil; Mechanical Purification of Linseed Oil; Chemical Purification of Linseed Oil; Bleaching Linseed Oil; Oxidising Agents for Boiling Linseed Oil; Theory of Oil Boiling and Drying; Manufacture of Boiled Oil; Adulterations of Boiled Oil; Chinese Drying Oil and Other Specialties; Pigments for House and Artistic Painting and Inks; Pigments for Printers' Black Inks; Substitutes for Lampblack; Machinery for Color Grinding and Rubbing; Machines for Mixing Pigments with the Vehicle; Paint Mills; Manufacture of Ordinary Oil Paints; Examination of Pigments and Paint; Ship Paints; Luminous Paint; Artists' Colors; Printers' Inks; Vehicles; Pigments and Manufacture.

Lehner, S. Ink Manufacture. Including writing, copying, lithographic, marking, stamping and laundry inks. *Second Edition, revised and enlarged.* Translated from the German of the *Fifth Edition* by A. Morris and H. Robson. Illustrated. 5¼ x 7½. cloth. 179 pp. London, 1902. $2.50

Contents: Varieties of Ink; Writing Inks; Raw Materials of Tannin Inks; Chemical Constitution of the Tannin Inks; Recipes for Tannin Inks; Logwood Tannin Inks; Ferric Inks; Alizarine; Extract, Logwood, Copying Inks; Hektographs; Hektograph and Safety Inks; Ink Extracts and Powders; Preserving Inks; Changes in Ink and the Restoration of Faded Writing; Colored Inks—Red, Blue, Violet, Yellow, Green, Metallic and Indian; Lithographic Inks and Pencils; Ink Pencils; Marking Inks; Ink Specialties; Sympathetic Inks; Stamping Inks; Laundry or Washing Blue.

Mitchell, C. A. Inks; Their Composition and Manufacture. *Second Edition.* 4 plates, 56 illustrations. 5¼ x 7¾. cloth. 266 pp. London, 1916. $3.00

Contents: Historical Introduction. *Writing Inks.* Carbon and Carbonaceous Inks. Tannin Materials for Inks; Nature of Inks; Manufacture of Iron Gall Inks; Logwood, Vanadium, and Aniline Black Inks; Coloured Writing Inks; Examination of Writing Inks. *Printing Inks.* Early Methods of Manufacture; Manufacture of Varnish; Preparation and Incorporation of the Pigment; Coloured Printing Inks. *Inks for Miscellaneous Purposes.* Copying Inks; Marking Inks; Safety Inks and Papers; Sympathetic Inks; Inks for Special Purposes; List of English Patents; Index.

Seymour, Alfred. Modern Printing Inks. A practical handbook for printing ink manufacturers and printers. Illustrated. 8vo. cloth. 90 pp. London, 1910. $3.00

Contents: Linseed Oil; Varnish; Dry Colors: Black, Whites, Yellows, Reds, Browns, Blues, Greens; Lakes; The Grinding of Printing Inks; Inks and Color Mixing; The Characteristics of Some Printing Processes; Driers; Bronze Powders and Bronzing; Things Worth Knowing.

Underwood, Norman, and Sullivan, Thomas V. The Chemistry and Technology of Printing Inks. Illustrated. 6 x 9. cloth. 145 pp. New York, 1915. $4.00

Contents: Testing of Materials. Laboratory Apparatus; Methods of Analysis; Physical Tests of Pigments. *Manufacture and Properties of Ink Making Materials.* Reds; Blues; Yellows; Greens; Oranges; Russets; Citrines; Blacks; Dilutents; Bases; Organic Lakes; Oils; Typographic Varnishes; Reducers; Driers. *The Manufacture of Printing Inks.* General Considerations. Explanation of Terms; Printing Inks; Plate Inks; Typographic Inks; Defects of Inks and Their Remedies.

LEATHER

Modern American Tanning. A practical treatise on the manufacture of leather written by well-known tannery foremen, superintendents and chemists. In two volumes. Illustrated. 6¼ x 9½. cloth.

Vol. I. 16 illustrations. 292 pp. Chicago, 1902. net, $5.00

Contents: Hides and Skins; Location and Construction of Tanneries; Soaking, Liming and Beamhouse Work, Bark, Extracts, Leaching; Chrome Tannage; Grain and Side Leathers, Coloring, Dyeing, and Finishing Light Leathers;

Rough, Welting and Card Leathers; Sole Leather; Tanning Furs and Robes; Harness, Skirting and Saddlery Leather; Glove Leathers; Sheepskins; Chrome Harness and Belting; Upholstery Leather; Miscellaneous Articles; Tannery Labor.

Vol. II. 570 pp. Chicago, 1910. net, $5.00

Contents: Tannery Equipment and Management; Tannery Materials, Chemistry, etc.; Hides and Skins; Beamhouse Work; Sole Leather Tanning; Extract Tanning; Bark and Chrome Belting; Chrome Tanning; Upper Leather and Glazed Kid; Harness, Skirting, Collar Leathers, etc.; Patent Leather; Bag, Case and Pocketbook Leather; Sheepskins; Splitting Leather and Splitting Machines; Miscellaneous.

Adcock, K. J. Leather, from the Raw Material to the Finished Product. 38 illustrations. 4¾ x 7¼. cloth. 167 pp. London, 1916. $1.00

Bennett, H. G. The Manufacture of Leather. 110 illustrations. 8vo. cloth. 441 pp. London, 1910. $6.00

Contents: Historical and Introductory Outline; The Nature of Skin; Fermentation; Hides and Skins; Water; Soaking; Unhairing; Deliming; The Tannins; The Vegetable Tanning Materials; The Analysis of Tanning Materials; The Preparation of the Tanning Liquors; The Principles of Vegetable Tanning; The Tannage of Sole Leather; The Tannage of Belting Harness, and Upper Leather, etc.; The Tannage of Moroccos and Light Leathers; The Tannage of Chrome Leather; The Alum and Combination Tannages; Fat, Oil and Aldehyde Tannages; The Drying of Leather; The Finishing of Sole Leather; The Currying and Finishing of Dressing Leather; Leather Dyeing; The Finishing of Light Leathers; The Finishing of Chrome Leathers; The Finishing of the Alum and Combination Tanned Leather; The Finishing of Fat and Oil Tanned Leathers; Japanned and Enamelled Leathers; The Dressing of Wool Rugs; The Analysis of Leather.

Brunner, R. Manufacture of Lubricants, Shoe Polishes and Leather Dressings. Such as axle and machinery greases, oils, machinery oils, clockmakers' oils. Translated from the *Sixth German Edition* by Charles Salter. Illustrated. 5 x 7½. cloth. 170 pp. London, 1916. $3.50

Flemming, L. A. Practical Tanning. *Third Edition, rewritten and thoroughly revised.* 6 full-page plates. 6 x 9. cloth. 615 pp. Phila., 1916. *Reprinting*

A handbook of modern processes, receipts and suggestions for the treatment of hides, skins and pelts of every description, including various patents relating to tanning, with specifications.

Harvey, Arthur. Practical Leather Chemistry. A handbook of laboratory notes and methods for the use of students and works' chemists. 10 illustrations. 5½ x 8¾. cloth. 210 pp. London, 1920. $6.00

Contents: Water Analysis; Analysis of Lime; Analysis of Sodium and Arsenic Sulphides; Estimation of Nitrogen; Analysis of Lime Liquors; Analysis of Limed Pelt; Analysis of Lactic Acid; Other Deliming Agents; Single Bath Chrome Tanning; Commercial Egg Yolk; Soap Analysis; Oils, Fats and Waxes; The Tannins (Qualitative and Quantitative); The Liquors, Leather Analysis; Finishing Materials; Natural Dyestuffs; Coal Tar Dyes; Appendix.

Lamb, M. C. Leather Dressing, Including Dyeing, Staining and Finishing. With figures and diagrams and samples of colored leathers. 6 x 9. cloth. Illustrated. 449 pp. London, 1908. $9.00

Procter, H. R., Stiasny, E., and Brumwell, H. Leather Chemists' Pocketbook. A short compendium of analytical methods. Illustrated. 4½x6. leather. 237 pp. London, 1912. $3.00

Contents: Alkalimetry; Water Analysis; Liming, Deliming and Bating; Qualitative Recognition of Vegetable Tanning; Sampling and Grinding of Tanning Materials; Estimation of Tannins; Materials Used in Mineral Tannages; Analysis of Formaldehyde; Analysis of Soaps; General Chemistry of Oils and Fats; Glucose Detection and Estimation; Analysis of Leather; Use of the Microscope; Bacteriology and Mycology.

Standage, H. C. The Leather Worker's Manual. Being a compendium of practical recipes and working formulae for curriers, bootmakers, leather dressers, blacking manufacturers, saddlers, and fancy leather workers *Third Edition, revised.* 5¾ x 8¾. cloth. 176 pp. London, 1920. $4.50

Contents: Boot and Shoe Blackings, Polishes, Glosses, Dressings, Renovators; Harness Polishers. Blackings, Dressings, Compositions, Greases, Soaps, Boot-Top Powders and Liquids; Leather Grinders' Sundries; Curriers' Seasonings, Blacking Compounds, Dressing Finishes, Glosses, etc.; Dyes and Stains for Leather; Natural Dyestuffs—Miscellaneous Recipes; Chrome Tanning; Useful Recipes and Methods.

Trotman, S. R. Leather Trades Chemistry. A practical manual on the analysis of materials and finished products. 48 illustrations. 6 x 9. cloth. 300 pp. London, 1908. $5.00

Contents: Analysis of Fuel; Estimation of Nitrogen; Preparation of Standard Solutions; Water; Effluents; Depilation; Delivering Qualitative Recognition of Tannis; Analysis of Tanning Materials; Common Vegetable Tannis; Mineral Tannages; Analysis of Spent Liquors and Tans; Oils; Soap; Varnishes; Skins; Analysis of Leather; Fleshings and Scutch; Glue; Benzine; Dyestuffs; Disinfectants and Antiseptics; Glossary of Ternes.

Watt, A. Leather Manufacture. Being a practical handbook of tanning, currying and chrome leather dressing. *Fifth Edition, thoroughly revised and enlarged.* 83 illustrations. 6 x 7¾. cloth. 500 pp. London, 1906. $6.00

Contents: Chemical Theory of the Tanning Process; The Skin; Hides and Skins; Tanning;

Gallic Acid; Gallic Fermentation; Tanning Materials; Estimation of Tannin; Preliminary Operations; Depilation; Raising or Swelling; Tanning Butts for Sole Leather; Tanning Processes; Tanning by Pressure; Quick Tanning; Harness Leather Tanning; American Tanning; Tanning by Electricity; Chemical Tanning; Miscellaneous Processes; Cost of American Tanning; Manufacture of Light Leathers; Dyeing Leather; White Leather, Chrome Leather, Box-Calf, and Chamois Manufacture; Currying; Machinery Employed; Embossing Leather; Fellmongering; Parchment, Vellum and Shagreen; Gut Dressing; Glue Boiling; Utilization of Tanners' Waste.

Wood, J. T. The Puering, Bating and Drenching of Skins. 33 illustrations. 6 x 8¾. cloth. 316 pp. London, 1912. net, $4.00

Contents: Description of the Puering and Bating Process; Chemistry and Physics of Bating; Bacteriology of the Bate; Action of Enzymes; Original Papers on Bating; Artificial Bating; Patents; Drenching; Original Papers on Drenching; Bibliography.

SOAPS

Brannt, Wm. T. Soap Maker's Handbook of Materials, Processes and Receipts for Every Description of Soap. *Second Edition, revised and in great part rewritten.* Illustrated. 6 x 9. cloth. 512 pp. New York, 1912. $6.00

Deite, C. Manual of Toilet Soap-Making. Comprising toilet soaps, medicated soaps, and other specialties. *Second Revised Edition.* 85 illustrations. 6½ x 10. cloth. 356 pp. London, 1920. $7.50

Contents: Fats and Lyes for the Manufacture of Toilet Soaps; Colors for Toilet Soaps; Perfumes and Their Manufacture; Essential Oils; Balsams and Resins; Perfumes of Animal Origin; Artificial Perfumes; Tinctures and Extracts; Plant and Machinery for Toilet Soap-Making; Preparation of Toilet Soaps; Toilet Soaps Made b Boiling; Toilet Soaps Made by the Cold Process; Toilet Soaps by Re-Melting; Milled Soaps; Stock Soaps and Their Manufacture; Shaving Soaps; Transparent Soaps; Soft and Liquid Toilet Soaps; Toilet Soaps with Special Additions; Bath Soaps; Tooth Soaps; Pastes and Creams; Medicated Soaps; Stock Soaps for Medicated Soaps; Recipes for Medicated Soaps; Stain Removing Soaps; Metal Polishing Soaps; The Testing of Soaps; Testing of Fulling Soaps; Testing of Toilet Soaps; Testing of Medicated Soaps; Commercial Value of Soaps.

Deite, C., and others. Soap Makers' Handbook of Materials. Processes and receipts for every description of soap. Edited chiefly from the German of Dr. C. Deite A. Engelhardt, F. Wiltner and and experts. With additions by W. T. Brannt. *Second Edition, revised and greatly rewritten.* 54 illustrations. 6 x 8¾. cloth. 535 pp. Philadelphia, 1912. *Reprinting*

Contents: Historical Review of the Manufacture of Soap; Raw Materials Used in the Manufacture of Soap; Occurrence and Manner of Obtaining and Purifying Fats and Fat Oils; Examination of Fats and Oils; Fats, Fat Oils, Fatty Acids and Rosin Used in the Manufacture of Soap; Alkalies; Testing of Soda and Potash; Auxiliary Raw Materials; Machinery and Utensils for Manufacture of Soap; Production of Soaps; Hard Grained, Paste, Domestic, Soft, and Textile Soaps; Washing Powders and Allied Products; Toilet Soap and Soap Specialties; Essential Oils and other Materials Used for Perfuming Soaps; Testing Soaps.

Gathmann, Henry. American Soaps. A complete treatise on the manufacture of soap, with special reference to American conditions and practice. Contains many additions and suggestions. 72 illustrations. 7 x 10½. cloth. 334 pp. Chicago, 1893. *Reprinting*

Hurst, G. H. Soaps. A practical manual of the manufacture of domestic, toilet and other soaps. *Second Edition.* 66 illustrations. 6 x 8¾. cloth. 385 pp. London, 1907. $6.00

Contents: Soap Makers' Alkalies; Soap Fats and Oils; Perfumes; Water as a Soap Material; Soap Machinery; Technology of Soap Making; Glycerine in Soap-lyes; Laying Out a Soap Factory; Soap Analysis.

Hurst, George H., and Simmons, W. H. Textile Soaps and Oils. A handbook on the preparation, properties, and analyses of the soaps and oils used in textile manufacturing, dyeing and printing. *Second Edition, revised and partly rewritten.* 11 illustrations. 5½ x 8¾. cloth. 204 pp. London, 1914. $3.50

Contents: Textile Soaps. Introductory; Methods of Making Soaps; Special Textile Soaps; Relation of Soap to Water for Industrial Purposes; Treating Waste Soap Liquors; Soap Analysis. *Animal and Vegetable Oils and Fats.* Tallow, Lard, Bone Grease, Tallow Oil, Lard Oil, Whale Oil or Train Oil; Paul Oil, Palm-Nut or Palm-Kernel Oil, Cocoa-Nut Oil, Olive Oil, Arachis Oil, Cotton-Seed Oil, Soya-Bean Oil, Linseed Oil, Castor Oil, Maize (Corn) Oil, Rape Oil. *Glycerine. Textile Oils.* Wool Oils, Oleines, Wool Oils, Oleic Acid, Blended Wool Oils, Oils for Cotton-Dyeing, Printing and Finishing, Color Oil, Turkey-Red Oils, Turkey-Red Oil, Alizarine Oil, Oleine, Oxy-Turkey-Red Oils, Soluble Oil, Analysis of Turkey-Red Oil; Finishers' Soluble Oil, Finishers' Soap Softenings, Oil and Fat Analysis.

Koppe, S. W. Glycerine. Its introduction, Uses and Examination. For chemists, perfumers, soapmakers, pharmacists, and explosives technologists. 7 illustrations. 5¼ x 7½. cloth. 260 pp. New York, 1915. $3.50

Contents: Chemical Properties of Glycerine; Compounds and Decomposition Products of Gly-

cerine; Production and Properties of Glycerine; Nitro-Glycerine; Properties of Nitro-Glycerine; Dynamite; Lead Glyceride (Glycerine Cement); Glycerine as a Softening Substance; Preparations of Glycerine and Glue; Glycerine Applied to the Manufacture of Inks; Glycerine as a Solvent; Various Applications of Glycerine; Chemical Analysis of Glycerine; Investigation of Nitro-Glycerine and Dynamite.

Lamborn, L. L. Modern Soaps, Candles, and Glycerin. A practical manual of modern methods of utilization of fats and oils in the manufacture of soaps and candles, and the recovery of glycerin. 228 illustrations. 6½ x 9¼. cloth. 708 pp. N. Y., 1906. $10.00

Contents: The Soap Industry; Raw Materials of Soap Making; Bleaching and Purification of Soap Stock; Chemical Characteristics; Mechanical Equipment of a Factory; Cold-Process and Semi-Boiled Soap; Grained Soap; Settled Rosined Soap; Milled Soap Base; Floating Soap; Shaving Soaps; Medicated Soap; Essential Oils and Soap Perfumery; Milled Soap; Candles; Glycerin; Examination of Raw Materials and Factory Products.

Simmons, William H. Soap. Its compositon, manufacture and properties. 11 illustrations. 4¾ x 7¼. cloth. 133 pp. London, 1916. $1.00

Simmons, W. H., and Appleton, H. A. The Handbook of Soap Manufacture. 27 illustrations. 6 x 9. cloth. 166 pp. London, 1908. $4.00

Contents: Constitution of Oils and Fats and Their Saponification; Raw Materials Used in Soap Making, Their Bleaching and Treatment; Soap Making; Treatment of Settled Soap; Toilet; Textile and Miscellaneous Soaps; Soap Perfumes; Glycerine Manufacture and Purification; Analysis of Raw Materials; Soap and Glycerine; Statistics of the Soap Industry.

Watt, A. Art of Soapmaking. A practical handbook of the manufacture of hard and soft soaps, toilet soaps, etc. *Fifth Edition, revised and enlarged.* 43 illustrations. 5¼ x 7½. cloth. 323 pp. London, 1916. $4.00

Contents: The Soap Factory; Materials Used in Soap Making; Caustic Lyes; Manufacture of Hard Soaps; Cold Process of Manufacture; Oleic Acid; Cheapened Soaps; Disinfecting Soaps; Saponification Under Pressure; Various Processes; Manufacture of Soft Soaps; Of Toilet Soaps; Medicated Soaps; Miscellaneous Soaps and Processes; Alkalimetry; Soap Analysis; Purifying and Bleaching Oils and Fats; Recovery of the Glycerine from Waste or Spent Lyes; Useful Notes and Tables; Modern Candle Making.

ESSENTIAL OILS—PERFUMES—FLAVORINGS

Askinson, George W. Perfumes and Cosmetics. Their preparation and manufacture. *Fourth Edition,* translated from the German, and revised with additions by W. L. Dudley. 32 illustrations. 6¼ x 9½. cloth. 354 pp. New York, 1915. $5.00

A complete and practical treatise containing complete directions and formulas for making handkerchief perfumes, smelling salts, sachets, fumigating pastils, cosmetics, hair dyes, and all toilet preparations, including the use of synthetics.

Gildemeister, E., and Hoffmann, Fr. The Volatile Oils. *Second Edition,* by E. Gildemeister. Authorized translation by Edward Kremers. Vol. I. 65 illustrations, 2 maps. 6¾ x 9½. cloth. 692 pp. New York, 1913. $7.50

Contents: Historical Introduction; Production of Flower Perfumes by Extraction, Enfleurage and Maceration. *Principal Constituents of Volatile Oils, Natural and Artificial Perfumes.* Hydrocarbons; Alcohols; Aldehydes; Ketones; Phenols and Phenol Ethers; Acids; Esters; Lactones; Oxides; Compounds Containing Nitrogen and Sulphur. *Examination of Volatile Oils.* Determination of Physical Properties; Chemical Methods of Examination; Tables.

Joseph, Max. A Short Handbook of Cosmetics. 7½ x 5¼. cloth. 96 pp. New York, 1909. $1.00

Contents: Translator's Preface; Introduction; Cosmetics of the Skin; Cosmetics of the Hair; Cosmetics of the Nails; Cosmetics of the Mouth; Index.

Kessler, E. J. Practical Flavoring Extract Maker. A treatise on the manufacture of the principal flavoring extracts, in accordance with the requirements of the food laws of the United States. Written by a practical manufacturer who sets down the full knowledge of his specialty acquired during many years of continuous experience. 5¼ x 8¼. cloth. 86 pp. New York, 1912. net, $4.00

Contents: General Observations; Qualifications of a Manufacturer; What Constitutes a Flavoring Extract; Manufacture of Vanilla Extracts; Of Lemon Extracts; Various Extracts; Laboratory Notes; Miscellaneous Receipts; Adhesives; Weights and Measures, Tables; Household Ammonia; Bottles and Corks; Figuring Costs.

Koller, T. Cosmetics. A handbook of the manufacture, employment, and testing of all cosmetic materials and cosmetic specialties, with numerous recipes. Translated from the German. *Third Edition.* 5 x ½. cloth. 264 pp. London, 1920. $3.50

Contents: Purposes and Uses of Cosmetics, and Ingredients Used in Their Preparation; Preparation of Perfumes; Chemical and Animal Products Used in the Manufacture of Cosmetics; Oils annd Fats in the Preparation of Cosmetics; General Cosmetic Preparations; Mouth Washes andn Tooth Pastes; Hair Dyes, Hair Restorers,

and Depilatories; Cosmetic Adjunncts and Specialties; Antiseptic Washes and Soaps, Toilet and Hygienic Soaps; Cosmetic Secret Preparations for the Skin, Complexion, Teeth, Mouth, etc.; Testing and Examining the Materials Employed in the Manufacture of Cosmetics.

Otto, M. L'Industrie des parfums, d'áprés les théories de la chemie moderne. Notations et formules. Les parfums naturels. Les parfums artificiels. Illustrated. 6½ x 9½. cloth. 545 pp. Paris, 1909. **$7.20**

Parry, Ernest J. The Chemistry of Essential Oils and Artificial Perfumes. In two volumes. Illustrated. 6½ x 10. cloth.

Vol. I. Monographs on Essential Oils. *Third Edition, revised and enlarged.* 52 illustrations. 532 pp. London, 1918. **$9.00**

Contents: Jungermanniaceae; Coniferae; N. O. Gramineae; Palmae; N. O. Liliaceae; Amaryllidaceae; Irideae; Zingiberaceae; Piperaceae; Cannabinaceae; Juglandaceae; Myricaceae; Salicineae; Urticaceae; Chenopodiaceae; Lauraceae; Myristiceae; Monimiaceae; Euphorbiaceae; Santalaceae; Aristolochiaceae; Labiatae; Verbanaceae; Convolvulaceae; Primulaceae; Rubiaceae; Oleaceae; Ericaceae; Valerianaceae; Compositae; Umbelliferae; Myrtaceae; Rosaceae; Calycanthaceae; Rutaceae; Zygophyllaceae; Anacardiaceae; Buseraceae; Leguminosae; Geraniaceae; Tropaeolaceae; Meliaceae; Cruciferae; Magnoliaceae; Anonaceae; Pittosporaceae; Hamamelidaceae; Cistineae; Resedaceae; Turneraceae; Canellaceae; Dipterocarpaceae; Theaceae; Malvaceae; Ranunculaceae.

Vol. II. Constituents of Essential Oils, Synthetic Perfumes and Isolated Aromatics, and the Analysis of Essential Oils. *Third Edition, revised and enlarged.* Illustrated. 351 pp. London, 1919. **$7.00**

Contents: The Essential Oil in the Plant; The Constituentsof Essential Oils and Synthetic Perfume Bodies; The Analysis of Essential Oils; Oil of Achilea Millefolium—Oil of Ammoniacum, etc.

Simmons, W. H. Fats, Waxes, and Essential Oils. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Sulz, C. H. Sulz's Compendium of Flavorings. Complete directions for making, clarifying and judiciously applying every known variety of flavoring extracts and essences. 6 x 9¼. cloth. 140 pp. New York, 1888. **$3.00**

Walter, Erich. Manual for the Essence Industry. Illustrated. 6¼ x 9¼. cloth. 431 pp. New York, 1916. **net, $4.00**

Contents: The Taste, and the Transfer of Flavor to Foods and Beverages; The Raw Materials Yielding the Different Tastes; Laboratory Practice; Non-Alcoholic Beverages; The Manufacture of Liquors, Licqueurs, Spirits and Other Alcoholic Beverages; Confectionery, Bakery and Culinary Essences; Coloring Matters for Foods and Drinks; Cosmetic Essences.

OILS—FATS—WAXES—LUBRICANTS

Andes, Louis E. Animal Fats and Oils. Their practical production, properties, falsification and examination. Translated from the German. *Third Edition, revised and enlarged.* 76 illustrations. 5¾ x 8¾. cloth. 324 pp. London, 1920. **$6.00**

Contents: Introduction; Occurrence, Origin, and Chemical Constitution of Animal Fats and Waxes, Triglycerides, Animal Waxes, Fatty Acids, Alcohols, Phosphatides, Vitamines, Hydrocarbons; Preparation of Animal Fats and Oils; Edible Animal Fats; Sea-Animal and Fish Oils; Miscellaneous Animal Fats; Waste or Recovered Animal Fats: The Hydrogenation of Oils for Conversion into Solid Fats; Physical and Chemical Examination of Oils and Fats.

Andes, Louis E. Vegetable Fats and Oils. Their practical preparation, purification, properties, adulteration and examination. Translated from the German by Chas. Salter. *Third Edition,* revised and enlarged by H. B. Stocks. 93 illustrations. 5½ x 8¾. cloth. 362 pp. London, 1917. **$6.00**

Contents: Introduction; General Properties and Composition of the Vegetable Fats and Oils; Estimation of the Amount of Oil in Seeds; Non-Drying Vegetable Oils; Sem-Drying Vegetable Oils; Vegetable Drying Oils; Solid Vegetable Fats; The Preparation of Vegetable Fats and Oils; Installation of Oil and Fat Works, and the Apparatus Used for Grinding, Pressing and Extracting; Treatment of the Oil After Leaving the Press; Refining with Sulphuric Acid, Zinc, Lead, Oxides, Alkalis and Tannin; Ekenberg and Aspinall's Method of Refining Oils; Purifying Oils and Mechanical Appliances for Refining; Deodorising Oils and Fats; Bleaching Fats and Oils; Practical Experiments on the Treatment of Oils, with Regard to Refining and Bleaching; Oils Specially Prepared for Industrial Purposes; The Hydrogenation of Oils for Conversion into Solid Fats; Oil-Cake and Meal; Physical and Chemical Examination of Oils and Fats.

Andes, L. E. Drying Oils, Boiled Oil, and Solid and Liquid Driers. A practical work for manufacturers of oils, varnishes, printing inks, oil cloth and linoleum, oil cakes, paints, etc. *Second Edition.* Revised by H. B. Stocks. 43 illustrations and diagrams. 5¾ x 8¾. cloth. 352 pp. London, 1917. **6.00**

Contents: General Chemical and Physical Properties of the Drying Oils—Cause of the Drying Property Absorption of Oxygen-Behaviour Towards Metallic Oxides, etc.; The Properties of and Methods for Obtaining the Drying Oils; Production of the Drying Oils by Expression

and Extraction, Refining and Bleaching; Manufacture of Boiled Oil; The Preparation of Drying Oils for Use in the Grinding of Paints and Artists' Colours and in the Manufacture of Varnishes, by Heating (Boiling) Over a Fire or by Steam by the Cold Process, by the Action of Air, and by Means of the Electric Current; Preparation of Varnishes for Letterpress Lithographic, and Copper-Plate Printing; For Oilcloth and Waterproof Fabrics; Behaviour of the Drying Oils and Boiled Oils Towards Atmospheric Influences, Water Acids, and Alkalis; Boiled Oil Substitutes; Manufacture of Solid and Liquid Driers from Linseed Oil and Rosin; Examination of the Drying Oils and Boiled Oils and Driers for Adulteration.

Archbutt, L., and Deeley, R. M. Lubrication and Lubricants. A treatise on the theory and practice of lubrication, and on the nature, properties, and testing of lubricants. *Third Edition, thoroughly revised and enlarged.* 157 illustrations. 6¼ x 8¾. cloth. 635 pp. London, 1912. $9.00

Contents: **Friction of Solids; Internal Friction, or Viscosity, of Liquids; Plastic Friction; Superficial Tension; Theory of Lubrication; Sources, Preparation and Chief Properties of Lubricants; Physical and Chemical Properties, and Methods of Examination of Lubricants; Systematic Testing of Lubricants by Physical and Chemical Methods; Mechanical Testing of Lubricants; Design and Lubrication of Bearings and Other Friction Surfaces.**

Battle, John R. The Handbook of Industrial Oil Engineering. In two volumes. Supplants the "Lubricating Engineers' Handbook."

Vol. I. Industrial Oils and Lubrication. Illustrated. 6¼ x 9¾. cloth. Philadelphia, 1920. $10.00

Contents: Mathematics; Marketing; Mechanical Engineering; Petroleum and Its Products; Petroleum Chemistry; Shale Oils; Refining of Petroleum and Manufacture of Products; Data on Petroleum Products; Petroleum Lubricants; Lubricating Greases and Other Lubricants; Fats and Oils Other Than Petroleum Products; Testing and Properties of Oils; Lubrication and Friction; Bearings and Their Lubrication; Ball Bearings; Roller Bearings; Line Shaft Bearings; Bearing Lubrication; Filters; Filtration, and Reclamation of Lubricating Oils; Oil Storage and Handling; Lubricating and Industrial Oil Storage; Industrial Practice and Utilization of Lubricating Oils and Industrial Oils; Artillery and Ordnance; Air Compressors and Lubrication; Aviation Engines; Automobiles; Baking Machinery; Brick Plants and Brick Oils; Candles and Candle Making; Chains and Cables; Cement Mills; Core Binders and Foundry Practice; Cutting and Drilling Metal, Theory, Oils and Oil Systems, and Oil Recovery; Diesel Engines; Drawing Operations and Lubricants for Metal; Dry-cleaning System; Electric Cars; Electric Cranes and Lubrication; Electric Motors and Dynamos; Elevators; Extrusion of Metals; Flour Mills; Forging and Die Swabbing; Heat Treatment of Steel; Hydraulic Equipment, Lubrication Data; Internal Combustion Engines; Insect Sprays; Marine Engines and Marine Oils; Mining Operations; Naval Oils; Oil Switches and Electric Circuit Breakers; Pneumatic Tools; Printing Plants; Railways; Refrigeration; Rust Prevention Cause and Rust Preventatives; Shoe Factories; Shipyards; Soap Making; Steam Cylinder Lubrication; Rolling Mills and Their Lubrication; Sugar House Machinery; Textile Operations; Tinplate Mills; Tractors and Lubrication; Transformers and Transformer Oils; Steam Turbines; Washing Oils; Waste Manufacture and Stock Oils; Water Wheels and Generators; Industrial Oil Specifications; Lubrication Costs; Lubricating Engineering Reports and Surveys; Lubricating Specifications and Test Methods; Motor Gasoline Specifications.

Vol. II. Liquid Fuels. *In Preparation*

Brunner, Richard. The Manufacture of Lubricants, Shoe Polishes and Leather Dressings. Translated from the *Sixth (Enlarged) German Edition* by Chas. Salter. *Second English Edition.* 10 illustrations. 5½ x 7½. cloth. 180 pp. London, 1916. $3.50

Contents: The Manufacture of Lubricants and Greases. Introductory; Properties of the Bodies Used as Lubricants; Raw Materials for Lubricants; Solid Lubricants; Tallow Lubricants; Palm Oil Greases; Lead Soap Lubricants; True Soap Greases; Caoutchouc Lubricants; Other Solid Lubricants; Liquid Lubricants; Lubricating Oils in General; Refining Oils for Lubricating Purposes; Cohesion Oils; Resin Oils; Lubricants of Fat and Resin Oil; Neatsfoot Oil; Bone Fat; Lubricants for Special Purposes; Mineral Lubricating Oils; Clockmakers' and Sewing Machine Oils; The Application of Lubricants to Machinery; Removing Thickened Grease and Oil; Cleaning Oil Rags and Cotton Waste; The Use of Lubricants. *Shoe Polishes and Leather Softening Preparations.* The Manufacture of Shoe Polishes and Preparations for Varnishing and Softening Leather; The Preparation of Bone Black; Blacking and Shoe Polishes; Leather Varnishes; Leather Softening Preparations; The Manufacture of Degras.

Chalmers, T. W. The Production and Treatment of Vegetable Oils. Including chapters on the refining of oils, the hydrogenation of oils, the generation of hydrogen, soap making, the recovery and refining of glycerine, and the splitting of oils. 95 illustrations, 9 folding plates. 8 x 11½. cloth. 163 pp. London, 1919. $7.50

Contents: Introductory and General; Principal Vegetable Oils; Preparatory Machinery for Copra and Linseed; Preparatory Machinery for Palm Fruit and Palm Kernels; Preparatory Machinery for Cotton Seed and Castor Seed; Some Special Forms of Reduction Machinery; Meal Kettles, Receiving Pans and Moulding Machines; Oil Presses—Anglo American Type; Oil Presses—Cage Type; General Arrangement of Oil Mills; Extraction of Oils by Chemical Solvents; Refining of Oils; Hydrogenation or Hardening of Oils; Generation of Hydrogen for Oil Hardening Purposes; Manufacture of Soap; Glycerine Recovery and Refining and the Splitting of Oils.

Cowell, W. B. Pure Air, Ozone and Water. A practical treatise of their utilization and value in oil, grease, soap, paint, glue and other industries. Illustrated. 5 x 7½. cloth. 91 pp. London, 1900. $2.50

Contents: Atmospheric Air; Compressed Air; Liquid Air; Purification of Water; Fleshings and

Bones; Ozonized Air in the Bleaching and Deodorizing of Fats, Glues, etc.; General Information.

Dieterichs, Ernest E. F. A Practical Treatise on Friction, Lubrication, Fats and Oils. Including the manufacture of lubricating oils, leather oils, paint oils, solid lubricants and greases; together with numerous formulas, modes of testing oils, and the application of lubricants. *Second Edition, thoroughly revised and enlarged.* 5½ x 7. cloth. 153 pp. Philadelphia, 1916. $1.25

Ellis, Carleton G. The Hydrogenation of Oils, Catalyzers and Catalysis and the Generation of Hydrogen and Oxygen. *Second Edition, thoroughly revised and enlarged.* 240 illustrations. 6¼ x 9½. cloth. 767 pp. N. Y., 1919. $7.50

Contents: Methods of Hydrogenation; Catalyzers and Their Role in Hydrogenation Processes; The Base Metals as Catalyzers; The Occlusion of Hydrogen and the Mechanism of Hydrogen Addition; The Analytical Constants of Hydrogenated Oils; Edible Hydrogenated Oils; Use of Hydrogenated Oils and Their Utilization in Soap Making; Uses of Hydrogenated Oils and Properties of Certain Hardened Products; Hydrogenation Practice; The Hydrogenation of Petroleum; The Hydrogen Problem in Oil-Hardening; Water Gas as a Source of Hydrogen and the Replacement of Carbon Monoxide by Hydrogen; Liquefaction and Other Methods for the Removal of Carbon Monoxide; Hydrogen by the Decomposition of Hydrocarbons; Hydrogen by the Action of Steam on Heated Metals; Action of Acids on Metals; Miscellaneous Methods of Hydrogen Generation; Hydrogen and Oxygen by Electrolysis of Water; Precautions in Handling Hydrogen; Appendices.

Ennis, William D. Linseed Oil and Other Seed Oils. An industrial manual. 88 illustrations. 8vo. cloth. 330 pp. New York, 1909. $5.00

Contents: Introductory; The Handling of Seed and the Disposition of Its Impurities; Grinding; Tempering the Ground Seed and Moulding the Press Cake; Pressing and Trimming the Cakes; Hydraulic Operative Equipment; The Treatment of the Oil from the Press to the Consumer; Preparation of the Cake for the Market; Oil Yield and Output; Shrinkage in Production; Cost of Production; Operation and Equipment of Typical Mills: Other Methods of Manufacturing; The Seed Crop; The Seed Trade; Chemical Characteristics of Linseed Oil; Boiled Oil; Refined and Special Oils; The Linseed Oil Market; The Feeding of Oil Cake; Miscellaneous Seed Oils; The Cotton-Seed Industry.

Friend, J. Newton. The Chemistry of Linseed Oil. 5¼ x 7½. cloth. 96 pp. (Van Nostrand's Chemical Monographs, No. 5.) N. Y., 1917. net, $1.00

Contents: Introduction; Manufacture of Linseed Oil; Chief Constituents of Linseed Oil; Properties and Reactions of Linseed Oil; Chemistry of Linseed Oil and Linoxyn; Polymerised and Oxidised Oils; Bibliography and Notes.

Fryer, P. J., and Weston, F. E. Technical Handbook of Oils, Fats and Waxes. In two volumes. Illustrated. 6 x 9. cloth. London, 1918.

Vol. I. Chemical and General. 33 illustrations, 36 plates. 290 pp. $3.00

Contents: Introduction; Chemistry of the Oils, Fats and Waxes; Testing and Analysis of Oils, Fats and Waxes; Classification of Oils, Fats and Waxes; Production and Refinement of Oils, Fats and Waxes; Oleo-Resins and Essential Oils.

Vol. II. Practical and Analytical, 69 illustrations. 330 pp. $4.50

Contents: Introduction to Practical Work for Technical Students; Sampling and Preliminary Tests; Practical Methods for the Standard Analytical Determinations; Specific Tests for Oils, Fats and Waxes; Identification and Determination of Fatty Acids and Alcohols (including Glycerin); Testing and Analysis of Hydrocarbon Oils and Waxes; Testing and Analysis of Rosin and Turpentine; Interpretation of Results; Scheme for the Identification of an Oil, Fat or Wax; Tables; Appendix.

Gill, A. H. A Short Hand-Book of Oil Analysis. *Revised Ninth Edition.* Illustrated. 5½ x 8¼. cloth. 215 pp. Philadelphia, 1919. $2.50

Contents: Physical and Chemical Tests. Petroleum Products—Burning Oils; Lubricating Oils; Animal and Vegetable Oils; General Considerations Regarding Lubricants. *Derivation, Description and Examination of Certain Oils.* Classification; Petroleum Products—Vegetable Oils; Drying Oils; Semi-Drying Oils; Non-Drying Oils; Animal Oils; Marine, Terrestrial; Liquid Waxes; Waste Fats; Lubricating Greases; Miscellaneous Oils; Edible Fats; Hardened Oils; Appendix.

Greene, J. Arthur (Editor). A Treatise on British Mineral Oil. With a foreword by Sir Boverton Redwood. Illustrated, numerous folding plates. 6¼ x 9. cloth. 244 pp. London, 1919. $6.50

Contents: The Raw Material. Oil-Shales; Cannel-Coals and Allied Deposits; Lignite and Peat. *Retorting of Bituminous Materials.* Wasteful Consumption of Fuel: The Remedy; The Action of Heat; Retorting; Low-Temperature Distillation. *The Products from Low-Temperature Carbonization and Their Chemical Nature.* The Nature of Coal Substances; Thermal Decomposition of Coal; The Products of Low-Temperature Carbonization; The Brown-Coal Industry in Germany; Oils from Shale and Peat; The Utilization of By-Products. *Refining.* Scheme for Refining Low-Temperature Crude Oils. *Practical Experimental Work.* The Midland Testing Station. *Recovery of By-Products from Coal and the Generation of Electrical Energy.* Power; Appendix.

Gregorius, R. Mineral Waxes, Their Preparation and Uses. Translated from the German by Charles Salter. 32 illustrations. 5 x 8. cloth. 247 pp. London, 1908. net, $3.00

Contents: Introduction; Ozokerite and Ceresine; Paraffin; Mineral (Montan) Wax; Various Appliances for Extracting; Distilling and Refining Ozokerite, etc.; Uses of Ceresine, Paraffin and Mineral Wax.

Holde, D. The Examination of Hydrocarbon Oils, and of the Saponifiable Fats and Waxes. Translated from the *Fourth German Edition* by Edward Mueller. 115 illustrations. 6¼ x 9¼. cloth. 499 pp. N. Y., 1915. **net, $5.00**

Contents: Petroleum and Petroleum Products; Natural Asphalt; Ozokerite and Montan Wax; Tars Obtained by the Distillation of Coal, Lignite, Shale and Peat; Saponifiable Fats; Technical Products Prepared from Fats; Waxes.

Hurst, Geo. H. Lubricating Oils, Fats and Greases. Their origin, preparation, properties, uses and analysis. *Third Edition, revised and enlarged,* by Henry Leask. 74 illustrations. 5¾ x 8¾. cloth. 405 pp. London, 1916. $5.00

Contents: Introduction; Hydrocarbon Oils; Scotch Shale; Petroleum; Vegetable and Animal Oils; Testing and Adulteration of Oils; Lubricating Greases; Lubrication; Appendices.

Hyde, Frederic S. Solvents, Oils, Gums, Waxes and Allied Substances. 6 x 9. cloth. 183 pp. N. Y., 1913. **net, $2.00**

Contents: Various Solvents and Fluids; Terpene Bodies, Camphors, Essential Oils, Fragrant Substances, and Balsams; True Gums, Gum Resins and Bitumens; Carbohydrates; Albumenoids and Proteids; Oils, Fats and Waxes; List of Commercial Tests on Oils and Fats; Lubricating Oils; Linseed Oil; Insoluble Soaps; Fatty Acids; Waxes; Alkaloidal Substances; Bitter Principles; Miscellaneous Substances.

Ingle, Harry. A Manual of Oils, Resins, and Paints. For students and Practical Men. In three volumes. Each volume complete in itself.

Vol. I. Analysis and Valuation. Illustrated. 5½ x 7¾. cloth. 138 pp. London, 1915. $2.00

Contents: Introduction to the Chemistry of Oils, Gums, etc.; Physical Tests; Chemical Tests; Qualitative Tests for Oils; Classification of Oils; Systematic Examination of Oils, Fats, and Waxes; Technological Analysis.

Lamborn, L. L. Cottonseed Products. A manual of the treatment of cottonseed for its products and their utilization in the arts. 79 illustrations, 1 folding plate. 6½ x 9½. cloth. 253 pp. New York, 1918. $4.00

Contents: The Cotton Plant; The Cottonseed Industry; Cottonseed; Products; Manufacture of Oleomargarine and Lard Compound; Manufacture of Soap and Soap Powder; Cottonseed-Meal and Hulls for Cattle-Food and Fertilizer; Government Regulations of Transactions in Cottonseed Products.

Laucks, I. F. Commercial Oils, Vegetable and Animal, with Special Reference to Oriental Oils. 5 x 7¼. cloth. 146 pp. New York, 1919. $1.25

Contents: Definition; General Properties; Examination of Oils for Purity; Vegetable Oils; Fish Oils; Liver Oils; Terrestrial Animal Oils; Animal Fats; Solid Waxes; Uses of Oils, Including Edible Oils, Oils for Medicinal Purposes, Burning or Illuminating Oils, Paint Oils, Lubricating Oils, Wool Oils, Cloth Oils, Boiled Oils, Varnishes, Enamels, Paints, etc.

Leathes, J. B. The Fats. 6¼ x 9¾. boards. 138 pp. (Monographs on Biochemistry.) London, 1910.

New Edition in Press

Contents: Introduction; The Fatty Acids; The Extraction of Fats; Physical Properties of Fats; The Physiology of Fats.

Lewkowitsch, J. Chemical Technology and Analysis of Oils, Fats and Waxes. In three volumes. Illustrated. 6½ x 9. cloth.

Vol. I. *Fifth Edition, entirely rewritten and enlarged.* Tables. cloth, 692 pp. London, 1913. $11.00

Contents: Classification of Oils, Fats and Waxes, and Their Physical and Chemical Properties; Saponification of Fats and Waxes; Constituents; Preparation of the Fatty Matter for Examination; Preliminary Tests; Physical and Chemical Methods of Examining Oils, Fats and Waxes; Qualitative and Quantitative Tests of the Chemical Method; Examination of Mixed Fatty Acids; Examination of Mixed Unsaponifiable Matter; Detection and Quantitative Determination of Rosin; Application of the Foregoing Methods to the Systematic Examination of Oils, Fats and Waxes; Examination by Strictly Scientific Methods.

Vol. II. *Fifth Edition, entirely rewritten and enlarged.* 19 illustrations. 958 pp. London, 1914. $11.00

Contents: Commercial Preparation of the Raw Materials Used in the Oils, Fats, and Waxes Industries; Technology of the Natural Oils, Fats, and Waxes; Methods of Preparing, Refining and Examining Them, and Detecting Adulterations; Oils and Fats, Glycerides; Oils or Liquid Fats; Animal Oils; Solid Fats; Vegetable Fats; Waxes; Liquid Waxes; Solid Waxes; Index of Botanical and Zoological Names.

Vol. III. *Fifth Edition, entirely rewritten and enlarged.* 27 illustrations. 493 pp. London, 1915. $9.00

The set complete. $31.00

Contents: Technology of Manufactured Oils, Fats, and Waxes; Technical and Commercial Examination of the Products of the Oil, Fat, and Wax Industries; Technology of Oils and Fats; Industries Having for Their Object the Refining of Oils and Fats, and Their Application to Commercial Uses; Industries in Which the Glycerides Undergo a Chemical Change, but are not Saponified; Industries Based on the Saponification of Oils and Fats; Technology of Waste Oils, Fats, and Waxes, and the Commercial Products Derived Therefrom; Appendix.

Lewkowitsch, J. Laboratory Companion to Fats and Oils Industries. 6 x 9. cloth. 197 pp. N. Y., 1901. $2.75

Lockhart, L. B. American Lubricants from the Standpoint of the Consumer. Illustrated. 6¼ x 9¼. cloth. 246 pp. Easton, Pa., 1918. *New Edition in Press*

Contents: Crude Petroleum; Refining of Petroleum; Refined Products; Friction and Lubrication; Lubrication of Internal Combustion En-

gines; Automobile Lubrication; The Lubrication of Electrical Machinery; The Lubrication of Steam Cylinders and Steam Engines; The Lubrication of Steam Railways; The Lubrication of Cotton Mills and Other Textile Mills; The Lubrication of Miscellaneous Plants and Machines; Physical Methods of Testing Lubricating Oils; Chemical Methods of Testing Lubricating Oils; Lubricating Greases; Methods for Testing and Analysis of Greases; Animal and Vegetable Oils; Methods of Testing Fatty Oils; Specifications for Fatty Oils; Specifications for Cylinder Oils; Specifications for Special Engine and Machine Oils and Car Oils; Specifications for Cutting Oils; Specifications for Greases, Graphite, Boiler Compound and Cotton Waste; Specifications for Gasoline and Fuel Oils; Gasolines; Kerosene; Tables.

McIntosh, J. G. The Manufacture of Varnishes and Kindred Industries. Based on and including the "Drying Oils and Varnishes" of Ach. Livache. In three volumes. Illustrated. 5½ x 8½. cloth.

Vol. I. The Crushing, Refining and Boiling of Linseed Oil and Other Varnish Oils. *Third Edition, revised and enlarged.* 114 illustrations. 506 pp. London, 1919. $7.00

Vol. II. Varnish Materials and Oil Varnish Making. Illustrated. 216 pp. London, 1908. *Reprinting*

Vol. III. Spirit Varnishes and Spirit Varnish Materials. 64 illustrations. 492 pp. London, 1911. *Reprinting*

For contents see page —

McNair, Jas. B. Citrus By-Products. *In Press*

Contents: Necessity for the Industry; By-Products from the Rind, Pulp, Seeds, and where the Whole Fruit is Used; By-Products from the Flowers, Leaves and Stems; Cost of By-Products and Market Conditions; The Industry in North America, Central America, South America, Europe, Asia, Africa and Australia; Appendix.

Mitchell, C. Ainsworth. Edible Oils and Fats. Illustrated. 5½ x 9. cloth. 171 pp. London, 1918. $2.25

Contents: The Nature, Properties and Composition of Fats; Constituents of Oils and Fats; Extraction and Purification of Oils and Fats; Methods of Examination; Characteristics of Individual Edible Oils; Characteristics of Individual Edible Fats; Butter and Butter Fat; Hardened or Hydrogenated Oils; Manufacture of Margarine; Bibliography.

Parry, Ernest J. The Chemistry of Essential Oils and Artificial Perfumes. In two volumes. Illustrated. 6½ x 10. cloth.

Vol. I. Monographs on Essential Oils. *Third Edition, revised and enlarged.* 52 illustrations. 532 pp London, 1918. $9.00

Contents: Jungermanniaceae; Coniferae; N. O. Gramineae; Calmae; N. O. Liliaceae; Amaryllidaceae; Irideae; Zingiberaceae; Piperaceae; Cannabinaceae; Jublandaceae; Myricaceae; Salicineae; Urticaceae; Chenopodiaceae; Lauraceae; Myristiceae; Monimiaceae; Euphorbiaceae; Santalaceae; Aristolochiaceae; Labiatae Verbanaceae; Convolvulaceae; Primulaceae; Rubiaceae; Oleaceae; Ericaceae; Valerianaceae; Compositae; Umbelliferae; Myrtaceae; Rosaceae; Calycanthaceae; Rutaceae; Zgophyllaceae; Anacardiaceae; Burseraceae; Leguminosae; Geraniaceae; Tropaeolaceae; Meliaceae; Cruciferae; Magnoliaceae; Anonaceae; Pittosporaceae; Hamamelidaceae; Cistinae; Resedaceae; Turneraceae; Canellaceae; Dipterocarpaceae; Theaceae; Malvaceae; Ranunculaceae.

Vol. II. Constituents of Essential Oils, Synthetic Perfumes and Isolated Aromatics, and the Analysis of Essential Oils. *Third Edition, revised and enlarged.* Illustrated. 351 pp. London, 1919. $7.00

Contents. The Essential Oil in the Plant; The Constituents of Essential Oils and Synthetic Perfume Bodies; The Analysis of Essential Oils; Oil of Achillea Millefolium Oil of Ammoniacum, etc.

Pickering, Geo. F. Aids in the Commercial Analysis of Oils, Fats, and Their Commercial Products. A laboratory handbook, with many tables in the text. 6 x 9. cloth. 141 pp. London, 1917. $3.00

Contents: Sampling, and Preparation for Analysis; Physical Properties; Chemical Examination; Fatty Oils; Miscible Castor, Boiled Oils, Blown Oils, etc.; Chemical Examination; Sulphonated Oils, Neutral Fats, Foots, etc.; Fat Splitting and Distillation Products; Glycerine; Resins; Recovered Products and Their Distillation Products; Oils, Fats, and Waxes of the British Pharmacopœia.

Practical Compounding of Oils, Tallow and Grease, for Lubrication, etc. By an expert oil refiner. *Second Edition.* 5½ x 8¾. cloth. 103 pp. London, 1907. $3.50

Contents: Hydrocarbon; Animal, Fish, Compound, Vegetable and Lamp Oils; Engine Tallow; Solidified Oils; Petroleum Jellies; Machinery Greases; Clarifying and Utilizing Waste Fats, Oils, Tank Bottoms, Drainings of Barrels and Drums, Pickingsap, Dregs, etc.; Fixing and Cleaning Oil Tanks; General Information.

Redwood, I. I. Lubricants, Oils and Greases. Treated theoretically and giving practical information regarding their composition, uses and manufacture. A practical guide for manufacturers, engineers, and users in general of lubricants. 3 folding plates. 5½ x 8¼. cloth. 65 pp. London, 1918. $1.50

Scheithauer, W. Shale Oils and Tars and Their Products. Translated from the German by Chas. Salter. 70 illustrations, 4 diagrams. 5¾ x 8¾. cloth. 190 pp. New York, 1913. $4.00

Contents: History of the Shale and Lignite-Tar Industry; Bituminous Raw Materials; Production of Distillation Tar; Distillation Products; Distillation of the Tar and Tar Oils; Chemical Treatment of the Tar and Its Distillates; Utilization of Refinery Waste; Manufacture of Paraffin; Products Furnished by Shale Oil and Lignite Tar; Candlemaking; Chemical Composition of the Tars and Their Distillates; Laboratory Work; Statistics.

Sherriff, Frank F. The Oil Merchants' Manual and Oil Trade Ready Reckoner. *Second Edition, revised and enlarged.* 5½ x 8½. cloth. 215 pp. London, 1904. $3.50

Simmons, W. H. Fats, Waxes, and Essential Oils. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Simmons, W. H., and Mitchell, C. A. Edible Fats and Oils. Their composition, manufacture and analysis. Illustrated. 5¾ x 8¾. cloth. 164 pp. London, 1911. $3.50

Contents: Raw Materials Used in the Manufacture, Refining, Bleaching and Deodorizing; Butter; Lard; Margarine and Other Butter Substitutes; Salad Oils; Analysis of Raw Materials and Finished Products; Statistics of the Trade in Edible Oils.

Stillmann, Thomas B. Examination of Lubricating Oils. 32 illustrations. 6¼ x 9. cloth. 129 pp. Easton, Pa., 1914. $1.75

Tompkins, D. A. Cotton and Cotton Oil. Full information for investor, student and practical mechanic. 100 illustrations. 6 x 9. cloth. 300 pp. Charlotte, 1901. net, $7.50

Contents: Cotton, Cotton Seed Oil Mills; Cattle Feeding Fertilizers.

Wright, C. R. A., and Mitchell, C. A. Animal and Vegetable Fixed Oils, Fats, Butters and Waxes. Their preparation and properties, and the manufacture therefrom of candles, soaps, and other products. *Second Edition.* 2 plates, 154 illustrations. 6¾ x 9¼. cloth. 820 pp. London, 1908. net, $8.00

Contents: General Composition and Nature of Oils, Butters, Fats, Waxes, and Allied Substances; Physical Properties of Oils, Fats, Waxes, etc.; Chemical Properties of Oils, Fats, Waxes, etc.; Processes Used for Extracting, Rendering, Refining and Bleaching Oils, Fats, etc.; Classification and Uses of Fixed Oils, Fats, Waxes, etc.; Adulterations; The Candle Industry; The Soap Industry.

PETROLEUM—ASPHALTS

Abrahams, Herbert. Asphalts and Allied Substances. Their Occurrence, Modes of Production, Uses in the Arts and Methods of Testing. 208 illustrations. 6 x 9. cloth. 621 pp. N. Y., 1920. $6.00

Contents: General Considerations. Historical Review; Terminology and Classification of Bituminous Substances; Chemistry of Bituminous Substances; Geology and Origin of Bitumens and Pyrobitumens; Annual Production of Asphalts, Asphaltites and Asphaltic Pyrobitumens. *Semi-Solid and Solid Native Bituminous Substances.* Methods of Refining; Mineral Waxes; Native Asphalts Occurring in a Fairly Pure State; Native Asphalts Associated with Mineral Matter; Asphaltites; Asphaltic Pyrobitumens; Pyrobituminous Shales. *Tars and Pitches.* General Methods of Producing Tars; Wood Tar, Wood-tar Pitch and Rosin Pitch; Peat and Lignite Tars and Pitches; Shale Tar and Shale-Tar Pitch; Coal Tar and Coal Tar Pitch; Water-Gas and Oil-Gas Tars and Pitches; Petroleum Asphalts; Paraffine Wax and Wax Tailings; Wurtzilite Asphalt; Fatty-Acid Pitch, Bone-Tar and ore-Tar Pitch. *Manufactured Products and Their Uses.* Methods of Blending; Bituminous Paving Materials; Bituminized Fabrics for Roofing, Flooring, Waterproofing, Sheathing and Insulating Purposes; Semi-Liquid, Semi-Solid and Solid Bituminous Compositions; Bituminous Paints, Cements, Varnishes, Enamels and Japans. *Methods of Testing.* Physical Characteristics; Heat Tests; Solubility Tests; Chemical Tests; Methods of Testing Manufactured Products; Weathering Tests.

Andros, S. O. The Petroleum Handbook. Illustrated. 4 x 7. flexible cloth. 206 pp. Chicago, 1919. $2.00

Gives the fundamentals of each phase of the oil industry necessary to a clear understanding of the various operations entailed between the location of an oil well and the distribution of the refined products. The work is chiefly a compilation from the standard authorities, arranged for those who wish a brief, accurate account of the industry.

Bacon, Raymond F., and Hamor, W. A. The American Petroleum Industry. Two volumes. Not sold separately. Illustrated. 6 x 9. cloth. 975 pp. New York, 1916. $12.00

Boorman, T. H. Asphalts. Their Sources and Utilizations. 1914 Road Edition. Containing five new chapters on Modern Road Construction. Illustrated, with plates. 7 x 10. cloth. 205 pp. New York, 1914. $2.00

Contents: Discovery and Early Use of Asphalt; Rock Asphalt; Mastic or Asphalt Coulé; Trinidad Asphalt; Petroleum Residuum and California Malthas as a Fluxing Material; Venezuela Asphalts; Cuban Asphalts; American Bituminous Asphalt Sandstone Rock; Manjok and Uintaite; Late European Work; Turkish and Other Bitumens; Developments of Asphalt Industry up to 1903; Asphalts in 1908; Asphalt in Building Construction; Dustless Roads; Methods of Surfacing Roads; Asphaltic Oils, Their Classification and Properties; Application of Asphaltic Oils; Sprinkling with Asphaltic Oils; Latest Views of Engineers on Asphaltic Surfacing; Municipal Asphalt Plants; Asphalt Waterproofing; Asphalt in Roofing, Manufacture, Asphalt Machinery; Rock Asphalt Maintenance; Asphalt Macadam Roads; Cold Laid Asphalt Roads; Bituminous Road Surfaces; Asphalt Block for Roads.

Campbell, Andrew. Petroleum Refining. With a foreword by Sir Boverton Redwood, Bart., past president of the Society of Chemical Industry and Advisor

on Petroleum to His Majesty's Government. 138 illustrations, 29 folding plates. 6 x 9. cloth. 313 pp. London, 1918. $8.50

Contents: Examination of the Crude Oil; General Departments; Storage of Crude Oil and Liquid Products; Distillation; Paraffin Extraction and Refining; Candle Manufacture; Chemical Treatments; Distribution of Products; Engineering Specifications; Appendix.

Cooper-Key, A. A Primer on the Storage of Petroleum Spirit and Carbide of Calcium. For the use of local inspectors and motorists. 5¼ x 7½. cloth. 138 pp. London, 1904. $1.00

Contents: Petroleum; Keeping Without License; Licensing; Acetylene and Carbide of Calcium; Future Legislation; Appendices.

Craig, E. H. C. Oil-Finding. An introduction to the geological study of petroleum. With an introduction by Sir Boverton Redwood. Illustrated, 13 plates. 5¾ x 8¾. cloth. 208 pp. New York, 1916. $6.00

Contents: The Origin of Petroleum; Processes of Formation; The Migration, Filtration, and Subterranean Storage of Petroleum; Lateral Variation; Geological Structure; Indications of Petroleum; Stratigraphy; Location of Wells; (For Beginners) Field-Work; (For Beginners) Indoor-Work.

Cross, Roy. A Handbook of Petroleum, Asphalt and Natural Gas. Methods of analysis, specifications, properties, refining processes, statistics, tables and bibliography. Illustrated. 6x 9. fabrikoid. 500 pp. Kansas City, 1919. $5.00

Contents: Economics; Geology; Production and Refining Statistics; Storage, Measurement, Gauging, Transportation; Chemical and Physical Properties and Distillation of Crude Oil; Gasoline, Naphtha, Benzines, Mineral Spirits; Kerosene, Illuminating Oils, Absorption Oils; Lubricating Oils, Greases; Waxes; Fuel Oil and Fuels; Asphalt and Road Oil; Crackening and Engineering; Oil Shales and Shale Oil Products; Natural Gas; Methods of Analysis; Tables; Patents; Bibliography.

Danby, Arthur. Natural Rock Asphalts and Bitumens. Their geology, history, properties and industrial application. 5 x 7½. cloth. 253 pp. London, 1913. net, $2.50

Contents: Nomenclature and Definitions; Geology of Bitumen and Rock Asphalt; Appearance and Physical Structure; History and Ancient Use; Modern Exploitation of Rock Asphalt; Sources of Rock Asphalt and Bitumen; American Deposits of Bitumen; Extraction and Preparation of Rock Asphalt; Tests and Analyses; Physical Properties of Rock Asphalt; The Carrying Out of Rock Asphalt Work, and of Rock Asphalt Mastic Work; Macadam Roads; Other Uses of Bitumen.

Guttentag, W. E. Petrol and Petroleum Spirits. A description of their sources, preparation, examination and uses. With a preface by Prof. Sir John Cadman. Illustrated. 5¾ x 8¾. cloth. 135 pp. London, 1918. net, $3.40

Contents: Introductory; Petroleum; Petrol; Petrol: Other Sources; Examination and Testing; Further Properties; Uses; Appendices.

Hager, D. Practical Oil Geology. The application of geology to oil field problems. *Third Edition, thoroughly revised and enlarged.* 126 illustrations. 5 x 7½. fabrikoid. 267 pp. New York, 1919. $3.00

Hicks, J. A. The Laboratory Book of Mineral Oil Testing. *Second Edition.* 32 illustrations. 5 x 7. cloth. 76 pp. London, 1906. *Reprinting*

Contents: Preliminary; Specific Gravity; Flashing-Point; Viscosity; Color; Sundry Apparatus; Appendix.

Hubbard, Prevost. Laboratory Manual of Bituminous Materials. For the use of students in highway engineering. 39 illustrations. 6 x 9. cloth. 164 pp. New York, 1916. net, $1.50

Contents: Introduction; Density Tests; Consistency Tests; Heat Tests; Solubility Tests on Other Than Bituminous Aggregates; Miscellaneous Tests; Extraction of Bituminous Aggregates and Recovery of Bitumen and Aggregate; Fluid Petroleum Products and Emulsions; Semi-solid and Solid Petroleum and Asphalt Products; Refined Tars and Tar Pitches; Creosoting Oils or Wood Preservatives; Bituminous Aggregates.

Johnson, Roswell H., and Huntley, L. G. Principles of Oil and Gas Production. 148 illustrations. 6 x 9¼. cloth. 382 pp. New York, 1916. net, $3.75

Contents: Varieties; The Origin; Distribution; Reservoirs and Accumulation of Oil and Gas; Pressure in Oil and Gas Reservoirs; Origin of the Shape of the Reservoir; Classification of the Attitude of Geological Surfaces; Effect of the Different Attitudes Upon Accumulation; Locating Oil and Gas Wells; Oil and Gas Lands; Drilling for Oil and Gas; "Bringing in a Well"; The Management of Oil Wells; Completing the Extraction of the Oil; The Management of Gas Wells; Condensation of Gasoline from Gas; The Natural Gas Industry; Size and Scope of Oil and Gas Companies; Reports upon Oil and Gas Prospects or Properties; The Valuation of Oil Properties; Oil and Gas Fields of North America; Oil Market and the Future Supply; Appendix.

Lidgett, Albert. Petroleum. Illustrated. 5 x 7. cloth. 130 pp. N. Y., 1919. $1.00

Peckham, S. F. Solid Bitumens. Their physical and chemical properties and

chemical analysis. Together with a treatise on the chemical technology of Bituminous Pavements. 29 illustrations. 6¼ x 9¼. cloth. 332 pp. New York, 1909. net, $5.00

Contents: Introduction; Geographic Distribution of Bitumens; Origin of Bitumens; Classification of Bituminous Substances; The Derivation of Natural Solid Bitumens; Of Bituminous Rocks; Of Artificial Solid Bitumens; Chemistry of Solid Bitumens; Boussingault's Memoir Upon the Composition of Bitumens; Use of the Words Petrolene Asphaltene; The Ultimate Analysis of Solid Bitumens; Proximate Analysis of Bitumens; Technical Analysis of Solid Bitumens; Special Chemical and Physical Methods of Analysis, by Which Solid Bitumens May be Recognized and Distinguished; Miscellaneus Methods Applied to Street Mixtures and Surfaces, Bituminous Paving Blocks, Bituminous Concrete, Wood Paving Blocks, Cements, Mortars and Concrete, etc.; Physical Properties of and Chemical Technology of Bitumens.

Redwood, B. Petroleum. A treatise on the geographical distribution and geological occurrence of petroleum and natural gas; the physical and chemical properties, production and refining of petroleum and ozokerite; the characters and uses, testing, transport, and storage of petroleum products; and the legislative enactments relating thereto; together with a description of the shale oil and allied industries and a full bibliography. *New Edition.* In four volumes. *Reprinting*

Redwood, B., and Eastlake, Arthur W. Petroleum Technologist's Pocket-Book. 1 colored plate, 8 maps, 38 illustrations. oblong 5½ x 4. fabrikoid. 480 pp. London, 1915. $3.75

Contents. General Information About Petroleum; Geological; Physical and Chemical; Production; Refining, Transport, Storage, and Testing; Uses; Weights and Measures; Miscellaneous; Statistics.

Richardson, Clifford. The Modern Asphalt Pavement. *Second Edition, revised and enlarged.* 42 illustrations. 6 x 9. cloth. 638 pp. New York, 1908. $4.00

Contents: Introduction; The Foundation and Intermediate Course; The Materials Constituting the Asphalt Surface Mixture; Native Bitumens in Use in the Paving Industry; Technology of the Paving Industry; Handling of Binder and Surface Mixture on the Street; The Physical Properties of Asphalt Surfaces; Specifications for and Merits of Asphalt Pavement; Causes of the Defects in and the Deterioration of Asphalt Surfaces; Control of Work; Appendix.

Southcombe, J. E. Chemistry of the Oil Industries. Illustrated. 6 x 9. cloth. 209 pp. New York, 1913. $3.50

Contents: Introductory Organic Chemistry; Mineral Oils-Petroleum and Shale-Mineral Oil Refining; Natural Sources and Methods of Preparation of Saponifiable Oils and Fats; Impurities Occurring in Crude Oils and Fats and the Technical Methods of Removing Them; Composition and Properties of the Saponifiable Oils and Fats in General; Composition and Properties of the Individual Oils and Fats of Commercial Importance; The Natural Waxes, Their Composition and Properties; Analytical Methods; Industrial Applications of Fats and Oils; Burning Oils; Edible Oils and Margarines; Polymerised, Boiled and Blown Oils; Turkey-Red Oils; Saponification of Fats and Oils on a Technical Scale; The Distillation of Fatty Acids; Oleines and Stearines; Candle Manufacture; Soap-Making; Glycerine; Conclusion; Scientific and Technical Research on Problems in the Oil and Related Industries; Literature.

Thompson, A. B. Oil-Field Development and Petroleum Mining. A practical guide to the exploration of petroleum lands and a study of the engineering problems connected with the winning of petroleum. Including notes on petroleum legislation and customs and a discussion of the origin of petroleum. 17 tables, 152 illustrations. 6 x 9¼. cloth. 667 pp. London, 1910. $15.00

Contents: Introductory; Customs, Leasing and Valuation of Oil-Fields; Geological Structure and Lithological Character of Oil-Fields, and Factors Governing the Distribution of Petroleum; Indications of Petroleum and Phenomena Associated with Its Occurrence; Typical Oil-Field Structures; Origin, Composition, Characteristics, and Treatment of Petroleum; Systems of Drilling or Boring for Petroleum; Casing or Lining Tubes for Wells and Appliances Employed in Its Insertion, Manipulation, Extraction, and Repairs; Exclusion of Water from Oil Wells; The Extraction of Petroleum and Natural Gas; Oil-Field Equipment; The Measurement, Collection, Transmission, and Utilization of Natural Gas; Compilation of Statistical Records; Oil-Field Organization and Accounts.

Thompson, A. B. Oil Fields of Russia and the Russian Petroleum Industry. A practical handbook. 93 illustrations, numerous plates. 8 x 11. cloth. 522 pp. New York, 1904. $10.00

Thomson, J. H., and Redwood, B. Handbook on Petroleum. For inspectors under the petroleum acts, and for those engaged in the storage, transport, distribution and industrial use of petroleum and its products and calcium carbides, with suggestions on the construction and use of mineral oil lamps. *Third Edition,* revised and added to by Major A. Cooper-Key and Sir Boverton Redwood. Illustrated. 6 x 9. cloth. 360 pp. London, 1913. $4.50

Contents: Introductory; Sources of Supply; Production, Refining, Marine Transport; Storage and Distribution; Commercial Products of Petroleum, Shale-Oil, and Coal-Tar; "Flash-Point" and "Fire-Test"; Testing; Specific Gravity; Boiling Point; Other Tests; Legislation Relating to Petroleum (Historical); Existing Legislation Relating to Petroleum; Precautions Necessary for Petroleum; Petroleum Oil Lamps; Carbide of Calcium annd Acetylene; Appendices; Index.

Tinkler, C. K., and Challenger, F. The Chemistry of Petroleum and Its Substitutes. A practical handbook. With an introduction by Sir Boverton Redwood. 45 illustrations. 6 x 8¾. cloth. 368 pp. London, 1919. $6.00

Contents: Petroleum; Precautions to be Observed in Practical Work; Preparation of Aliphatic Hydrocarbons; Distillation; Physical Constants; Vapor Density and Allied Problems; Determination of Flash Point, etc.; Detection and Estimation of Elements; Detection and Estimation of Unsaturated Hydrocarbons in Liquid Mixtures; Distillation of Bituminous Shales; "Cracking" of Heavy Oils; Preparation of Certain Aromatic Compounds; Separations Effected by Chemical Reagents; Destructive Distillation of Coal; Distillation of Coal Tar; Methods of Hydrogenation; Alcohol; Derivatives of Ethyl Alcohol; Destructive Distillation of Wood; Saponifiable Oils; Thermo-chemistry; Relative Values of Petrol, Benzine and Alcohol as Motor Fuels; Statistics, Typical Analyses, and Specifications; Relation of Metric and English Units; Questions and Numerical Examples.

Tower, W. S. The Story of Oil. Illustrated. 5 x 7. cloth. 283 pp. New York, 1909. net, $1.00

FUELS

Barr, W. M. Combustion of Coal and the Prevention of Smoke. A practical treatise for engineers, firemen and all others interested in fuel economy and the suppression of smoke from stationary steam-boiler furnaces and from locomotives. *Fifth Edition.* 80 illustrations. 4½ x 6½. 349 pp. New York, 1913. net, $1.00

Contents: Fuels; Some Elementary Data; The Atmosphere; Combustion; Products of Combustion; Fuel Analysis; Heating Power of Fuels; Steam Generation; Stationary Furnace Details; Locomotive Furnace Details; Chimneys and Mechanical Draft.

Best, William N. The Science of Burning Liquid Fuel. Illustrated. 6 x 9. cloth. 159 pp. 1913. net, $2.00

Contents: Introduction; Liquid Fuel, Its Origin, Production and Analysis Atomization; Oil Systems; Refractory Materials; Locomotive Equipment; Stationary and Marine Boilers; Ovens; Furnaces.

Bjorling, P. R., and Gissing, F. T. Peat; Its Use and Manufacture. 18 tables, 60 illustrations. 5 x 7. cloth. 173 pp. London, 1907. $2.50

Contents: Formation, Growth, and Distribution; Specific Gravity and Analysis; Methods of Digging, Cutting, and Dredging; Drying; Peat Fuel Manufacture; Nature and Uses of Peat as a Fuel; Uses of Peat Other Than as a Fuel; Appendix; Bibliography; List of Patents; Index.

Bone, William A. Coal and Its Scientific Uses. 94 illustrations. 5½ x 9. cloth. 506 pp. London, 1918. $7.50

Contents: Introductory; The Origin and Formation of Coal; The Chemical Composition of Coal; The Composition of Coal; The Principles Governing Combustion and Heat Transmission in Boilers; Domestic Heating; The Smoke Nuisance and Its Abatement; General Considerations Relating to the Use of Gaseous Fuels Derived from Coal; The Carbonisation Industries; The Complete Gasification of Coal; Water Gas and Its Applications; Fuel Economy in the Manufacture of Iron and Steel; Economy of Fuel Attainable in the Blast Furnace by the Use of Dry Blast; Power Production from Coal; Surface Combustion.

Booth, W. H. Liquid Fuel and Its Apparatus. Illustrated. 6 x 9. cloth. 308 pp. New York, 1912. $8.00

Brame, J. S. S. Fuel, Solid, Liquid and Gaseous. 73 illustrations. 6 x 9. cloth. 388 pp. New York, 1914. $5.40

Contents: Solid Fuels. Wood, Peat, and Minor Solid Fuels; Coal and Its Constituents; Commercial Varieties of Coal; Treatment and Storage of Coal; Briquettes and Powdered Coal; Cokes and Coking; Special Forms of Coke; Liquid Fuel; Composition and Characters of Fuel Oils; Systems of Burning Oil Fuel; Liquid Fuel and Heavy Fuel Oils for Internal Combustion Engines. *Gaseous Fuel.* Coal Gas and Coke-Oven Gas; Gaseous Fuels of Low Calorific Value; Water Gas; Simple Producer Gas (Siemens Gas) and "Mixed" Producer Gas (Dowson Gas); Producer Gas Plants and Blast Furnace Gas; Fuel Consumptions and General Consideration in Power Production; Fuel Analysis, Calorimetry and Control of Fuel Supply.

Brislee, F. J. An Introduction to the Study of Fuel. A textbook for those entering the engineering, chemical and technical industries. 60 illustrations. 6¼ x 9. cloth. 293 pp. London, 1020. $3.50

Contents: General Chemical Principles; Weight and Volume of Air Required for Combustion; Analysis of Fuel and Flue Gases; Calorimetry and Determination of the Heating Value of a Fuel; Measurement of High Temperatures; Pyrometry; Calculation of Combustion Temperatures; Natural Solid Fuels; Artificial Solid Fuels; Gaseous Fuel; Manufacture of Producer Gas and Water Gas; Theory of the Producer Gas and Water Gas Reactions; Explosion and Explosion Engines; Air Supply and Measurement of Draught; Furnace Efficiency and Fuel Economy; Heat Balances. Furnace and Boiler Tests; Liquid Fuels; Appendices.

Butler, Edward. Oil Fuel. Its supply, composition, and application. *Third Edition, greatly enlarged.* 150 illustrations. 5½ x 7¾. 342 pp. London, 1914. $3.00

Contents: Origin, Production, and Source of Supply; The Economic Aspect and Heat Value of Liquid Fuel; Chemical Composition of Fuel Oils; Conditions of Combustion in Oil; Fuel Furnaces; Early Combustion Methods for Oil Fuel; Steam Air, and Pressure jet Burners, etc.,

Used in Land and Marine Boilers; The Relative Advantages of Steam, Compressed Air, and Mechanical Action, as an Atomising Agent for Liquid Fuel Burners; Oil Fuel for Marine and Naval Uses; Oil Fuel for Locomotives, Road Vehicles, Motor Launches; For Metallurgical Purposes, etc.

Chrystopher, J. E., and Byrom, T. H. Modern Coking Practice, Including the Analysis of Materials and Products. In two volumes. *Second Edition.* Illustrated. 5¾ x 9¼. cloth. New York, 1917.

Vol. I. Raw Materials and Coke. 65 illustrations. 122 pp. N. Y., 1917. $3.00

Contents: Introduction; Classification of Fuels; Impurities in Coals; Coal Washing; Sampling and Valuation of Coals; Calorific Power of Fuels; History of Coke Manufacture; Development of Coke Oven Design; Recent Types of Coke Ovens; Mechanical Appliances at Coke Ovens; Chemical and Physical Examination of Coke.

Vol. II. By-Products. 63 illustrations. 124 pp. New York, 1917. $3.00

Contents: Introductory; Cooling and Condensing Plant; Gas Exhausters; Composition and Analysis of Ammoniacal Liquor; Working Up of Ammoniacal Liquor; Direct and Semi-Direct Processes of Ammonia Recovery; Distillation of Tar; Benzol; Surplus Power; Gas Analysis, Pyrometry.

Cosgrove, James F. Coal. Its Economical and Smokeless Combustion. 33 illustrations, 23 tables. 5¾ x 8¾. cloth. 288 pp. Philadelphia, Pa., 1910. $3.50

Contents: Classification of Coals; Characteristics of Coal; Coal Classified According to Use; Composition of Coal; Effect of Size of Coal; Clinkering of Coal Ash; Prevention of Clinker; Geological History of Coal; The Coal Fields of America; Analysis of Coal; The Purchasing of Coal; Theory of Combustion; Combustion of Coal; Temperature of Combustion; Determining the Heat Value of Coal; Burning Bituminous Coal; Smoke and Its Prevention; Burning Coal Smokelessly; Draft Regulation; Hand-Fired Furnaces; Stoker Furnaces.

Coste, J. H. Calorific Power of Gas. A treatise on calorific standards and calorimetry. 57 illustrations. Numerous tables. 5½ x 8. cloth. 326 pp. London, 1915. $2.25

Contents: Standards. Historical; Calorific Standards. *Calorimetry.* Constituents of Coal Gas and Similar Gaseous Mixtures; Their Thermal Properties; Appendices.

Coste, J. H., and Andrews, E. R. The Examination and Thermal Value of Fuel. Gaseous, liquid and solid. Illustrated. 6 x 9. cloth. 278 pp. Philadelphia, 1914. $2.50

Dunn, F. B. Industrial Uses of Fuel Oil. 109 illustrations. 5½ x 8½. cloth. 244 pp. San Francisco, 1916. net, $3.00

Contents: Oil as a Fuel; Oil Storage and Pumping Systems; Boiler Furnace Arrangement; Oil Burners; Oil Strainers and Heaters; Oil in the Glass Industry, Oil Burning Locomotives; Oil in the Clay, Lime and Cement Industries; Oil in the Sugar and Rubber Industries; Smelting Furnaces Fired with Oil; Metallurgical and Shop Furnaces; Oil in the Steel Industry; Fuel Oil for Naval and Maritime Purposes; Fuel Oil for Domestic Purposes; The Rotary System of Burning Oil; Furnace Efficiency and Combustion; Tests and Reports; Oil for Gas Making.

Ellis, Carleton, and Meigs, J. V. Gasolene and Other Motor Fuels. *In Press*

This book will be very complete and extensive, and will interest the members of the petroleum industry, the natural gas industry, the coke oven industries, the illuminating gas and associative industries, the alcohol industry, and the manufacturer of automobiles.

Franke, G. A Handbook of Briquetting. Translated by F. C. A. H. Lantsberry. 2 vols.

Vol. I., The Briquetting of Coals, Brown Coals, and Other Fuels. 9 plates, 225 illustrations. 6 x 9. cloth. 640 pp. London, 1917. $10.50

Contents: Preparation of Coal Briquettes; Briquetting Coals and Binding Materials; Supply and Collection of Coals and Binding Materials for Briquetting; Crushing; Supply, Mixing, and Distribution; Warming, Drying, Kneading, and Heating; Pressing; Loading and Storage of Briquettes; Complete Coal-Briquette Factories; Regulations of the Mining Commissions; Economy of Briquetting; Costs; Preparation of Brown-coal Briquettes and Wet-Compressed Blocks; Nature, Composition, etc., of Brown-coal for Briquetting; Mining and Supply of Crude Brown Coals; Drying the Briquetting Coals; Carriage, Mixing, etc.; Pressing; Progress, Cooling, Loading and Stacking of the Briquettes; Repair Work; Economics of Brown-coal Briquetting; Statistics; Preparation of Wet-Compressed Blocks; Appendix.

Vol. II. Briquetting of Ores, Metallurgical Products, Metal Swarf and Similar Materials, Including Agglomeration. With appendices. 79 illustrations, 4 plates. 6 x 9. cloth. 225 pp. London, 1918. $4.50

Gibbings, Alfred H. Oil Fuel Equipment for Locomotives and Principles of Application. 42 illustrations. 6 x 9. cloth. 130 pp. New York, 1915. $2.50

Contents: Preliminary Observations and Data; Advantages of Oil Fuel; Principles of Combustion; Methods of Burning Oil Fuel; Different Systems; Steam-jet System; Air-jet System; Pressure-jet System; Pressure-jet Systems—Comparative Tests; Burners; Firebox Conditions and Dampers; Draught Regulation; Regulation of Oil Supply to Furnace; Evaporation Capacity and Heating Surface; Disposition of the Apparatus for Pressure-jet System; Oil Tanks; Piping; Firebricks and Fire Doors; Making Tests and Taking Records; Running Conditions; Instructions to Enginemen; Specification Clauses for Locomotive Oil-Burning Equipments; Auxiliary Apparatus; Holden's Injector and Steam Fitting for Locomotives; The Meyer-Smith Lighting Up or Starting Heater; The Thermoscope; The "Premier" Steam Trap; Conversion Table; List of Modern Publications and Papers on Oil Fuel, etc.; Reference.

Gill, Augustus H. Gas and Fuel Analysis for Engineers. A compend for

those interested in the economical application of fuel. *Eighth Revised Edition.* 20 illustrations. 5 x 7½. 152 pp. New York, 1917. $1.50

Contents: Introduction, Sampling; Apparatus for the Analysis of Chimney-Gases; Measurement of Temperature; Calculations; Apparatus for the Analysis of Fuel and Illuminating Gases; Preparation of Reagents and Arrangement of the Laboratory; Fuels, Solid, Liquid and Gaseous; Their Derivation and Composition; Fuels; Methods of Analysis and Determination of Heating Value.

Gissing, Frederick T. Commercial Peat; Its Use and Its Possibilities. 59 illustrations. 5 x 7. cloth. 191 pp. London, 1910. $2.50

Contents: Alcohol from Peat; Ammonia from Peat—Woltereck Process; Nitrates from Peat; Ekenberg Wet-Carbonizing Process; Utilization of Peat; Peat Gas; Peat-Gas Producers; Peat for Sewage Purposes; Reclamation and Cultivation of Peat Lands; Peat from Falkland Islands; Zeigler's Peat Coking Process at Beuerberg; Zeigler's Peat Coking Process at Dartmoor; Paper from Peat; Peat Dryers; Peat Excavators; Peat Cutters; Peat Mincing or Disintegrating Machine; Peat Squeezer; Peat Drying Ovens; Hydro-Extractor for Extracting Moisture from Peat; Peat Pallet Conveyor; Manufactured Peat Fuel; Destructive Distillation of Peat; Peat Moss Litter Baling Presses; Peat Moss Litter Factory; Peat Moss Litter Willows; Peat Mull Grinding Mills; Peat Tearing and Mixing Machine; "Lennox" Patent Peat Plant; Candy Filters for Peaty Waters; Peat Deposits; Appendices; Bibliography; Patents; Index.

Gissing, Fredk. T. Peat Industry Reference Book. 29 illustrations. 4 x 5½. flexible cloth. 306 pp. London, 1920. $3.00

Contents: Formation, Classification, and Composition; Working of Peat; Treatment of Raw Material; Peat and Peat Products as Solid Fuel; Distillation of Peat; Peat Gas; Uses and Products Other than Fuel; Miscellaneous Information, Formulas, Tables, etc.

Herington, C. F. Powdered Coal as a Fuel. *Second Edition, revised and enlarged.* Illustrated. 6 x 9. cloth. about 350 pp. New York, 1920. *In Press*

Contents: Introductory; Coals Suitable for Powdering; Preparation of Powdered Coal; Feeding and Burning Powdered Coal; Powdered Coal in the Cement Industry; Application of Powdered Coal to Reverberatory Furnaces; Powdered Coal in Metallurgical Furnaces; Powdered Coal Under Boilers; Effective Utilization of Powdered Coal in Metallurgical Furnaces; Analysis of Coal and Ash from a Continuous Furnace; Tables and Useful Data; How to Operate a Pulverized Coal Plant.

Juptner, H. von. Heat Energy and Fuels. Pyrometry, combustion analysis of fuels and manufacture of charcoal, coke, and fuel gases. Translated by Oscar Nagel. Illustrated. 6 x 9. cloth. 306 pp. New York, 1908. $3.00

Kershaw, John B. C. Fuel, Water and Gas Analysis for Steam Users. *Second Edition, revised and enlarged.* Illustrated, 6 x 9. cloth, 213 pp. London, 1919. $3.50

Contents: Fuel. Natural and Artificial Fuels, their Origin, Composition and Methods of sampling; The Approximate Analyis of Fuel; Preparing the Sample, Testing the Fuel; The Calorific Valuation of Solid Fuels; The Calorific Valuation of Liquid and Gaseous Fuels; The Practical Applications of the Test Results. *Water.* The Sources of Feed Water Supply and the Physical and Chemical Characteristics of the Same; The Approximate Analysis of Water; The Practical Applications of the Test Results; The Use of Softening of Reagents and the Tests Necessary to Regulate Their Amount. *Waste.* Waste-Gases-Sampling the Gases; The Approximate Analysis of the Water Gases; The Use of Continuous and Recording Gas-Testing Apparatus; The Practical Applications of the Gas-Test. Results; Appendix.

Kershaw, John B. C. The Use of Low-Grade and Waste Fuels for Power Generation. 52 illustrations. 5¾ x 8¾. cloth. 212 pp. London, 1920.

Contents: Fuels. Introductory; Peat; Lignite, Bagasse and Wood Waste; Coke and Coke-Breeze; Culm and Washery Waste; Towns' Refuse and Garbage; Pitch; Waste Gases. *Scientific Control.* Fuel Sampling and Testing; Calorimetric Tests; Boilers and Furnaces; Automatic Apparatus.

Lewes, V. B. The Carbonisation of Coal. A scientific review of the formation, composition and destructive distillation of coal for gas, coke and by-products. 27 illustrations. 6 x 8¾. cloth. 330 pp. London, 1914. $5.00

Contents: The Formation, Composition, Classification and Distribution of Coal; Form of Retorts used in Gas Manufacture; Coke Ovens and Their Development; Conditions Existing in the Destructive Distillation of Coal; Primary Gaseous Products of the Destructive Distillation of Coal, and the Bodies from Which it Has Been Formed; Tar, Its Formation, Use and Decomposition; Coke; Nitrogen and Sulphur of Coal and Their Recovery; Modern Coal Gas; Appendix.

Lewes, V. B. Liquid and Gaseous Fuels and the Part They Play in Modern Power Production. Illustrated. 5¾ x 8½. cloth. 348 pp. (Van Nostrand's Westminster Series.) N. Y., 1913. $3.00

Contents: Combustion; Formation and Composition of Fuel; Determination of Calorific Value; Liquid Fuels; Use of Liquid Fuels; Liquid and Gaseous Fuels; Manufacture of Coal Gas; Use of Coal Gas for Heating and Power; Water Gas; Poor Fuel Gas; The Fuel of the Future.

Moore, Harold. Liquid Fuels for Internal Combustion Engines. A practical treatise for engineers and chemists. 48 illustrations. 5½ x 8¾. cloth. 215 pp. London, 1918. $5.00

Contents: Petroleum; Shale Oil and Its Products; Coal Tars and Their Products; Lignite Tars and Their Products; Production of the Carbonization of Wood and Peat; Animal and Vegetable Oils; Methyl and Ethyl Alcohol;

Fuels for Engines Fitted with Carburetters; Fuels for Engines Fitted with Vaporizers; Fuel Oils for Engines Fitted with Atomisers; The Examination of Liquid Fuels; Calorimetry.

Poole, Herman. The Calorific Power of Fuels. *Second Edition, revised and enlarged.* With a collection of auxiliary tables and tables showing the heat of combustion of fuels, solid, liquid and gaseous. To which is appended the report of the Committee on Boiler Tests of the American Society of Mechanical Engineers (December, 1899). 50 illustrations. 6x9. 296 pp. New York, 1914. net, $3.00

Contents: Fuels; Methods of Determining Heat of Combustion; Calorimeters; Calorimeters with Constant Pressure; Calorimeters with Constant Volume; Mahler's Bomb; Solid Fuels; Liquid Fuels; Gaseous Fuels; Calorific Power of Coal Burnt Under a Steam-boiler; Air Supplied and Waste Gases; Calculation of the Heat Units; Flame and Flame Temperatures; Weight and Heat Units of Carbon Vapor; Evaporative Power of Fuel; Report of the Committee on the Revision of the Society Code of 1885, Relative to a Standard Method of Conducting Steam-boiler Trials; Presented to the N. Y. meeting of the A. S. M. E. (Dec., 1899); Tables.

Robertson, John B. The Chemistry of Coal. 5x7½. cloth. 104 pp. London, 1920. $1.25

Contents: Classification and Occurrence of Coal; Origin of Coal; Action of Solvents on Coal; Oxidation of Coal; Destructive Distillation of Coal; Analysis of Coal-Sampling; Proximate Analysis; Ultimate Analysis; Calorific Value; Properties of Coal on Combustion.

Sexton, A. H. Fuel and Refractory Materials. *Second Edition, revised.* 104 illustrations. 12mo. cloth. 374 pp. London, 1913. *Reprinting*

Contents: Combustion; Heating Power of Fuels; Fuels: Wood, Peat, Coal; Solid Prepared Fuels: Charcoal, Peat-Charcoal, Coke; Coal Washing; Liquid Fuels; Gaseous Fuels; Recovery of By-Products; Furnaces for Metallurgical Purposes; Supply of Air to the Furnace; Removal of waste Products; Smoke; Smoke Prevention; Pyrometry; Calorimetry; Utilization of Fuel; Testing Fuels;—Refractory Materials; Bricks; Crucibles; Notes and Tables.

Somermeier, E. E. Coal. Its composition, analysis, utilization and valuation. Illustrated. 6½x9½. cloth. 186 pp. New York, 1912. $2.50

Stephenson, J. Industrial Fuels. 107 illustrations. 6¼x9¼. paper. 190 pp. Toronto, Canada, 1920. $2.25
cloth, $3.00

Contents: Coal; Natural Gas; Coal Gas; Oil Gases; Producer Gases; Coke; Fuel Briquets; Application of Commercial Gases; Fuel Analysis; Fuels of the Future.

Taylor, Hugh S. Fuel Production and Utilization. Illustrated. 5½x8¾. cloth. 311 pp. London, 1920. (Industrial Chemistry Series.) $4.00

Contents: Introduction; The Direct Combustion of Coal; The Destructive Distillation of Coal; The Utilization of Coke; The Gasification of Coal; Carbonization Residuals as Fuel; Lignite as Fuel; The Utilization of Peat; The Utilization of Wood; Synthetic Fuels.

Wagner, Frederick H. Coal and Coke. 137 illustrations. 6x9. cloth. 431 pp. New York, 1916. $5.00

Contents: Coal. Origin and Classification of Coal; Oxidation and Spontaneous Combustion; Cooking and Gas Coals; Analyzing Coal; Preparation and Storage of Coal. *Coke.* Carbonization in Retort Benches; Combustion and the Heating of Settings; Flue Gases; Pyrometry; Euchenes Thermic Reactions; Carbonization in Ovens; Chamber Ovens; Low Temperature Carbonization; Power Production with Waste Heat; Coke.

GAS MANUFACTURE AND ANALYSIS

Birchmore, W. H. Interpretation of Gas Analyses. Illustrated. 5x7½. cloth. 86 pp. N. Y., 1906. $1.25

Contents: Introduction; The Translation of the Analysis; The Atmosphere; Specific Gravity and Liter Weights; Combustion; Products; The Immaterial Products of Combustion; Tension of Aqueous Vapor According to Regnault.

Brooke, T. Modern Retort Settings. Their construction and working. 162 illustrations. 5½x8¾. cloth. 210 pp. London, 1912. net, $3.00

Contents: Introduction; Dictinction Between Direct and Gaseous Firing-Types of Settings; Theory of Combustion; Effect of Steam Supply; Foundations; Cellars or Subways, and Stage-Floors; Chimneys and Retort Bench; Direct-Fired Settings; Producer and Setting for Generator and Regenerator Installations; Regenerators; Retorts and Bricks; Retort Bench Ironwork; Working and Regenerator Settings; Vertical Retorts; Pyrometer Tests; Distribution of Heat in Producer and Settings; Specific Heat, etc.

Dennis, L. M. Gas Analysis. 110 illustrations. 5½x7¾. cloth. 450 pp. New York, 1913. $2.75

Contents: Gas Collection and Storage; Measurement of Gases; Determination of the Specific Gravity of a Gas; Laboratory Arrangement and Fittings; Apparatus for Gas Analysis with Water as the Confining Liquid; Hempel Apparatus for Exact Gas Analysis with Mercury as the Confining Liquid; Apparatus Construction and Connection; Purification of Mercury; Absorption Apparatus; Gas Combustion; Determination of Gases by Combustion; Properties of the Various Gases and Methods for Their Determination; Flue Gas Analysis; Illuminating and Fuel Gas; Determination of Heating Value of Fuel; Acetylene Gas; Examination of Atmospheric Air; Analysis of Salt Petre and Nitric Acid Esters with the Nitrometer; The Lunge Nitrometer.

Dowson, J. E., and Larter, A. T. Producer Gas. *Third Edition.* 71 illustrations. 6 x 9. cloth. 335 pp. London, 1912. $3.75

Contents: Theory of Producer Gas; Furnace Work; Heating Work; Engine Work; Suction Plants; Gas from Bituminous Coal For Engine Work; Stand-by Losses; Comparison of Gas and Steam Power Fuel; Analysis of Fuel and Producer Gas; Calorific Power of Solid and Gaseous Fuels; Practical Notes; Appendix.

Franzen, Hartwig. Exercises in Gas Analysis. Translated from the first *German Edition* (with corrections and additions by the author) by Thomas Callan. 30 illustrations. 5 x 7½. cloth. 129 pp. N. Y., 1913. net, $1.00

Contents: Analyses of Gases; Volumetric Gas Analysis; Appendix.

A systematic introduction to the methods used in gas analysis, grading the exercises carefully from easy to more difficult ones, and to each exercise adding a brief discussion of the theoretical questions involved.

Gas Chemists' Handbook. Compiled by technical committee sub-committee of the American Gas Institute on chemical tests, 1916. 73 illustrations. 6 x 9. cloth. 354 pp. New York, 1917. net, $3.50

Contents: Raw Materials; Products of Gas Manufacture; Impurities in Gas; Tar Products; Miscellaneous; Tables.

Gray, H. H. Gas-Works Products. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Greenwood, Harold C. Industrial Gases. 23 illustrations. 5½ x 8½. cloth. 388 pp. London, 1919. (Industrial Chemistry Series.) $5.00

Contents: Introduction; The Gases of the Atmosphere. Air; Oxygen; Nitrogen; The Rare Gases of the Atmosphere; Ozone. *Hydrogen, Carbon and Monoxide, Carbon Monoxide, Carbon Dioxide, Sulphur Dioxide, Nitrous Oxide, Asphyxiating Gases.* Hydrogen, Stationary Plants; The Production of Hydrogen for Military Purposes; Carbon Monoxide; Carbon Dioxide; Sulphur Dioxide; Nitrous Oxide; Asphyxiating Gases. *Gaseous Fuels.*

Haber, Dr. F. Thermodynamics of Technical Gas-reactions. Seven lectures. Translated by Arthur B. Lamb. 20 illustrations. 6 x 9. cloth. 356 pp. London, 1908. $3.50

Hole, W. The Distribution of Gas. *Third Edition.* 687 illustrations. 6¼ x 8¾. cloth. 865 pp. London, 1912. $8.50

Contents: Rights and Duties of Gas Undertakings; Preliminary Considerations; Discharges from Pipes; Discharges from Pipes Under High Pressure; Station Governors; Districting; District Governors; Cast Iron Pipes and Irregulars; Steel Pipes and Connections; Joints and Jointing; Mainlaying; Valves and Main Cocks; Subways; Services; Wet-Dry, Prepayment, and Fixing Meters; Pipes and Joints for Internal Fitting; Internal Fitting and Lighting; Gas Fires and Cookers; Gas Engines; Pressure Gauges and Registers; Complaints and Repairs; Gas as an Aid to Ventilation. *Public Lighting.* Low-Pressure Self-Intensifying and High-Pressure Systems; Lighting and Extinguishing Lamps; High Pressure Distribution and Transmission; Compressors; High Pressure; Distributing Apparatus; Internal Lighting and Heating; Unaccounted-For Gas; Fusion and Electrolysis; Appendix.

Hornby, John. A Text-Book of Gas Manufacture for Students. *Sixth Edition, revised and enlarged.* Illustrated. 6 x 8¼. cloth. 435 pp. London, 1911. $3.00

Kershaw, John B. C. Fuel, Water and Gas Analysis for Steam Users. *Second Edition, revised and enlarged.* Illustrated. 6 x 9. cloth. 213 pp. London, 1919. $3.50

Kunberger, A. F. (Editor). Gas Chemists' Handbook. Compiled by Technical Committee, Sub-Committee on Chemical Tests, 1916, of the American Gas Institute. Illustrated. 6 x 9. cloth. 354 pp. New York, 1916. $3.50

Lange, K. R. The By-Products of Coal-Gas Manufacture. Trans. by Chas. Salter. 13 illustrations and diagrams. 5 x 7½. cloth. 162 pp. London, 1915. $2.50

Contents: Production of Coal Gas; Coke; Retort Graphite; Gas Tar; The Gas Liquor; Treatment of the Gas-Purifying Agents; Treating the Cyanogen Sludge; Treating the Crude Liquors; Treatment of the Crude Ammonium Thiocyanate and Cuprous Thiocyanate; Potassium Ferricyanide; The Cyanogen Pigments; Sulphur and Sulphuric Acid.

Latta, M. Nisbet. American Producer Gas Practice. 247 illustrations. 7¾ x 10¾. cloth. 547 pp. N. Y., 1910. net, $6.00

Contents: Producer Operation; The Producer; Cleaning the Gas; Works Details; Producer Types; Moving Gases; Solid Fuels; Physical Properties of Gases; Chemical Properties of Gases; Gas Analysis; Gas Power; Gas Engines; Furnaces and Kilns; Burning Lime and Cement; Preheating Air; Doherty Combustion Economizer; Combustion in Furnaces; Temperature, Radiation and Conduction; Data; Heat Measurement; Flues and Chimneys; Materials; Useful Tables; Glossary.

Latta, M. Nisbet. Handbook of American Gas-Engineering Practice. Illustrated. 5¾ x 8¾. cloth. 477 pp. New York, 1907. $5.00

Contents: Water Gas Manufacture. Generator; Carburetter; Superheater; Wash-Box and Tar; Scrubbers; Condensers; Purifiers; Exhausters; Station-Meters; Holders; Works Operation. *Gas Distribution.* Naphthalene; Mains; Services; Consumers' Meters; Pressure; House Piping; Appliances. *General Technical Data.* Properties of Gases; Steam; Mathematical Tables; Conversion Factors; Pipe and Miscellaneous Data.

Leeds, F. H., and Butterfield, W. J. A. Acetylene. The principles of its generation and use. A practical handbook on the production, purification and subsequent treatment of acetylene for the development of light, heat and power. *Second Edition, revised and enlarged.* 62 illustrations. 5¼ x 8. cloth. 404 pp. London, 1910. $3.25

Lunge, George. Technical Gas Analysis. 143 illustrations. 6¼ x 9¼. cloth. 423 pp. New York, 1914. $4.50

Contents: General Remarks on Technical Gas Analysis. *Various Methods Employed in Technical Gas Analysis.* Estimation of Solid and Liquid Admixtures in Gases; Estimation of Gases by Absorption; Estimation of Gases by Combustion; Gas Analysis by Optical and Acoustical Methods; Separation of Gases by Low Temperatures; Estimation of Specific Gravity of Gases; Measurement of Pressure and of Draught; Determination of the Calorific Value of Gases; Determination of the Illuminating Power of Gases; Special Method for Detecting and Estimating Various Gases and Vapors Occurring in Technical Operations; Analysis of Gaseous Mixtures Produced on a Large Scale; Compressed and Liquefied Gases; Gas-Volumetric Analysis; Appendix; Addenda.

Martin, G., and others. Industrial Gases. Including the liquefaction of gases and the manufacture of hydrogen, oxygen, nitrogen, carbon dioxide, sulphur dioxide, ammonia, producer gas, illuminating gas, acetylene, ozone, etc. 84 illustrations, 3 folding plates. 6½ x 10. cloth. 158 pp. N. Y., 1916. $4.00

Mathot, R. E. Gas-Engines and Producer Gas Plants. Translated by W. B. Kaempffert. 152 illustrations. 6 x 9¼. cloth. 314 pp. N. Y., 1906. $3.00

Contents: Motive Power and Cost of Installation; Selection of an Engine; The Installation of an Engine; Foundation and Exhaust; Water Circulation; Lubrication; Conditions of Perfect Operation; How to Start an Engine; Preliminary Precautions; Perturbations in the Operation of Engines and Their Remedy; Producer-Gas Engines; Producer-Gas; Pressure Gas-Producers; Suction Gas; Producers; Oil and Volatile Hydrocarbon Engines; Selection of an Engine.

Meade, Alwyne. Modern Gasworks Practice. (With an introduction by Stanley H. Jones.) 340 illustrations. 7¾ x 9¾. cloth. 540 pp. N. Y., 1916. $8.50

Contents: The Planning and Laying Out of Gasworks; Foundations, Gasworks Buildings, Etc.; The Horizontal Retort Bench; Control of Horizontal Retort Settings; Vertical Retorts and Chamber Ovens; Refractory Materials; Retort-Bench Appurtenances; Mechanical Handling of Materials; Electrical Plant in Gasworks; Gas Making and Other Coals; Carbonization of Coal; Condensation of Coal Gas; Exhausting Machinery; Preliminary Purification of Coal Gas; Recovery of Cyanogen; Dry Purification of Coal Gas; Storage of Gas; Water Gas: Its Manufacture, Enrichment, and Use.

"Mentor." Self-Instruction for Students in Gas Engineering. *Third Edition.* 34 illustrations. 5x 7¼. cloth. 245 pp. London. $2.00

Contents: Coals and Coal Testing; Effect of Temperature on Carbonization; Composition of Coal Gas; Testing for Impurities; Gas Analysis; Heating of Retort Settings; Photometry, Calorimetry and Pyrometry; Carburetted Water Gas; Sulphate of Ammonia Manufacture; Labor Saving Machinery; Inclined and Vertical Retorts; Carburation and Naphthalene; Cyanogen Recovery and Purification; Gas Holder Construction; Points in Management; Delivery of Gas Through Mains.

"Mentor." Self-Instruction for Students in Gas Supply. *Elementary Second Edition.* 135 illustrations. 5 x 7¼. cloth. 266 pp. London, 1912. $2.50

Contents: Station Governors; General Arrangement of Mains: Use of the District Governor; Pressures; Mains and Mainlaying; Leakages and Stoppages; Service Laying and Meter Fixing; Gas Meters; Plumbing; Interior Fitting; Governors; Burners; Lanterns; Flames; Ventilation; Shades and Globes; Construction and Fixing of Cookers; Geysers and Circulators; The Construction and Operation of Gas Engines; Answers to the City and Guilds Questions in Gas Supply, Ordinary Grades, 1910, '11.

"Mentor." Self-Instruction for Students in Gas Supply. *Advanced Second Edition.* 71 illustrations. 5 x 7¼. cloth. 253 pp. London, 1914. $2.50

Contents: Flow of Gas in Mains: Pipes of Various Materials; Electrolysis; Methods of Dealing with Naphthalene and Other Stoppages; Ascertaining the Pressure in Gas Mains; Pressure Recording Instruments; Gases and Their Toxicological Effects; First Aid; High Pressure Distribution; Calorimetry; Information for Gas Fitters; Street and Indoor Lighting; Unaccounted-for Gas; Ventilation; Law Effecting Gas Supply.

Newbigging, T. Handbook for Gas Engineers and Managers. *Eighth Edition.* 217 illustrations. 6½ x 8¼. leath. 596 pp. London, 1913. $7.50

Contents: Coal; Chief Kinds of Coal; Storage of Coal; Analyses of Coals and Cannels; Spontaneous Ignition of Coal; Gases Occluded in Coal; Testing of Coal for Its Producing Qualities; Specific Gravity of Coal; Coal Distillation; Gas Production; Retort House; Retort Stack; Retorts; Heating of Retorts; Inclined Retorts; Machine Charging and Drawing; Analysis of Furnace Gases; Retort Bench Mountings; Hydrocarbon and Other Gases and Vapors; Retort House Tools and Appliances; Condensation; Naphthalene; Condensers; Exhausters; Steam Engines and Boilers; Washers; Tower-Scrubbers; Washer-Scrubbers; Bye-Pass Mains and Valves; Tar and Liquor Wells and Tanks; Purification; Purifying House; Purifiers; Notes on Lime; Lime Burning; Station Meters and Other Indicating and Recording Apparatus; Gas-holder Tanks; Gasholders; Governors; Main Pipes; Main Pipe Joints; Wrought-Iron and Steel Main Pipes; Laying of Main Pipes; Explosions in Main Pipes; Testing of Mains in the Ground; Electrolysis of Mains and Service Pipes; Discharge of Gas Through Main Pipes; Service Pipes and

Fittings; Public Lighting; Consumers' Gas Meters; Testing Meters; Internal Fittings; Coal Gas Testings; Appliances and Methods; Tests for Impurities; Illuminating Power; Foreign and Other (proposed) Home Standards of Light; Jet Photometers; Specific Gravity of Gas; Enrichment of Coal Gas; Public Illuminations; Colored Fires; Illumination Devices; Use of Gas for Purposes Other Than Lighting; Residual Products; Coke and Breeze; Coal Tar; Ammonical Liquor; Sulphur Recovery; Cyanogen; Coal Products; Elementary Substances; Chemical and Other Memoranda; The Gas Industry; Cost of Gas-Works; Bricks and Brickwork; Mortar and Concrete; Iron, Steel, and Other Metals; Velocity and Force of the Wind; Specific Gravity and Weight of Various Substances; Office Memoranda; Approximate Multipliers; Tables of Diameters, Circumferences, Areas of Circles and Sides of Equal Squares; Weights and Measures; French Weights and Measures-Decimal System; Money Tables.

O'Connor, Henry. The Gas Engineer's Pocket-Book. Comprising tables, notes, etc., relating to the manufacture, distribution and use of coal gas. *Third Edition, revised.* 4¾ x 6¾. leather. 478 pp. London, 1907. $5.00

Contents: General Mathematical Tables: Unloading Materials and Storage; Retort House; Condensers; Boilers, Engines, Pumps and Exhausters; Scrubbers and Washers Purifiers; Gasholder Tanks; Gasholders; Workshop Notes; Manufacturing; Retort House; Condensing Gas; Exhausters; Washing and Scrubbing; Purification; Gasholders; Distributing Gas; Testing Enriching Process; Products Works.

O'Connor, Henry. Petrol Air-Gas. *Second Edition, thoroughly revised and enlarged.* 27 illustrations. 5 x 7½. cloth. 106 pp. London, 1912. net, $0.75

Contents: Description of Previous Plants and Systems for Country House Lighting; Difficulties; Objections and Prices; History of Petrol Gas; Comparative Costs; Petrol—Its Nature, Dangers and Storing; Heating Values; Burners; Parts of Plants; Various Plants; Extract from the Act for Safe Keeping of Petroleum.

Royle, Harold M. The Chemistry of Gas Manufacture. A practical manual for the use of gas engineers, gas managers and students. 82 illustrations. 5¾ x 8¾. cloth. 343 pp. N. Y., 1908 $5.00

Contents: Preparation of Standard Solutions; Coal; Furnaces; Testing and Regulation; Products of Carbonization; Analysis of Crude Coal-Gas; Analysis of Lime; Ammonia; Analysis of Oxide of Iron; Naphthalene; Analysis of Fire-Bricks and Fire Clay; Weldon, and Spent Oxide; Photometry and Gas Testing; Carburetted Water-Gas; Appendix Miscellaneous Extracts; Useful Data.

Russell, Walter M. Operation of Gas Works. 76 illustrations. 6 x 9. cloth. 219 pp. New York, 1917. $2.50

Contents: Organization and Management Chemical Control; Coal Gas; Water Gas; General Plant Operation; Calorimetry and Photometry.

Russell, W. M., and Wills, F. Chemical Control of Gas Manufacture. 47 illustrations. 5¼ x 7¾. cloth. 152 pp. New York, 1916. net, $2.00

Contents: General; The Retort House; Ammonia Recovery; The Condenser Room; The Purifying Plant; Calorimetry and Photometry; Chemical Tests for Purity; Gas Analysis; The Water Gas Machine; The Laboratory and Its Equipment; Physical Control; Elementary Chemistry; Chemical Tests; Elementary Analytical Chemistry.

Stone, C. H. Practical Testing of Gas and Gas Meters. 51 illustrations. 6 x 9. cloth. 347 pp. N. Y., 1909. $3.50

Contents: Photometry; Chemical Tests; Calorimetry; Specific Gravity and Pressure; Testing of Meters.

Wagner, F. H. Coal Gas Residuals. *Second Edition, revised and enlarged.* Illustrated, folding plates. 6 x 9. cloth. 257 pp. New York, 1918. $2.50

RUBBER

Akers, C. E. The Rubber Industry. In Brazil and the Orient. 26 illustrations, 2 maps. 5½ x 7¾. cloth. 336 pp. London, 1914. $2.50

Braham, F. Rubber-Planter's Notebook. A handy book of reference on para rubber planting. 23 illustrations and plates. 4½ x 6½. cloth. 116 pp. London, 1911. $1.20

Contents: Nurseries, Planting, Topping, Etc.; Machinery, Literature of Rubber, Useful Notes, Etc.; Hints on the Preservation of Health in Tropical Climates; Notes on the Geography and Climate of Para Rubber-Growing Countries; Plantation Life; Hand Measure; Measuring the Growth of Trees; Preventing Coagulation of Latex; Tackiness in Rubber; Growth of Hevea Trees.

Brown, Harold. Rubber. Its resources, cultivation, and preparation. With a preface by Wyndham R. Dunstan. Illustrated. 12 plates. 5¾ x 9. cloth. 261 pp. New York, 1916. $2.50

Contents: Utilization of Rubber; Cultivation of Rubber Plants; World's Production of Rubber; Rubber Production in America, Africa and Asia; Rubber in British Africa; The Principal Rubber-Yielding Plants; Latex; The Tapping of Rubber Plants; The Preparation of Rubber; The Chemistry of Rubber; Statistics of Consumption and Prices; The Para Rubber Tree; The Ceara Rubber Tree; The African Rubber Tree; The African Rubber Vines; The Central American Rubber Tree; The Assam Rubber Tree; Other Species of Ficus.

Caspari, W. A. India-Rubber Laboratory Practice. 23 illustrations. 5 x 7½. cloth. 204 pp. London, 1914. $2.50

Contents: Crude and Washed Rubber; Machinery and Apparatus; Rubber Diluents; Solid Compounding Materials; Miscellaneous Accessor-

ies; Specific Gravities; Analysis of Manufactured Rubber: Organic and Inorganic; Gutta-Percha and Balata; Tables.

Clouth, F. Rubber, Gutta-Percha and Balata. First English translation, with additions and emendations by the author. 23 illustrations, 1 map. 6¾ x 9¾. cloth. 255 pp. New York, 1903. $6.00

Contents: India Rubber. Natural History; Production of Raw Rubber; Commercial Points; Chemical and Physical Properties of Raw Rubber; Production of Soft Rubber Goods; The Vulcanization; Chemical and Physical Properties of Vulcanized Soft Rubber; Hard Rubber (Ebonite); Regenerated and Artificial Rubber. *Gutta-Percha.* Natural History; Production of Raw Gutta-Percha; Commercial Points; Chemical and Physical Properties; Production and Employment of Gutta-Percha Goods; Balata; Survey, On the Principal Products Made of India Rubber, Gutta-Percha and Balata.

Dubosc, A., and Luttringer, A. Rubber: Its Production, Chemistry and Synthesis in the Light of Recent Research. A practical handbook for the use of rubber cultivators, chemists, economists and others. 6½ x 9. cloth. 394 pp. London, 1918. net, $6.50

Contents: Natural Rubber, Its Production, Its Present Position, Its Cost of Production. Introductory; Resinous Rubbers; Reclaimed Rubber; Cost of Production of Rubber. *The Formation, Physical and Chemical Properties, Analysis, and Constitution of Crude Rubber.* The Laticiferous System; Physical and Chemical Examination of Latex; Coagulation; Examination of the Physical Properties of Coagulated Rubber; Chemical Analysis of Coagulated Rubber; Constitution of Rubber. *The Synthesis of Caoutchouc.* Isoprene and Its Homologues; The Preparation of Synthetic Rubber.

Eaton, B. J., Grantham, J., and Day, F. W. F. The Preparation and Vulcanisation of Plantation Para Rubber. Illustrated. 6 x 9¾. paper. 400 pp. Kuala Lumpur, F. M. S., 1918. $5.00

Contents: Introductory; Description of Experimental Vulcanizing Factory; Technique; The Scientific Aspect of the Problem of Variability and Researches on its Elucidation; Variability of Plantation Para Rubber with Different Technical Mixings; The Rate of Combination of Sulphur with Different Types of Plantation Para Rubber; Influence of Rate of Drying; Smoked Rubber and the Problem of the Effect of Smoking on Quality; Effect of Concentration of Latex; The Effect of Excessive Crepeing; The Effect of Excess of Acetic Acid; The Effect of Incomplete Coagulation; The Effect of Sodium Bisulphate in the Preparation of Pale Crepe Coagulation in Tanks versus Coagulation in Pans; The Effect of Various Coagulants; Special Processes; The Effect of Various Antiseptics on the Maturing of Slab in the Preparation of Fast Curing Rubber; The Effect of Soaking Freshly Machined Sheet Rubber in Water; The Effect of Washing and Crepeing Dry Sheet Rubber; The Effect of Alkalis on Rubber; The Effect of Certain Organic Vulcanization; The Effect of Mixing Raw Rubbers Having Different Rates of Cure; Estate Samples of "First Latex" Rubber; Lower Grade Plantation Para Rubbers; Fine Hard Para; Summary; Uniformity and Estate Practice; "Parchment Set" Tests as a Method of Valuation; Appendix.

Heil, Adolf. The Manufacture of Rubber Goods. A practical handbook for the use of manufacturers, chemists and others. *English Edition,* by E. W. Lewis. Illustrated. 6¼ x 9. cloth. 244 pp. London, 1909. $4.50

Contents: Plan and Arrangement of a Rubber Goods Factory; The Raw Material; Vulcanisation of Rubber; The Mixings; Manufacture of Soft-Rubber Articles; Manufacture of Ebonite.

Johnson, W. H. The Cultivation and Preparation of Para Rubber. *Second Edition, rewritten and greatly enlarged.* 32 illustrations. 6 x 9. cloth. 186 pp. London, 1909. $3.75

Contents: The World's Production and Consumption of Rubber; The Para Rubber Tree; Propagation; Planting and Cultivation; Soils and Manures; Pests; Latex; Collecting the Latex; Rubber Manufacture; Antisepticisation of Rubber; Drying and Packing Rubber for Export; Yield of Para Rubber from Cultivated Trees; Establishment and Cultivation of a Para Rubber Plantation; Commercial Value of the Oil in Hevea Seeds.

Lock, R. H. Rubber and Rubber Planting. 22 illustrations, 10 plates. 5¼ x 7½. cloth. 260 pp. Cambridge, 1913. $1.65

Contents: History of the Use and Cultivation of Rubber; Botanical Sources of Rubber; Physiology of Latex Productions; Tapping Experiments. *Hevea.* Planting and Harvesting Operations; Factory Work on the Estate; Pests and Diseases of Hevea; Cultivation of Species Other Than Hevea Brasiliences; Chemistry of India-Rubber; Manufacture of Rubber Goods.

Morrell, R. S., Waele, A. E., and Rideal, S. Rubber, Resins, Paints and Varnishes. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Pearson, Henry C. Crude Rubber and Compounding Ingredients. A textbook of rubber manufacture. *Third Edition.* 6¼ x 9¼. cloth. 422 pp. New York, 1918. $10.00

Contents: Crude Rubber, Chemical and Physical Characteristics, Sources of Supply; Some Little Known Rubbers and Bastard or Pseudo Gums; Coagulation of Rubber Latex; Vulcanizing Processes and Ingredients—Plantation Hevea and the Optimum Cure; Organic and Inorganic Accelerators; Fillers and Ingredients Used in Rubber Compounds; Substitutes for India Rubber, Natural and Artificial; Substitutes for Hard Rubber and Gutta Percha, Including Cellulose Products; Resins, Balsams, Gums, Earth Waxes, and Gum-like Substances Used in Rubber Compounding; Coloring Matters; Acids, Alkalies, and Their Derivatives Used in Rubber Manufacture; Vegetable, Mineral and Animal Oils Used in Rubber Compounds and Solutions; Solvents Used in Commercial and Proofing Cements, Their Origin, Properties, and Methods of Use; Miscellaneous Processes and Compounds for the Use in the Rubber Factory; Synthetic Rubber; Vulcanization Without Sulphur; Re-

claimed Rubber and Its Uses; Physical Tests and Analysis of Crude and Vulcanized Rubber; Primary Processes, Divisions in Rubber Manufacture, and Typical Compounds; Gutta-Percha: Its Sources, Properties, Manipulation, and Uses.

Pearson, Henry C. Rubber Machinery. An encyclopedia of machines used in rubber manufacture. 428 illustrations. 6½ x 9½. cloth. 420 pp. New York, 1915. net, $6.00

Contents: The Washing of Crude Rubber; Crude Rubber Drying: Dry-Sifting and Batching of Compound Ingredients; Mixing and Compounding of Rubber; Preparing Fabrics for Calendering and Spreading; Calenders; Clutches, Drives, and Safety Stops for Mills and Calenders; Molds, Metal and Rubber; Vulcanizers; Vulcanizing Presses, Screw and Hydraulic; Tube Making Machinery; Spreaders, Doublers and Surface Finishers; Cement and Solution Machinery; Extraction of Rubber and Gutta-Percha from Shrubs, Vines, Roots, and Leaves; Extraction of Resin from Rubber and Gutta Percha; Reclaiming; Temperature Recording and Controlling Devices; Rubber Laboratory Equipment.

Porritt, B. D. The Chemistry of Rubber. 5¼ x 7½. cloth. 104 pp. (Van Nostrand's Chemical Monographs, No. 3.) New York, 1914. net, $1.00

Contents: The Properties of Crude Rubber; Constitution and Derivatives; Methods of Vulcanization; Theories of Vulcanisation; Waste Rubber and Its Utilisation; Synthetic Caoutchouc; Bibliography.

Potts, H. E. The Chemistry of the Rubber Industry. 6¼ x 9½. cloth. 168 pp. London, 1912. $2.50

Contents: The Colloidal State; Raw Rubber; Gutta Percha and Balata; Mixing; Vulcanization; Vulcanized Rubber.

Schidrowitz, P. Rubber. Its production and industrial uses. plates. 83 illustrations. cloth. 6 x 9¼. 320 pp. New York, 1911. $6.00

Contents: Historical: Production and Consumption of Rubber; General Nature of the Rubber Industry; Wild Rubber; Plantation Industry; Plantation System of the Preparation of Rubbers other than Hevea: Industrial Rubbers; Rubber Latices and Coagulation; Crude Rubbers Compared—Tackiness; Chemistry of Crude Rubber; Theory of Vulcanization; Manufacture of Rubber Goods; Substitutes and Waste Rubber Disposal; Chemical, Physical and Mechanical Properties of Vulcanized Rubber; Chemical Analysis and Physical Examination of Rubber; Mechanical Tests; Contracts and Specifications.

Seeligmann, T., Torrilhon, G. L., and Falconnet, H. India Rubber and Gutta Percha. Translated by J. G. McIntosh. A complete practical treatise on India rubber and gutta percha in their historical, botanical, aboricultural, mechanical, chemical and electrical aspects. *Second English Edition, revised and enlarged.* 145 illustrations. 125 tables. 6½ x 9¾. cloth. 424 pp. London, 1910. $6.00

Contents: India-Rubber—Botanical Origin; Climatology; Soil; Rational Culture and Acclimation of the Different Species of India-Rubber Plants; Methods of Obtaining the Latex; Methods of Preparing Raw or Crude India-Rubber; Classification of the Commercial Species of Raw Rubber; Physical and Chemical Properties of the Latex and of India-Rubber; Mechanical Transformation of Natural Caoutchouc into Washed or Normal Caoutchouc (Purification) and Normal Rubber into Masticated Rubber; Softening, Cutting, Washing, Drying; Preliminary Observations; Vulcanisation of Normal Rubber; Chemical and Physical Properties of Vulcanised Rubber; General Considerations; Hardened Rubber or Ebonite; Considerations on Mineralisation and other Mixtures; Coloration and Dyeing; Analysis of Natural or Normal Rubber and Vulcanised Rubber; Rubber Substitutes; Imitation Rubber. Gutta Percha—Botanical Origin; Climatology; Soil; Rational Culture; Methods of Collection; Classification of the Different Species of Commercial Gutta Percha; Physical and Chemical Properties; Mechanical Transformation; Methods of Analysing; Gutta Percha Substitutes.

Stevens, H. P., and Beadle, C. Rubber. Production and Utilization of the raw product. *Second Revised and Enlarged Edition.* 28 illustrations. 4¾ x 7¼. cloth. 149 pp. London, 1911. $1.00

Terry, H. L. India Rubber and Its Manufacture. With chapters on gutta-percha and balata. Illustrated. 6 x 9. cloth. 303 pp. London, 1919. $3.50

Contents: Introduction; Historical and General; Raw Rubber; Chemical and Physical Properties; Vulcanization; India Rubber Plantations; India Rubber Substitutes; Reclaimed Rubber, Washing and Drying of Raw Rubber; Compounding of Rubber; Rubber Solvents and Their Recovery; Rubber Solution; Fine Cut Sheet and Articles Made Therefrom; Elastic Thread; Mechanical Rubber Goods; Sundry Rubber Articles; India Rubber Proof Textures; Tyres; India Rubber for Boots and Shoes; Rubber for Insulated Wires; Vulcanite; Contracts for India Rubber Goods; Testing of Rubber Goods; Gutta Percha; Balata; Bibliography; Index.

Torrey, J., and Manders, A. S. (Editors.) The Rubber Industry. Illustrated. 6½ x 10. cloth. 516 pp. London, 1915. net, $6.00

The Official Report of the Fourth International Rubber Congress held in London in 1914, together with the papers read and discussions thereon. Numerous papers and discussions dealing with Fibres, Cotton, Oils, etc. The principal papers read at the Rubber Congress, New York. Also a report of the Proceedings of the Fourth International Rubber and Allied Industries Exhibition, London, 1914.

Weber, Carl Otto. Chemistry of India Rubber. Including the outlines of a theory on vulcanisation. Illustrated. 6¾ x 9. cloth. 314 pp. London, 1912. net, $6.00

Contents: The Chemistry of India Rubber; Examination and Valuation of Gutta Percha and India Rubber; Examination of India Rubber Substitutes; Inorganic Compounding Materials; Vulcanizers and Sulphur Carriers; India Rubber

Solvents; Coloring Matters; Constructive Components of India Rubber Articles; Analysis of Rubber Articles; Appendix; Sanitary Conditions in India Rubber Works; Index.

Wicherley, W. The Whole Art of Rubber-Growing. *Second Edition.* Illustrated. Full-page plates. 5 x 7½. cloth. 154 pp. Philadelphia, 1919. $1.50

Contents: Introductory: *Trees That Count*—Hevea Brasiliensis; Manihot Glaziorii; The Ficus; Castilloa Elastica; Funtumua Elastica; The New Mahinets; Interplanting; Assimilative and Secondary Rubbers; Clearing and Planting Forest Lands; Future Prospects; The Soya Bean.

Wickham, H. A. On the Plantation, Cultivation, and Curing of Para Indian Rubber (Hevea Brasiliensis) with an account of its introduction from the west to the eastern tropics. Illustrated. 12mo. cloth. 78 pp. London, 1909. net, $1.50

Contents: Advantages of "Hevea"; Planting and Cultivation: Extraction and Cure of Rubber "Latex"; Curing the "Latex"; General Observations; Genesis of the "Plantation Para"; India Office Report; Rubber Curing Apparatus Specification.

Woodroffe, Joseph F. The Rubber Industry of the Amazon, and How Its Supremacy Can be Maintained. Edited with additions by Harold H. Smith. With a foreword on the Latin-American Indian by Viscount Bryce. 48 illustrations. 6 x 8¾. cloth. 484 pp. London, 1916. net, $6.00

Contents: The Labor Question; Historical and Deseriptive; Eastern Plantation; East and West; New Methods for Preparing Rubber; The Scringuero and His Life; Plantation Rubber up the Amazon; Rubber and Its Labor Supply; Settlers in Brazil; The Japanese as Planters, Artisans, etc.; The Chinese; Rubber Preparation up the Amazon; The Future of the Rubber up the Amazon; The Ideal System of Collection; Question of Transportation; Amazonian Industries; The Question of Food Production; Hunting and Fishing; Brazilian Settlers of To-morrow; The Future Homestead of the Seringuero; The Future of Brazil; Costs and Prices; The Monroe Doctrine.

Wright, Herbert. Hevea Brasiliensis or Para Rubber. Its botany, cultivation, chemistry and diseases. *Third Edition.* Illustrated. 6¾ x 8¾. cloth. 221 pp. Colombo, 1908. net, $5.00

Contents: History of Para Rubber in the East; Botany of the Para Rubber Tree; Climatic Conditions for Para Rubber; Cultivation of Para Rubber Trees; Para Rubber Soils and Manuring; Tapping Operations and Implements; How, Where and When to Tap Para Rubber Trees; Yields; Effect of Tapping on the Trees; Physical and Chemical Properties of Latex; Production of Rubber; Drying of Rubber; Physical and Chemical Properties of Rubber; Purification; Vulcanization and Uses of Rubber; Kinds of Para Rubber; Diseases of Para Rubber Trees; What to do with the Seeds; Estimates of Rubber Planters; Costs of Planting Rubber in Ceylon, Malaya, Java, South India and Borneo.

Wyllie, J. A., and Ferriera, O. G. Notes on Rubber Cultivation. With special reference to Portuguese, India. With 16 full-page plates. 8vo. cloth. Illustrated. 131 pp. Madras, 1907. net, $3.50

CERAMICS—GLASS

Asch, W., and Asch, D. The Silicates in Chemistry and Commerce. Including the exposition of a hexite and pentite theory and of a stereo-chemical theory of general application. Translated, with critical notes and some additions, by Alfred B. Searle. Illustrated. 6¾ x 10. cloth. 476 pp. London, 1913. $7.50

Contents Chemistry of Carbon and Silicon; Historical Review of Existing Theories Concerning the Constitution of the Alumino-Silicates and Other Silicates; Critical Examination of Existing Theories Concerning Alumino-Silicates: Hypothesis Concerning the Bonding of the Atoms in Alumino-Silicates and Allied Compounds; *Consequences of the "Hexite-Pentite Theory" and the Facts;* Reactions During Double Decomposition; Genetic Relationship Between Various Aluminosilicates; Possibility of a Chemical System of Aluminosilicates; Variable Chemical Behavior of Part of the Aluminum in Kaolin, Nepheline and in the Epidotes; Minimum Molecular Weight of Aluminosilicates; Constitution of Andesite. Possibility of Isomerism; Water of Crystallization and of Constitution; Basic and Acid Water; Prognoses; Constitution of the Complexes of Molybdenum and Tungsten; Constitution of Clays; Ultramarines; New Theory of Hydraulic Binding Materials and Particularly of Portland Cements; Of the Porcelain Cements as Used for Dental Fillings; Of Glass, Glazes and Porcelain; Hexite-Pentite Theory as a General Theory of Chemical Compounds; Conversion of the H-P Theory Into a Stereo-chemical Theory and the Combination of the latter with the Modern Theory of the Structure of Crystals; Summary and Conclusions; Bibliography; Appendix Formulas and Analyses.

Audley, J. A. Silica and the Silicates. 5½ x 8¼ cloth. (Industrial Chemistry Series.) *In Press*

Bassett, Sara W. The Story of Glass. Illustrated. 5¾ x 7¾. cloth. 230 pp. Philadelphia, 1916. net, $0.75

Beckwith, A. Pottery. Observations on the materials and manufacture of terra-cotta, stoneware, firebrick, porcelain, earthenware, brick, majolica, and encaustic tiles. 5¾ x 9. paper. 101 pp. New York, 1872. $0.60

Contents: Porcelain; Parian; Earthenware; Decorative Tiles; Terra Cotta; Stoneware; Terro-

Metallic Ware; Blue Bricks; Fire-Clay Wares; Bricks; Drain Pipes; Roofing Tiles; Ancient Architectural Pottery.

Bellow, H. R. Factory Glazes for Ceramic Engineers. Book A of the series: Leadless sanitary glazes for hard weatherproof glazed brick and stone factory; for porcelain enameled fireclay sanitary ware factory; for soft porcelain factory; for strong clayware factory. 9 x 14 inches. cloth. 60 pp. New York, 1908. $10.00

Arranged after an exhaustive method for the heat of the soft porcelain kiln and including the glazes employed in factories by the foremost manufacturers of the finest products, with many new improvements and additions resulting from an extensive experience and never before published.

Binns, C. F. Manual of Practical Potting. Compiled by experts. *Fourth Edition, revised and enlarged.* 5¾ x 8¾. cloth. 214 pp. $8.00

Contents: Bodies; Glazes; Gold and Gold Colors; Means and Methods; Classification and Analysis; Forms and Tables.

Binns, Charles F. The Potter's Craft. A practical guide for the studio and workshop. 42 illustrations and plates. 12mo. cloth. 171 pp. New York, 1910. net, $2.00

Sets forth in the simplest and most explicit way a method of making and finishing pottery which may be followed by the most inexperienced individual workers, not in an empirical way but upon a sound, scientific basis, so that with the knowledge imparted the student has at his disposal the whole range of ceramic science.

Contents: The Present Need: Art versus Beauty; What Constitutes Art?; Pottery; Porcelain; The Preparation of the Clay; Mold Making and Plaster; Cases and Working Molds; Building by Hand; The Potter's Wheel; Turning; Making Large Pieces; Cups, Saucers and Plates; Casting; Tiles; Glazes and Glazing; Glaze Composition, Matt Glazes, Fritted Glazes,

Biser, Benjamin F. Elements of Glass and Glassmaking. Chemically revised by J. A. Koch. 6¼ x 8½. cloth. 140 pp. Pittsburgh, Pa., 1915. net, $3.00

A treatise designed for the practical glassmaker, comprising facts, figures, recipes, and formulas for the manufacture of glass, plain and colored. Including an appendix containing useful information pertaining to the subject.

Boswell, P. G. H. A Memoir on British Resources of Sands Suitable for Glassmaking. With notes on certain crushed rocks and refractory materials, and chemical analysis by H. F. Harwood and A. A. Eldridge. 11 illustrations, 3 plates. 5½ x 8½. paper. 92 pp. London, 1916. $0.50

Contents: Nature of Sands; Methods of Study of Sands; Glass Manufacture; Requirements of a Good Glass-Sand; Sands Suitable for Glassmaking; Special Treatment of Sands and Rocks —Economic Considerations.

Boswell, P. G. H. A Supplementary Memoir on British Resources of Sands and Rocks Used in Glass Manufacture. With notes on certain refractory materials. Contributions by W. B. Wright and others. Illustrated. 6 x 9. paper. 97 pp. London, 1917. $1.00

Bourry, Emile. A Treatise on Ceramic Industries. A complete manual for pottery, tile, and brick manufacturers. A revised translation from the French by Alfred B. Searle. 308 illustrations. 5¾ x 8½. cloth. 488 pp. London, 1911. $6.00

Contents: Definition and Classification of Ceramic Ware; Brief History of Ceramics; Raw Materials of Bodies; Plastic Bodies—Properties and Composition, Preparation, Purification; Processes of Formation: Throwing, Expression, Moulding, Pressing, Casting, Slipping; Drying: Evaporation, Aeration, Heat, Absorption; Glazes: Manufacture and Application; Firing: Properties of Bodies and Glazes During Firing-Kilns; Decoration: Materials and Methods; Terra-cottas: Bricks, Hollow Blocks, Roofing, Tiles, Paving Bricks, Pipes, Architectural and Decorative Terra-Cotta, Common Pottery, Tobacco Pipes, Lustre Ware, Tests; Fireclay Goods: Varieties, Methods of Manufacture, Tests; Faiences: Classification, Composition, Methods of Manufacture and Decoration; Stoneware: Paving Tiles, Sanitary Ware, For Domestic Purposes, For Chemical Products, Decorative Objects; Porcelain: Classification, Composition, Manufacture, Decoration.

Brown, Arthur E. Brick Drying. A practical treatise on the drying of bricks and similar clay products. 125 illustrations, 11 tables. 4¾ x 7. cloth. 202 pp. London, 1902. net, $1.00

Dillon, Edward. Glass. 49 illustrations. 7½ x 10½. cloth. 374 pp. New York, 1907. net, $7.50

A descriptive history of glass from the earliest times to the present day.

Duthie, A. L. Decorative Glass Processes. 38 illustrations. 6 x 8½. cloth. 279 pp. (Van Nostrand's Westminster Series.) London, 1908. $2.50

Contents: Various Kinds of Glass in Use: Their Characteristics, Comparative Price, etc.; Leaded Lights; Stained Glass; Embossed Glass; Brilliant Cutting and Bevelling; Sand Blast and Cystalline Glass; Gilding, Silvering and Mosaic; Proprietary Processes; Patents; Glossary.

Fairie, J. Notes on Pottery Clays. The distribution, properties, uses and analysis of ball clays, china clays and china stone. With tables and formulae. 5¼ x 7½. cloth. 135 pp. London, 1901. $2.00

Contents: Properties of Clays; Brick; Fire; Pottery; Pipe; Dorsetshire and Devonshire; Koohn or China; Cornish China; Analysis of Clays; Preparation of Clays; Sources of Irish Porcelain Clays; China Stone, Its Discovery, Use, Composition, Occurrence and Analysis.

Frary, Francis C. Laboratory Manual of Glass-Blowing. 18 illustrations. 5 x 7¾. cloth. 68 pp. N. Y., 1914. $1.00

Greaves-Walker, A. F. Clay Plant Construction and Operation. 79 illustrations. 6 x 9. cloth. 212 pp. Chicago, 1919. $4.00

This book explains in understandable English some of the problems of the manufacturer of structural clay products. Technical terms, formulas, and theories have been avoided, and practical facts alone presented.

Hainbach, R. Pottery Decorating. A description of all processes for decorating pottery and porcelain. Translated from the German by Charles Salter. With 22 illustrations. 12mo. cloth. 252 pp. London, 1907. $3.50

Describes methods of ceramic decoration, by means of glazes, engobes, colors, metals and lustres, in a manner that will enable any professional ceramist to obtain the desired effect.

Lefevre, L. Architectural Pottery. Bricks, tiles, pipes, enameled terra-cottas, ordinary and incrusted quarries, stoneware, mosaics, faïences and architectural stoneware. With a preface by M. J.-C. Formigé. Translated from the French by K. H. Bird, M.A., and W. Moore Binns. 950 illustrations, 5 plates. 6½ x 10. cloth. 511 pp. London, 1900. $7.00

Contents: Clays; Preparation; Bricks; Tiles; Pipes; Quarries; Terra Cottas; General Remarks on the Decoration of Pottery; Glazed and Enamelled Bricks and Tiles; Decorated Quarries; Architectural Decorated Pottery; Sanitary Pottery.

Lovejoy, Ellis. Drying Clay Wares. Illustrated. 6 x 9. cloth. 166 pp. Indianapolis, 1916. $1.00

Malinovzsky, A. Analysis of Ceramic Materials and Methods of Calculation. *In Press*

Marson, P. Glass and Its Manufacture. Illustrated. 5 x 7½. cloth. 138 pp. London, 1918. $1.00

Contents: History; The Chemistry of Glass-Making and the Materials Used; Chemical and Physical Properties of Glass; Composition of the Different Kinds of Glass; Colored Glass and Artificial Gems; Decolorizers; Refractory Materials Used; Glass House Furnaces; Glass-Melting Pots and Their Manufacture; Lehrs and Annealing; Manipulation of Glass; Glass-Makers' Tools and Machines; Crown, Sheet, and Plate Glass; Tube, Cane, and Chemical Glassware; Optical Glass; Decorative Glassware; English and Foreign Methods of Glass Manufacture Compared; Appendix.

Mellor, J. W. A Treatise on Quantitative Inorganic Analysis. With special reference to the analysis of clays, silicates and related minerals. Being Vol. I of a Treatise on the Ceramic Industries. 2 plates, 206 illustrations. 6½ x 9. 809 pp. cloth. London, 1913. $9.00

Contents: Weighing; Measurement of Volumes; Volumetric Analysis; Calorimetry and Turbidimetry; Filtration and Washing; Heating and Drying; Pulverisation and Grinding; Sampling; Reagents; Determination of Volatile Matters; Opening up Silicates; Determination of Silica Ammonia Precipitate; Iron; Titanium; Calcium and Magnesium; Alkalies; Abbreviated Analysis and Analytical Errors; Electro-Analysis; Analysis of Glass, Glazes, Enamels and Colours; Determination of Arsenic; Antimony; Tin; Lead-Bismuth; Mercury; Copper; Cadmium; Zinc; Manganese; Cobalt and Nickel; Molybdenum; Tungsten; Columbium and Tantalum; Gold; Selenium; Aluminum; Berylium; Special Methods for Iron Compounds, etc.

Mellor, J. W. (Editor). Clay and Pottery Industries. 263 illustrations, 4 colored plates. 6 x 8¾. cloth. 432 pp. Philadelphia, 1914. $6.00

Contents: Chrome-Tin and Chrome-Alumina Colors; Pottery Crystallization; Minute Structure of Porcelain and Earthenware; Excess Air in the Firing of Ovens and Kilns; Chemical and Physical Changes in the Firing of Pottery and Clays; Amount Determination of Soluble Salts in Clays; "Sulphuring" and "Feathering" of Glazes; Plasticity of Potters' Materials; Cobalt Blue Colors; Setting of Cement and the "Buckling" of Floor Tiles; High Temperature Specific Heats of Fire-Bricks; Clay-Slip Studies; Scumming of Magazine Blue; Action of Heat on Refractory Materials; Rational Analysis of Clays; Centrifugal Extractors vs. Filter Presses; Imitation of Fried Pottery Bodies; Pyritiferous Clays; Temperature Regulation of Electric Muffles; Compositions of Fractions of Clays of Different Degrees of Fineness; Action of Heat on Binary Mixtures of Felspar, Flint, and China Clay; Nomenclature of Clay; Absorption and Dissolution of Gases by Silicates; Determination of Small Amounts of Iron in Clays; Clay Vitrification Speed; Fusing Test as a Standard of Refractoriness; Cylinder Grinding; Jackson's and Purdy's Surface Factors; Frit-Kiln Bridge; Softening Temperatures of Lead-Silica Glasses; Silicate Nomenclature; Chemical Constitution of Kaolinite Molecule; Action of Heat in Fire-Clays; Fire-Clays and Fire-Bricks; Five Fallacies in Potting; Simultaneous Determination of Small Quantities of Titanium and Vanadium Colorimetrically; Behaviour of Some Glazes in the Glost Oven; Fine-Dust Action on Fire-Bricks; Laboratory Grinders; Altofts Shale Composition; Magnetic Pottery; Nickel in Glaze Colors; Cobalt Salts Action on Clay-Staining Bodies; Arrested Reactions; Refractory Materials in Gas Works; Technical Education and Foreign Competition; Technical Education in the Old-Established Industries.

Pier, G. C. Pottery of the Near East. 64 illustrations 8vo. cloth. 180 pp. New York, 1909. net, $3.50

Describes and illustrates the ceramic arts of Mesopotamia, Egypt, Syro-Egypt, Syria, Persia, European and Asiatic Turkey.

Recipes for Flint Glass Making. Being leaves from the mixing book of several experts on the flint glass trade, compiled by a British glass master and mixer. *Second Edition.* 5¼ x 7½. cloth. 34 pp. London, 1907. $5.00

Contains up-to-date recipes and valuable information as to Crystal, Demi-Crystal, and Col-

ored Glass in its many varieties, and the recipes for cheap metal suited to pressing, blowing, etc., as well as the most costly crystal and ruby, as follows: Ruby Glass; German Metal; Cornelian; Sapphire Blue; Crysophis; Opal; Turquoise Blue; Gold Color; Green; Malachite; Black; Canary; White Opaque Glass; Sealing Wax Red; Flint Glass; Achromatic Glass; Paste Glass; White Enamel; Firestone; Dead White; Agate; Canary; Notes by Compiler.

Rhead, G. W. British Pottery Marks. 14 photographs. 1200 other illustrations. 5¾ x 8¾. cloth. 307 pp. London, 1910. $3.50

The main purpose of the work is to assist the collector, connoisseur, student, and general reader in the identification of the various British pottery wares.

Ries, Heinrich. Clays, Their Occurrence, Properties and Uses. With especial reference to those of the United States. *Second Edition, revised and enlarged.* 60 illustrations. 6 x 9¼. cloth. 573 pp. New York, 1914. net, $5.00

Contents: Origin of Clay; Chemical Properties; Physical Properties; Kinds of Clays; Methods of Manufacture; Distribution of Clays in the United States; Fullers Earth.

Ries, Heinrich, and Leighton, Henry. History of the Clay Working Industry in the United States. Illustrated. 6 x 9. cloth. 279 pp. N. Y., 1909. net, $2.50

Contents: Resume of the Clay-working Industry by Products. Introduction; Common Brick; Pressed Brick and Ornamental Brick; Enameled Brick; Architectural Terra Cotta; Hollow Ware for Structural Work; Roofing Tile; Floor and Wall Tile; Sewer Pipe; Conduits; Paving Brick; Fire Brick; Pottery; Clay Mining Industries. *History of the Clay-working Industry by States.*

Rosenhain, Walter. Glass Manufacture. *Second Edition, largely rewritten.* 18 illustrations. 5½ x 8½. cloth. 273 pp. London, 1919. $4.00

Contents: Physical and Chemical Properties of Glass; Physical Properties of Glass; Raw Materials of Glass Manufacture; Refractories; Furnaces; The Process of Fusion; Processes Used in the Working of Glass; Bottle Glass; Blown and Pressed Glass; Rolled or Plate Glass; Sheet and Crown Glass; Colored Glasses; Optical Glass; Miscellaneous Products; Appendices.

Sandeman, Ernest A. Notes on the Manufacture of Earthenware. *Second Edition.* Illustrated 5 x 7½. cloth. 390 pp. London, 1917. $3.50

Contents: Definition of Earthenware and General Principles of its Manufacture: Materials Used in the Composition of the Body; Mixture of the Materials for the Body in the Slip House; Materials and Their Preparation for the Glaze; Models and Moulds; Processes and Materials Used in Their Manufacture; Manufacture of Articles from Clay and Various Methods Employed; Pressing, Casting, Handling, Sticking-up Dishmaking; Application of Machinery to Potting; Auxiliary Plant and Appliances Required by Machine Jiggerers; Manufacture of Clay Ware by Machinery; Decoration of Ware in the Clay State; General Remarks on Clay Ware; Ovens and Their Constructions; Saggers and Sagger-making; Biscuit Placing; Firing; Drawing Biscuit Ovens and Biscuit Warehouse Dipping, or the Application of the Glaze; Spurs, Thimbles, Stilts, and Their Manufacture; Glost Placing or the Arrangement of Glazed Ware in Saggers; Glost Firing; Drawing Glost and Sorting Warehouse; Printing Underglaze; Painting and Decorating Underglaze; Hardening-on Kilns; Printing, Painting and Decorating Overglaze; Enamel Kilns and Firing; Glost Warehouses and Getting up Orders; The Packing Shed; Arrangement of a Pottery; General Remarks; Cost of Production.

Searle, Alfred B. The Clayworker's Hand-Book. A manual for all engaged in the manufacture of articles from clay. *Second Edition.* 32 illustrations. 5½ x 7¾. cloth. 424 pp. London, 1911. $3.00

Contents: Materials Used in Clay-Working; Preparation of the Clay; Machinery; Transport, Conveyors, Pumps, and Fans; Drying and Dryers; Engobing and Glazing; Setting or Charging; Kilns; Firing; Discharging, Sorting, Packing and Despatching; Defects; Waste; Tests, Analysis, and Control.

Searle, Alfred B. An Introduction to British Clays, Shales, and Sands. 53 illustrations, 10 plates. 5¾ x 8. cloth. 463 pp. Phila., 1912. net, $2.00

Contents: Igneous Rocks from Which Clays Are Derived; Formation of Clays, etc., from Igneous Rocks; Sedimentary Rocks; Clay-Forming Portions by Sedimentary Rock; How Recent Clay Beds Were Formed; Chief Characteristics of Various Clays and Shales; Materials Similar to Clays; Mineral and other Constituents of Clays; Physical and Chemical Properties of Clays; Prospecting, Mining, and Quarrying; Purification and Preparation of Clays; Legal Position of Clays.

Searle, Alfred B. Cement, Concrete and Bricks. (Outlines of Industrial Chemistry.) 113 illustrations. 6¼ x 8¾. cloth. 425 pp. New York, 1914. net, $3.00

Contents: The Raw Materials for Cements; Methods of Cement Manufacture; Chemical and Physical Changes in Cements; Changes That Occur in Setting and Hardening; Testing the Properties of Cements; The Components of Concrete and Their Properties; Preparation of Concrete; Reinforced Concrete; Special Properties of Concrete; Testing Concrete; Raw Materials for Bricks; Methods of Brickmaking; The Chemical and Other Changes in Drying and Burning Bricks; Basic and Neutral Bricks.

Searle, A. B. Modern Brickmaking. *Second Edition, revised and enlarged.* 310 illustrations. 6½ x 10. cloth. 512 pp. London, 1920. $7.00

Contents: The Nature and Selection of Clays and their Special Suitability for Certain Purposes; Color and Characteristics of Various Bricks; Quality of Bricks; Sand, Breeze and other Materials Used; Getting Clay-Cleaning-Transport; Selection of a Process and Plant for Making Bricks; The Site; The Material; Plastic Processes; Stiff Plastic Process; Semi-Dry or Semi-Plastic Process; Selecting a Process; Selecting Brick Machinery; Methods of Transport,

Selecting a Dryer; Selecting a Kiln; Size of the Works; Engines and Other Sources of Power; Hand-Moulding Processes; Plastic Moulding by Machinery; Box-Mould Machines; Wire-Cut Bricks; Crushing Rolls; Edge-Runner Mills; Mixers and Feeders; Pug-Mills, Mouthpiece-Presses, and Auger Machines; Expression Roller Machines; Cutting Tables; Repressing; Drying; Transport; Kilns; The Stiff-Plastic Process; Stiff-Plastic Brick Machines; Drying; Kilns; Semi-Dry or Semi-Plastic Process; Dry or Dust Process; Kilns; Kiln Construction; Selecting a Kiln; Setting and Firing; Vitrified Bricks; Blue and Other Engineering Bricks; Paviors; Clinkers; Acidproof Bricks; Fire-Bricks and Blocks; Glazed Bricks; Glazes and Bodies; Salt-Glazing; Perforated, Radial and Hollow Bricks and Blocks; Fireproof Flooring; Moulded and Ornamental Bricks; Drying Raw Clay; Sources of Difficulty and Loss.

Searle, Alfred B. Refractory Materials: Their Manufacture and Uses. 135 illustrations. 6½ x 9. 456 pp. London, 1917. $6.00

Contents: The Raw Materials; The Manufacture of Firebricks from Clay; Silica Firebricks; Basic Bricks, Including Magnesia, Dolomite, Lime, Baryta and Basic Slag Bricks; Bauxite and Other Highly Aluminous Bricks; Carbon Bricks; Bricks Made of Chromite or Iron Ore; Carbide and Carboride Bricks; Refractory Blocks, Slabs, and Hollowware; Saggers, Muffles, Crucibles and Scarifiers; Glass Pots; Retorts; Fused Silica Ware; Refractory Porcelain; Mortars and Cements; Selection and Application of Refractory Materials.

Searle, Alfred B. Clays and Clay Products. Illustrated. 5 x 7½. cloth. 163 pp. New York. 1916. $1.00

Shaw, S. Chemistry of the Several Natural and Artificial Heterogeneous Compounds Used in Manufacturing Porcelain, Glass and Pottery. Reissued in its original form as published in 1837. 6½ x 10. cloth. 769 pp. London, 1903. $6.00

Contents: Analysis and Materials. Elements; Temperature; Acids and Alkalies; The Earths; Metals. *Synthesis and Compounds.* Origin and Progress of the Art; Science of Mixing; Various Bodies; Glazes; Glasses; Colors; Tables of the Characteristics of Chemical Substances.

Shaw, S. History of the Staffordshire Potteries and the Rise and Progress of the Manufacture of Pottery and Porcelain. With references to genuine specimens, and notices of eminent potters. 6 x 8¾. cloth. 269 pp. London, 1904. $2.50

Contents: The Potteries; On the Origin of the Art, and Its Practice Among the Early Nations; Manufacture of Pottery Prior to 1700; Introduction of Red Porcelain in 1690; Progress of the Manufacture from 1700 to 1760; Introduction of Fluid Glaze; Introduction of Porcelain; Blue Printed Pottery; Introduction of Lustre Pottery.

Shenstone, W. A. Methods of Glass Blowing and of Working Silica in the Oxy-Gas Flame. For the use of chemical and physical students. Illustrated. 4¾ x 6¾. cloth. 106 pp. London, 1916.

x 6¾. cloth. 106 pp London, 1916. $1.00

Contents: Glass-Blower's Apparatus; Varieties of Glass and Their Management; Cutting and Bending Glass; Forming Glass Apparatus Before the Blow-pipe; Making and Grinding Stoppers to Apparatus; Making Thistle Funnels, U-Tubes, etc.; Electrodes; Graduating and Calibrating Glass Apparatus.

Suffling, E. R. Treatise on the Art of Glass Painting. Prefaced with a review of ancient glass. Illustrated. colored plates. cloth. 150 pp. London, 1902. $3.50

Contents: A Short History of Stained Glass; Designing · Scale Drawings; Cartoons and Outline; Various Kinds of Glass Cutting for Windows; Colors and Brushes Used in Glass Painting; Painting on Glass; Dispersed Patterns; Diapered Patterns; Aciding; Firing; Fret Lead Glazing.

Uhlig, Edward C. Chemical Analysis for Glassmakers. 89 illustrations. 6¼ x 9½. cloth. 142 pp. Pittsburg, 1903. net, $5.00

Contents: Chemical Theory; The Metric System; General Procedure of Analysis; Volumetric Analysis; Reagents; Methods of Analysis; Specific Gravity; Care of Platinum Vessels.

CEMENT—CONCRETE

Blount, Bertram. Cement. Assisted by Wm. H. Woodcock and Henry J. Gillett. 84 illustrations. 5½ x 8¾. cloth. 206 pp. London. 1920. $6.00

Contents: Historical; Raw Materials; Fuel; Manufacture; Power; Works Control; Testing; Methods of Analysis; Chemistry of Portland Cement; Function of the Various Constituents of Cement; Uses of Cement; Effect of Various Substances of Cement; By-Products of Cement; Appendices.

Brown, William A. The Portland Cement Industry. A practical treatise on the building, equipping and economical running of a Portland cement plant. 36 illustrations. 5½ x 8¾. cloth. 168 pp. New York, 1917. net, $3.00

Contents: Introductory; Historical; Development of the Industry; Manufacture; Raw Materials; Design and Construction of a Modern Portland Cement Plant; The Rotary Kiln; Power Plants; Miscellaneous; Costs and Statistics; Equipment; Development of Cement Testing; Chemical Composition; Fineness; Tensile Strength; Time of Setting; Soundness or Constancy of Volume.

Cochran, Jerome. General Specifications for Concrete and Reinforced Concrete. Including finishng and waterproofing. 6¼ x 9¼. cloth. 300 pp. New York, 1913. net, $2.50

Cochran, J. A Treatise on Cement Specifications. Including the general use, purchase, storage, inspection and test requirements of Portland, Natural, Puzzolan (Slag) and Silica (Sand Cement), and methods of testing and analysis of Portland Cement. Illustrated. 5¾ x 8¾. cloth. 113 pp. New York, 1912. net, $1.00

Dancaster, Arnest A. Limes and Cements. Their nature, manufacture and use. An elementary treatise. Illustrated. 5¼ x 7½. cloth. 224 pp. N. Y., 1915. $2.75

Contents. Progress of Discovery in the Science Connected with Limes, etc.; Chemistry and Classification of Limes; The Composition and Origin of the Rocks Which Furnish Different Kinds of Lime; The Calcilation of Limestones; Artificial Hydraulic Limes, Pozzolanic and Slag Cements; Portland Cement; Natural Cements; Plaster Cements; The Slaking of Limes; Sands, Pozzolanas and Other Materials Used with Lime in the Preparation of Mortar; Mortars; Concretc; Plastering; Stuccos; Waterproofing Cement; Bituminous and Oleaginous Cements; The "Saltpetering" of Limes, Cements and Plasters; The Chcmical Analysis of Limes and Cements; Physical and Mechanical Tests.

Davis, A. C. Portland Cement. *Second Edition, revised and enlarged.* Illustrated. 6 x 9. 450 pp. London, 1909. net, $6.00

Contents: Introduction; Definition and Constitution; Raw Materials, Grinding and Mixing; Estimation and Analysis of Raw Materials; Burning or Calcining; Clinker Grinding; Chemical Tests; Sampling, Testing and Uses; Fineness and Sieving; Tests for Bushel Weight and Specific Gravity; Setting; Soundness, Contraction and Expansion; Tensile Strength; Tests; Compression, and Transverse Tests; Appendix.

Desch, Cecil H. The Chemistry and Testing of Cement. Illustrated. 5⅞ x 8¾. cloth. 277 pp. London, 1910. $4.00

Contents: The History of Calcareous Cements; The Raw Material and Processes of Manufacture of Cements; The Constitution of Cements; The Setting and Hardening of Cements; The Physical Propertics of Cements; The Mechanical Properties of Cements, Concrete and Artificial Stone; The Resistance of Cement and Concrete to Destructive Agents; The Chemical Analysis of Cements; Conclusion; Appendix I., The Revised British Standard Specification, 1910; Chronological Table.

Falk, Myron S. Cements, Mortars and Concretes. Their physical properties. Illustrated. 6¼ x 9¼. cloth. 182 pp. New York, 1904. net, $2.50

Contents: Chemical Properties of Cements; Physical Tests of Cement; General Physical Properties; Elastic Properties in General; Tensile Properties; Flexural Propertics; Appendix.

Gatehouse, F. B. A Handbook for Cement Works' Chemists. Illustrated. 6 x 9. cloth. 142 pp. London, 1908. $2.50

Contents: Introduction; Analysis of Raw Materials; Calculation of Proportion of Raw Materials; Analysis of Fuel, Lubricants, Water, and Kiln Gases; Cement Analysis; Appendix; Indices.

Glasenapp, M. Plaster, Overburnt Gypsum and Hydraulic Gypsum. Translated by W. Michaelis, Jr. 18 illustrations. 5¾ x 8. pap. 47 pp. Chic., 1910. $0.50

An essay, describing the various products obtainable by heating and calcining of native gypsum, based upon an extensive microscopical research, intended to throw light on the excellent properties of some kinds of burnt gypsum and to end the confusion existing in the classification of gypsum products.

Meade, Richard K. Portland Cement. Its composition, raw materials, manufacture, testing and analysis. *Second Edition.* 169 illustrations. 6 x 9. cloth. 522 pp. London, 1911. $5.00

Contents: Relation Between Mortar Materials and History of the Development of the American Portland Cement Industry; The Nature and Composition of Portland Cement; Raw Materials; Proportioning the Raw Materials; Quarrying, Excavating, Drying, and Mixing the Raw Materials; Grinding the Raw Materials and Grinding Machinery; Burning-Kilns and Process-Cooling and Grinding the Clinker; Storing and Packing the Cement; Analysis of Cement; Of Cement Mixtures; Of Raw Materials; Inspection of Cement; Specific Gravity; Fineness; Time of Setting; Tensile Strength; Soundness; Detection of Adulteration in Portland Cement; Investigation of Materials Used in Portland Cement; Tables.

Richards, W. A., and North, H. B. A Manual of Cement Testing. For the use of engineers and chemists in colleges and in the field. Illustrated. 5¾ x 8. cloth. 147 pp. N. Y., 1912. net, $1.50

Contents: Classification, Composition, Manufacture; Sampling; Fineness; Specific Gravity; Normal Consistency; Constancy of Volume; Tensile Strength; Compressed Strength and Transverse Tests; Sand and Stone; Laboratory Equipment; Part Played by Chemical Analysis; Preparation of Sample for Analysis; Analysis of Cement, Limestone, Marl, Slag and Clay.

Spaulding, F. P. Hydraulic Cement. Its properties, testing and use. *Second Edition, rewritten.* 34 illustrations. 5 x 7¼. cloth. 310 pp. New York, 1906. net, $2.00

Contents: Hydraulic Lime; Classification and Constitution of Cement; The Setting and Hardening of Cement; Its Soundness; Methods of Testing Cement; Tests for the Strength of Mortar; Tests for Soundness; Special Tests; Cement-mortar and Concrete; Appendix, Containing Specifications for the Reception of Cement.

Waterbury, L. A. Cement Laboratory Manual. For the use of students in cement laboratory practice. 28 illustrations. 5 x 7¼. cloth. 129 pp. New York, 1908. net, $1.00

Contents: General Instructions; Description of Apparatus; Laboratory Problems; Appendices: Progress Report of Committee on Uniform Tests of Cement of the American Society of Civil Engineers; American Society for Testing Materials' Specifications for Cement; New York Section of the Society for Chemical Industry's Methods of Analysis for Limestones and Cements.

PHOTOGRAPHY

Abney, W. De W. Instruction in Photography. *Eleventh Edition, revised.* 208 illustrations. 5 x 7½. cloth. 676 pp. London, 1905. $2.50

Abney, W. DeW. A Treatise on Photography. *Tenth Edition, thoroughly revised.* 134 illustrations. 5 x 7. cloth. 442 pp. London, 1918. $2.25

Contents: Historical Sketch of the Discovery and Progress of Photography; Experiments with Light; Theory of Sensitive Compounds; The Action of Light on Various Compounds; On the Support and Substratum; Development of the Photographic Image; Giving Intensity to and Fixing the Image; Effect of the Spectrum on the Haloid Salts of Silver; On the Apparent Destruction of the Action of Light on the Photographic Image; Light for the Dark Room; The Gelatino-Bromide Process; Exposure and Development of Gelatino-Bromide Plates; The Daguerreotype; Collodion; Collodion Processes; Manipulations in the Wet-Plate Photography; Dry-plate Processes with the Bath; Collodion-Emulsion Processes; Washed Collodion Emulsions; Paper Negatives; Silver Printing; Manipulations in Silver Printing; Collodio- and Gelatino-Citro-Chloride-Processes; Printing with Iron and Uranium Compounds; Platinotype Process; Printing with Chromium Salts; Miscellaneous Printing Processes with Chromium Salts; Photo-Lithographic Transfers; Photo-Engraving and Relief Processes; Photo-Collotype Process; Elementary Photographic Optics; Apparatus; On the Picture; Photo-Spectroscopy; Orthochromatic Photography; Actinometry; True Monochromatic Rendering of Color; Trichromatic Photography; Celestial Photography; Photography with the Microscope; The Failure of a Photographic Law; Appendix.

Deri, Louis. Photography for Students of Physics and Chemistry. 88 illustrations, 1 plate. 5 x 7½. cloth. 258 pp. New York, 1916. $2.25

Contents: Pin-Holes; The Lens; Aberrations of Lenses; Classes of Lenses; Lens Testing; The Diaphragm; The Camera and Its Accessories; Color Sensitiveness of Silver Salts; Photo-Chemical Action; Development and Developers; Markings upon the Plate; Fixing, Washing and Drying; Intensification and Reduction; Halation and Reversal; Certain Printing Processes; Lantern Slides; Shutter Exposures; Color Photography.

Flint, W. R. Chemistry for Photographers. Tables. 5 x 7. cloth. 216 pp. Boston, Mass., 1916. net, $2.00

Explains the principles underlying the technical details of photographic chemistry.

Gamble, Wm. Photography and its Applications. 50 illustrations. 7 x 7¼. cloth. 144 pp. London, 1920. $1.00

Contents: Discovery of Photography; The Camera and Lens; Dark Room and its Equipment; Sensitive Plates; Wet Collodion Process; Collodion Emulsion and Dry Plates; Making the Exposure; Development and After Treatment of the Plate; Printing Processes; Carbon and Other Methods; Enlarging, Copying, and Lantern-Slide Making; Color Processes; Scientific Applications of Photography; Cinema-Photography; Photo-Mechanical Processes; Industrial Applications of Photography; Photography in Warfare.

Garrett, A. E. The Advance of Photography. Its history and modern applications. 167 illustrations. 6 x 9. cloth. 395 pp. London, 1911. $4.00

Contents: Historical Survey; Chemical Action of Light; Pseudo-Photographic Effects; Photographic Importance of the Chromium Compounds; Lenses; Camera Appliances; Dry Plates, Films and Papers; Art in Photography; Some Early Applications of Photography; Photography in Natural Colors; Book Illustrations; Astronomical Photography; Micro-Photography and Projection Apparatus; Rontgen-Ray Photography; Photo-Telegraphy; Animated Photography.

Heath, F. H. Chemistry of Photography. *In Press*

Contents: The Scope of the Subject of Photography; Light and Allied Radiations; Photochemical Action and Its Measurement; Historical Sketch of the Development of the Photographic Art; The Latent Photographic Ibage; The Scientific Treatment of Modern Photographic Materials; Orthochromatic Photography; Exposure of the Photographic Plate or Film; The Common Physical and Chemical Phenomena Involved in the Processes of Photographic Work; The Developing Process; The Processes of Fixation and Washing of Plates and Films; The Method for the Production of Positives on Plates; Intensification and Reduction of Negatives; Processes of Printing in the Salts of Silver; The Methods of Copying and Enlarging from Negatives or Prints; Printing Methods Based on the Use of Salts of Iron; Printing Methods Based on the Photo-chemical Action of a Dichromate Mixed with Other Substances; Photomechanical Methods; Color Photography; Flash-Light and Artificial Light Photography; Scientific Uses of Photography.

Horgan, Stephen H. Half-Tone and Photomechanical Processes. Illustrated. 28 full-page plates. 6¼ x 9. cloth. 234 pp. Chicago, 1913. $3.00

Jones, H. Chapman. Photography of To-Day. A popular account of the origin, progress and latest discoveries in the photographers' art, told in non-technical language. 54 illustrations and plates. 5¾ x 8. cloth. 342 pp. Philadelphia, Pa. $2.25

Meldola, R. The Chemistry of Photography. 5 x 7¼. 396 pp. London, 1913. net, $2.00

Contents: Definition of Subject; Photo-chemistry of the Silver Compounds; Theory of the Action of Sensitizers; Emulsion Photography; General Notion of Development; Rapidity of Emulsion Plates Partly Due to Developer; Composition of White Light; Relation Between Photochemical Decomposition and Absorption of Light; Post Developmental Processes.

Roebuck, J. R. The Science and Practice of Photography. An elementary text-book on the scientific theory and a laboratory manual. Illustrated. 5½ x 8½. cloth. 312 pp. N. Y., 1918. **$2.25**

Contents: Historical Development; Properties of the Gelatine Dry Plate-Exposure and Developments and Color Sensitiveness; Latent Image Theories; Negative Defects; Positive Processes; Lenses; Color Photography; Good Pictures; Appendix; Laboratory Manual.

Sheppard, S. E. Photo-Chemistry. 47 illustrations, 42 tables. 5¼ x 7½. cloth. 475 pp. New York, 1914. **$4.00**

Contents: The Measurement of Light Quantities; Energetics of Radiation; Economic and Energetic Relations of Actual Light-Resources; Absorption of Light; Statics and Kinetics of Photo-Chemical Change; Dynamics of Photo-Chemical Change; Special Photo-Chemistry; Radiant Matter and Photo-Chemical Change; The Genesis Light on Chemical Change; Organic Photo-Synthesis.

Sheppard, S. E., and Mees, C. E. K. Investigations on the Theory of the Photographic Process. Illustrated. 5 x 7½. cloth. 350 pp. London, 1907. **$2.75**

Contents: Part I, Introductory; Part II, Physical Chemistry of Exposure, Development and Fixation; Part III, Sensitometry of Photographic Plates.

Steadman, Frank Morris. Unit Photography. 10 illustrations, 13 plates. 5¾ x 8½. cloth. 174 pp. N. Y., 1914. **$2.50**

Contents: Analysis of Present Conditions; Character of Photographic Emulsions; Actinism; Time; Diaphragm Systems; Unit Actinometry; Problems in Unit Actinometry; Unit Sensitometry; Actinic Contrasts; Classification of Subjects as to Their Actinic Contrasts; The Hurter and Driffield Method; Negative Making; Practice.

Verfasser, Julius. The Half-Tone Process. A practical manual of photo-engraving in half-tone on zinc, copper and brass; with chapters on three-color work and photo-lithography and off-set printing. *Fifth Edition, fully revised.* 177 illustrations and plates. 6 x 8½. cloth. 400 pp. London, 1916. **net, $3.50**

Contents: The Studio, Fittings, Tools and Appliances. What is a Half-Tone?; The Screen; Construction and Equipment of Studio; The Dark Room; Metal Printing Room; Electric Light Installation; Etching Room; Mounting; Proofing; Materials Used. *The Operations.* Photographic Operations; Making the Negative; Printing from the Negative; Etching the Plate; Machine Etching; Finishing and Mounting; Proofing the Plates; Three-Color Half-Tone Process; Duotypes or Two-Color Half-Tones; Photo-Lithography in Half-Tone; Preparation of Originals.

Von Hübl, A. F. Three-Color-Photography. With special reference to three-color printing and similar processes. Translated by H. O. Klein. 39 illustrations. 5¾ x 8¾. 138 pp. London, 1915. **$3.50**

Contents: Introduction; Light and Color; Theory and Practice of Three Color Photography; Conclusion.

Watkins, Alfred. Photography, Its Principles and Applications. *Second Edition, revised.* 99 illustrations. 5½ x 8½. cloth. 349 pp. London, 1919. **$3.00**

Contents: First Principles; Lenses; Exposure Influences; Practical Exposure; Development Influences; Practical Development; Cameras and Dark Room; Orthochromatic Photography; Printing Processes; Hand Camera Work; Enlarging and Slide Making; Color Photography; General, Record and Science Applications; Plate Speed Testing; Process Work (Photo-Mechanical Printing); Pinhole Photography.

ELECTRO-CHEMISTRY

Bonney, G. E. The Electro-Platers' Handbook. A practical manual for amateurs and students in electro-metallurgy. *Fifth Edition, revised.* 61 illustrations. 5 x 7½. cloth. 237 pp. London. **net, $1.50**

Burgess, C. F., and Cavens, G. W. Applied Electro-Chemistry and Welding. Illustrated. 6 x 9. cloth. 132 pp. Chicago, 1917. **$1.75**

A practical treatise on commercial chemistry, the electric furnace, the manufacture of ozone and nitrogen by high-tension discharges, and the application of electric, gas, and chemical welding to manufacturing and repair work.

Classen, A., and Cloeren, H. Quantitative Analysis by Electrolysis. Revised English translation of the *Fifth German Edition.* 52 illustrations. 6 x 9. cloth. 359 pp. New York, 1919. **$3.00**

Contents: Introduction; Electro-Analytical Determination; Separation of Metals; Special Analyses.

Danneel, H. Electrochemistry. Theoretical Electrochemistry and its physico-chemical foundations. Translated by E. S. Merriam. 18 illustrations. 5 x 7¼. cloth. 188 pp. N. Y., 1907. **$1.50**

Contents: Introduction; Work, Current, and Voltage; Chemical Equilibrium, Statics, and Kinetics; Theory of Electrolytic Dissociation; Conductivity; Electromotive Force and the Galvanic Current; Polarization and Electrolysis; Electron Theory; Bibliography.

Engelhardt, Victor. The Electrolysis of Water. Translated from the German by Jos. W. Richards. 90 illustrations. 6 x 9. cloth. 150 pp. Easton, 1904. **$1.50**

Field, Samuel. The Principles of Electro-Deposition. A laboratory guide to

electro-plating. 114 illustrations. 5¼ x 7¾. cloth. 398 pp. London, 1911. $2.50

Contents: Voltaic Cells and Accumulators; Properties of Electric Current; The Dynamo; Arrangement of Apparatus in the Circuit; Switchboard and Connections; Resistances; Measuring Instruments; Quantitative Electro-Deposition; Processes Preparatory to Plating; General Properties and Preparation of Solutions; Density of Solutions; Hydrometers; Deposition of Copper; The Copper Cyanide Solution; Deposition of Nickel, Iron, Tin, Zinc, Silver, Gold; Electro-Brassing; Metal-Colouring; Qualitative Analysis; Applications of Qualitative Analysis; Quantitative Analysis; Estimation of Cyanide; Estimation of Constituents of Copper Solutions; Recovery of Metals; Appendix.

Gamble, Wm. Photography and Its Applications. 50 illustrations. 5 x 7¼. cloth. 144 pp. London, 1920. $1.00

Contents: Discovery of. Photography; Camera and Lens; Dark Room and its Equipment; Sensitive Plates; Wet Collodion Process; Collodion Emulsion and Dry Plates; Making the Exposure; Development and After Treatment of the Plate; Printing Processes; Carbon and Other Methods; Enlarging, Copying, and Lantern-Slide Making; Color Processes; Scientific Applications of Photography; Cinema-Photography; Photo-Mechanical Processes; Industrial Applications of Photography; Photography in Warfare.

Hale, Arthur J. The Manufacture of Chemicals by Electrolysis. 10 illustrations. 5½ x 8½. cloth. 91 pp. London, 1919. $2.00

Contents: Electrolytic Hydrogen and Oxygen; Ozone; Production of Per-Salts and Hydrogen Peroxide; Nitric Acid; Hydroxylamine; Hydrosulphites; Fluorine; Electrolytic Preparation of Pigments and Insoluble Substances; Electro-Osmotic and Electro-Colloidal Processes; Electrolytic Reduction of Organic Compounds; Oxidation and Substitution of Organic Compounds; Appendix.

Hale, Arthur J. The Applications of Electrolysis in Chemical Industry. 58 illustrations. 5½ x 8¾. cloth. 157 pp. London, 1918. $2.65

Contents: Introduction; Methods of Generating the Current; The Electrolytic Refining of Metals; The Electrolytic Winning of Metals; Electrolytic Production of Hydrogen and Oxygen; Electrolysis of Alkali Chlorides: Chlorine and Caustic Soda. Hypochlorites, Chlorates, Perchlorates; Production of Inorganic Compounds; Production of Organic Compounds.

Hering, C., and Getman, F. H. Standard Table of Electrochemical Equivalents and Their Derivatives. With explanatory text on electrochemical calculations, solutions of typical practical examples and introductory notes on electrochemistry. Illustrated. 4½ x 7½. flexible cover. 140 pp. New York, 1917. net, $2.00

Contents: Introduction; Fundamental Laws; Fundamental Data and Description of the Tables; Electrochemical Equivalent by Weight; Grams per Ampere-hour in the Order of Magnitude; Electrophysical Equivalents by Volume; Valences of the Elements in Their Combinations; Calculations Involving Electrochemical Equivalents; Examples; Electrolysis; Theory of Electrolytic Dissociation; Faraday's Law; Coulometers; Electronic Theory; Valence; Elementary Principles of Chemical Reactions and Calculations; Conversion Factors Used in Electrochemical Calculations; Glossary of Terms.

Jones, Harry C. The Theory of Electrolytic Dissociation and Some of its Applications. *Third Edition.* 5½ x 8. cloth. 301 pp. N. Y., 1906. $2.00

Contents: The Earlier Physical Chemistry; The Origin of the Theory of Electrolytic Dissociation; Evidence Bearing upon the Theory of Electrolytic Dissociation; Some Applications of the Theory of Electrolytic Dissociation.

Kershaw, J. B. C. Electrometallurgy. 61 illustrations. 6 x 8½. cloth. 303 pp. (Van Nostrand's Westminster Series.) New York, 1908. $2.50

Contents: Aluminum; Bullion and Gold; Calcium Chloride and Acetylene Gas; Carborundum; Copper; Ferro-Alloys, Glass and Quartz Glass; Graphite; Iron and Steel; Lead; Miscellaneous Products; Nickel; Sodium Tin; Zinc.

Langbein, George. Electro-Deposition of Metals. A practical comprehensive work comprising electro-plating, galvanoplastic operations, and electrotyping; deposition of metals by the contact and immersion processes; coloring of metals; lacquering; methods of grinding and polishing, and hundreds of tested formulas and trade secrets. Translated with additions by Wm. T. Brannt. *Eighth Edition, revised and enlarged.* 185 illustrations. 6 x 9¼. cloth. 875 pp. N. Y., 1920. $7.50

Contents: Historical Part. Historical Review of Electro-Metallurgy. *Theoretical Part.* Magnetism and Electricity. *Sources of Current.* Voltaic Cells, Thermo-Piles, Dynamo-Electric Machines, Accumulators. *Practical Part.* Arrangement of Electro-plating Establishment in General; Preparation of the Metallic Objects; Deposition of Nickel, Cobalt, Copper, Brass, Bronze, Silver, Gold, Platinum, Palladium, Tin, Zinc, Lead, Iron, Antimony, Arsenic and Aluminum; Deposition by Contact, by Boiling and by Friction; Coloring and Etching of Metals; Lacquering; Hygienic Rules for the Workshop; Galvanoplasty (Reproduction); Chemicals Used in Electro-Plating and Galvanoplasty; Appendix.

LeBlanc, Max. The Production of Chromium and its Compounds. By the aid of electric current. Translated by J. W. Richards. 5¾ x 9. cloth. 122 pp. Easton, 1904. net, $1.25

Contents: Introduction; Purpose and Value of Electrolysis; Fundamental Ideas; Fundamental Laws of Electro-Technology; Calculation of Conductors; Components of an Electrolytic Equipment; Description and Equipment of Electrolytic Laboratories.

Le Blanc, Max. A Text-book of Electro-Chemistry. Translated from the *Fourth Enlarged German Edition* by W. B.

Whitney and John W. Brown. 51 illustrations. 5¾ x 8¾. cloth. 352 pp. New York, 1918. $3.00

Contents: The Forms of Energy and their Measurement; The Fundamental Principles Relating to Electrical Energy; Development of Electro-Chemistry Up to the Present Time; The Theory of Electrolytic Dissociation; The Migration of Ions; The Conductance of Electrolytes; Electrical Endosmose; Migration of Suspended Particles and of Colloids; Electro-Stenolysis; Electromotive Force; Electrolysis and Polarization; Supplement; Storage Cells or Accumulators; Appendix.

Lehfeldt, R. A. Electro-Chemistry. Part I. General Theory. Including a chapter on the Relation of Chemical Constitution to Conductivity, by T. S. Moore. 55 illustrations. 5 x 7½. cloth. 377 pp. London, 1913. $2.20

Lupke, Robert. The Elements of Electro-Chemistry. Treated Experimentally. *Second English,* from the *Fourth German Edition* by M. M. Pattison Muir. 61 illustrations. 5½ x 8½. cloth. 270 pp. London, 1903. net, $2.50

Contents: Recent Theories of Electrolysis; Theory of Solutions of Van't Hoff; Osmotic Theory of the Current of Galvanic Cells.

McMillan, W. G., and Cooper, W. R. A Treatise on Electro-Metallurgy. *Third Edition, revised and enlarged.* 111 illustrations. 5¾ x 8½. cloth. 440 pp. London, 1910. $4.25

Contents: Introductory and Historical; Theoretical and General; Sources of Current; General Conditions to be Observed in Electro-Plating; Plating Adjuncts and Disposition of Plant; Cleansing and Preparation of Wash for the Depositing Vat; Polishing of Plated Goods; Electro-Deposition of Copper; Electrotyping; Electro-Deposition of: Silver; Gold; Nickel and Cobalt; Iron; Platinum; Zinc; Chromium; Cadmium; Tin; Lead; Antimony; Bismuth and Palladium; Electrochromy; Electro-Deposition of Alloys; Electro-Metallurgical Extraction and Refining Processes; Recovery of Certain Metals from Their Solution or from Waste Substances; Determination of the Proportion of Metal in Certain Depositing Solution; Power Required for Electrolytic Work; Modern Theories of Electrolysis; Substances Commonly Employed in Electro-Metallurgy; Tables.

Nissenson, H. The Arrangement of Electrolytic Laboratories. Translated from the German by Jos. W. Richards. 52 illustrations. 6 x 9. cloth. 81 pp. Easton, 1905. $1.50

Perkin, F. M. Practical Methods of Electro Chemistry. 64 illustrations. 5½ x 8¾. cloth. 322 pp. London, 1905. $2.25

Contents: General; Electro-Chemical Analysis; Preparations by Electrolytic Means.

Pfanhauser, W. Production of Metallic Objects Electrolytically. 100 illustrations. 6 x 9. cloth. 162 pp. Easton, 1906. $1.50

Rideal, Eric K. Industrial Electrometallurgy, Including Electrolytic and Electrothermal Processes. Illustrated. 5½ x 8¾. cloth. 259 pp. London, 1919. *(Industrial Chemistry Series.)* $3.00

Contents: Introduction; Electrolysis in Aqueous Solutions; Electrolysis in Fused Electrolytes; The Electrolytic Preparation of the Rarer Metals; Electrothermal Processes; Carborundum and Oxysilicides of Carbon; The Carbides; Electrothermal Nitrogen Fixation by Metals and Metallic Compounds; Iron and the Ferro-Alloys; Appendix.

Smith, Edgar F. Electro-Analysis. *Sixth Edition, revised and enlarged.* 47 illustrations. 5½ x 7¾. cloth. 357 pp. Philadelphia, 1918. $3.50

Contents: Sources of Electric Current: Magneto-Electric Machines, Dynamos, Thermopile, Storage Cells; Reduction of the Current; Rheostats, Resistance Frames; Measuring Currents: Voltameter, Voltmeter, Amperemeter; An Electro-Chemical Laboratory; Historical Sketch; Theoretical Considerations; Rapid Precipitation of Metals in the Electrolytic Way; Use of Mercury Cathode; Determination of Metals; Separation of Metals; Additional Remarks on Metal Separations; Determination of the Halogens in the Electrolytic Way; Special Application of the Rotating Anode and Mercury Cathode in Analysis; Oxidations by Means of the Electric Current; The Combustion of Organic Compounds.

Talbot, H. P., and Blanchard, A. A. The Electrolytic Dissociation Theory with Some of its Applications. An elementary treatise for the use of students of chemistry. *Second Edition.* 6¼ x 9¼. cloth. 90 pp. New York, 1915. net, $1.25

Contents: Evidences of Electrolytic Dissociation Afforded by a Study of the Properties of Solutions; The Law of Mass Action and the Chemical Behavior of Electrolytes; Electrolytic Solution Pressure; Oxidation and Reduction; The More Common Ions and Their Characteristics; Appendix.

Thompson, M. DeKay. Applied Electro-Chemistry. Illustrated. 6 x 9. cloth. 343 pp. New York, 1914. $2.60

Contents: Coulometers or Voltameters; Electrochemical Analysis; Electroplating; Electrotyping and the Production of Metallic Objects; Electrolytic Winning and Refining of Metals in Aqueous Solutions; Electrolytic Reduction and Oxidation; Electrolysis of Alkali Chlorides;; Electrolysis of Water; Primary Cells; The Lead Storage Battery; The Edison Storage Battery; The Electric Furnace; Products of the Resistance and Arc Furnace; Electrometallurgy of Iron and Steel; The Fixation of Atmospheric Nitrogen; The Production of Ozone; Appendix.

Urquhart, J. W. Electro-plating. A practical handbook on the deposition of copper, silver, nickel, gold, brass, aluminum, platinum, etc. *Sixth Edition.* 10 illustrations. 5¼ x 7½. cloth. 238 pp. London, 1911. $3.00

Contents: The Plating Room; Preparation of Articles; Chemicals and Materials; Batteries;

Galvanometer; Dynamo-Electric Machines; Deposition of Copper, Silver, Gold, Nickel and Other Metals; Dynamo Machine Working; Improvements in Nickel Plating Processes.

Watt, A. Electro-Metallurgy Practically Treated. *Fifteenth Edition.* Illustrated. 5 x 7½. cloth. 234 pp. New York, 1904. $1.00

Contents: Introduction; Electrodeposition of Copper; Electrodeposition of Silver; Electrodeposition of Gold; Electrodeposition of Brass and Bronze; Electrodeposition of Zinc; To Coat Britannia Metal with Nickel; Electrodeposition of Iron; Electro-Metallurgical Cabinet.

Watt, Alexander. Electro-Plating. Based on "Electro-Metallurgy Practically Treated." 14 illustrations. 5 x 7½. cloth. 192 pp. London, 1920. $2.00

A practical exposition of the principles involved in electro-plating and the related arts, electro-plating and electro-deposition of metals, with a series of notes collected by the author during an active period of nearly twenty-five years.

Watt, A., and Philip, Arnold. The Electro-Plating and Electro-Refining of Metal. *Second Edition, revised.* Being a new edition of Alexander Watt's "Electro-Deposition." 162 illustrations. 6 x 8. cloth. 704 pp. London, 1911. $5.00

Contents: Electro-Plating. Preliminary Considerations; Primary and Secondary Batteries; Thermopiles, Dynamos, The Cost of Electrical Installations of Small Out-put for Electro-Plating, etc.; Historical Review of Electro-Deposition; Electro-Deposition of Copper; Deposition of Gold by Simple Immersion; Electro-Deposition of Gold; Various Gilding Operations; Mercury Gilding; Electro-Deposition of Silver; Imitation Antique Silver; Electro-Deposition of Nickel; Deposition and Electro-Deposition of Tin; Electro-Deposition of Iron and Zinc; Electro-Deposition of Various Metals; Electro-Deposition of Alloys; Recovery of Gold and Silver from Waste Solutions, etc.; Mechanical Operations Connected with Electro-Deposition; Materials Used in Electro-Deposition; Appendix.

Watts, Oliver P. Laboratory Course in Electrochemistry. Illustrated. 5½ x 7¾. cloth. 158 pp. N. Y., 1914. $1.25

Wiechmann, F. G. Notes on Electrochemistry. 5½ x 8. cloth. 150 pp. New York, 1906. $2.00

ENAMELS

Brown, W. N. The Art of Enamelling on Metal. *Second Edition, revised.* 28 illustrations. 5 x 7½. cloth. 60 pp. New York, 1914. $2.00

Contents: Vitrifiable Pigments; History; Cloisonné and Champs Levè Enamels; Painted Enamels; Preparing the Plate; Composition and Preparation of Enamels; Designs for Cloisonnè and Painted Enamels.

Brown, Wm. N. A Handbook on Japanning for Ironware, Tinware, Wood, Etc. With sections on tinplating and galvanizing. *Second Edition, revised and enlarged.* 13 illustrations. 5 x 7¾. cloth. 76 pp. London, 1913. $2.00

Contents: Introduction; Japan Grounds; Japanning or Enamelling Metals; The Enamelling and Japanning Stove-Pigments Suitable for Japanning with Natural Lacquer-Modern Methods of Japanning with Natural Japanese Lacquer; Colors for Polishing Brass; Processes for Tin-Plating; Galvanizing.

Chapin, H. M. How to Enamel. Being a treatise on the practical enamelling of jewelry with hard enamels. Illustrated. 5 x 7½. cloth. 81 pp. New York, 1911. $1.25

Contents: Preparation of the Enamel; Preparation of the Metals; Charging; Firing; Stoning; Polishing; Foils; Paillons; Glitter Enamel; Dull Finish; Plicque-A-Jour; Enamel Painting; Photographs on Enamel.

Day, L. F. Enameling. A comparative account of the development and practice of the art. 115 illustrations. 6 x 9. cloth. 222 pp. London, 1908. net, $3.00

Grampp, Otto. The Practical Enameler. With especial reference to enameling sheet iron and cast iron ware, with useful information relating to all side lines. An exceptionally complete manual for self-instruction for all engaged in the trade. 5½ x 8½. cloth. 88 pp. New York, 1910. $2.50

Contents: General Review; Male and Female Labor; Danger of Injury to Employees; Wages and Working Hours; Annealing and Pickling the Crude Ware; The Crude Materials Entering into the Composition of Enamel Fluxes; Smelting, Grinding, Coating and Firing Processes; Co-efficient of Expansion of Sheet Steel; Cast Iron Enameling; Majolica Ware Enamels; Enamel Painting; Pastel Painting on Enamel Paints; Pastel Crayons; The Application of Photoceramics to Enamel.

Grunwald, J. The Technology of Iron Enamelling and Tinning. Being collected papers. Translated from the German by H. H. Hodgson. 6¾ x 9. cloth. 149 pp. London, 1912. $3.00

Contents: History of the Enamels and Their Technology; Economic Significance of the Sheet-Iron Enamelling Industry; Chemical Technology of the Enamel Industry; Enamel Manufacture and Function of Clay in the Enamel; Theory and Technology of Purple of Cassius; Examination of Cast-Iron Enamels; Stiffening of Enamels When Ground Moist by Means of Vehicles; Heating and Pickling of the Rough Iron Wares in the Enamel Industry; Recent Investigations on the Pickling Processes; Calculation of the Chemical Composition of an Enamel from the Mixed Raw Materials; Technological History of Tinning; Recovery of Tin from Tinned Waste; Danger of Lead Compounds to Industry and the Household; Tin Disease; Procedure in an Enamel Works; Educational Training of Managers for Enamel Works, and the Scarcity of Technical Schools for the German and Austro-Hungarian Enamel Industry.

Grünwald, Julius. The Theory and Practice of Enamelling on Iron and Steel. Translated by H. H. Hodgson. 6 x 9. cloth. 138 pp. London, 1910. $3.00

Contents: Introduction; Raw Materials; Preparation of the Enamel; Preparation of the Crude Ware; The Process of Enamelling; Firing the Enamelled Wares; Painting; Photoceramics; Statistics and General Information; Short History of the Art of Enamelling.

Grünwald, Julius. The Raw Materials for the Enamel Industry and Their Chemical Technology. A treatise for manufacturers, chemists and enamel technologists. Translated by Herbert H. Hodgson. 21 illustrations. 6 x 9. cloth. 225 pp. London, 1914. $3.50

Randau, P. Enamels and Enamelling. An introduction to the preparation and application of all kinds of enamels for technical and artistic purposes. Translated by Charles Salter. Illustrated. 5¾ x 8¾. cloth. 196 pp. London, 1901. $5.00

Contents: Composition and Properties of Glass; Raw Materials Used in Enamel Manufacture; Substances for Producing Opacity; Fluxes; Pigments; Decolorizing Agents; Testing the Raw Materials and Enamel Mass; Subsidiary Materials; Preparing Materials for Enamel Making; Mixing the Materials; The Preparation of Various Technical Enamels.

Turner, William. Transfer Printing on Enamels, Porcelain and Pottery. Its origin and development in the United Kingdom. 48 plates. 6 x 9. cloth. 189 pp. London. net, $10.00

WASTE UTILIZATION

Hubbard, Ernst. The Utilization of Wood-Waste. *Third Edition, revised and enlarged.* 51 illustrations. 5 x 7½. cloth. 248 pp. London, 1920. $4.50

Contents: Introduction; General Observations on the Utilization of Sawdust; Employment of Sawdust as Fuel, with and Without Simultaneous Recovery of Charcoal and the Products of Distillation; Distillation of Wood for Recovery of Volatile Products; Manufacture of Illuminating Gas from Sawdust; Manufacture of Oxalic Acid from Sawdust; Manufacture of Sugar and Alcohol from Wood-Waste; Patent Dyestuffs (Organic Sulphides, Sulpho-dyes or Mercapto-dyes); Artificial Wood and Plastic Materials from Sawdust; Employment of Sawdust in the Manufacture of Explosives and Gunpowder; Manufacture of Briquettes from Sawdust; Various Applications of Sawdust and Wood Refuse; Potash from the Ash of Wood; Production of Wood-Wool.

Koller, Theo. The Utilization of Waste Products. A treatise on the rational utilization, recovery, and treatment of waste products of all kinds. *Third Edition, revised and enlarged,* by H. B. Stocks. 22 illustrations. 5¾ x 8¾. cloth. 346 pp. London, 1918. $5.00

Contents: Waste of Towns; Blood and Slaughter-house Refuse; Fat from Waste; Tannery Waste; Leather Waste; Fur and Feather Waste; Waste Horn; Fish Waste; Mother of Pearl Waste; Vegetable Ivory Waste; Waste Wood; Cork Waste; Waste Paper and Bookbinders' Waste; By-Products of Paper and Paper-Pulp Works; Waste Produced in the Manufacture of Parchment Paper; Wool Waste; Silk Waste; Waste Waters of Cloth Factories; Cotton Spinners' Waste; Jute Waste; Utilization of Rags; Coloring Matters from Waste; Residues in the Manufacture of Aniline Dyes; Dyers' Waste Waters; Waste Produced in Butter Making; Molasses; Waste Liquids from Sugar Works; Fruit; Waste Products of the Manufacture of Starch; Brewers' Waste; Wine Residues; Indiarubber and Caoutchouc Waste; Amber Waste; Utilization of Turf or Peat; Manufactured Fuels; Illuminating Gas from Waste and the By-Products of the Manufacture of Coal-Gas; By-Products in the Treatment of Coal-Tar Oils; Ammonia Recovery; Petroleum Residues; By-Products in the Manufacture of Rosin Oil; Soap-Makers' Waste; Alkali Waste and the Recovery of Soda; Recovery of Potash Salts; Sulphur Salt Waste; Gold and Silver Waste; Platinum Residues; Iridium from Goldsmiths' Sweepings; Metal Waste; Tinplate Waste; Calamine Slimes; Waste Iron; By-Products of the Manufacture of Mineral Waters; Infusorial Earth; Meerschaum; Mica Waste; Broken Porcelain, Earthenware and Glass; Utilization of Waste Glass.

Naylor, W. Trades Waste. Its treatment and utilization. With special reference to the prevention of river pollution. 21 plates, 27 folding diagrams, and numerous illustrations. 6 x 9. cloth. 283 pp. Philadelphia, 1912. $7.50

Contents: Chemical Engineering; Woolen Mill Waste; Tanning and Fellmongery; Brewery and Distillery Waste; Calico Bleaching and Dyeing; Calico Printing and Dyeing; Paper-Making Waste; General Chemical Waste.

Parry, L. Systematic Treatment of Metalliferous Waste. Illustrated. 6 x 9. cloth. 121 pp. London, 1909. $2.50

Contents: Sources of Supply; Kinds of Waste; General Chemical and Metallurgical Principles; Partial or Semi-Refining; Smelting Lead Ashes and Cleaning Tin Slags; Smelting Tin Ashes and Solder Ashes; Smelting Antimonial Material; Separation of Copper from Tin; Lead and Antimony; Copper Work; Metal Working and Refining; Miscellaneous.

Wilson, H. MacL., and Calvert, H. T. A Textbook on Trade Waste Waters. Their nature and disposal. 74 illustrations, 22 plates. 6¾ x 9½. cloth. 352 pp. London, 1913. $6.00

Contents: Historical and Legal; The Coal Trade; Coal Gas Manufacture; Grain Washing, Malting, Brewing, and Distilling; The Leather, Paper, and Textile Trades; Miscellaneous Trades; Pumps, Screens, Tanks, Filters, and Other Apparatus; Discharge of Trade Waste Waters to Public Sewers.

WOOD PRESERVATION

Betts, Harold S. Timber, Its Strength, Seasoning, and Grading. 107 illustrations, 8 folding plates. 6 x 9¼. cloth. 244 pp. New York, 1919. $3.00

Wagner, Joseph B. Seasoning of Wood. A treatise on the natural and artificial processes employed in the preparation of lumber for manufacture, with detailed explanations of its uses, characteristics and properties. 101 illustrations. 6¼ x 9¼. cloth. 287 pp. New York, 1917. $4.00

Contents: Timber; Coniferous Trees; Broad-Leaved Trees; Grain, Color, Odor, Weight, and Figure in Wood; Enemies of Wood; Water in Wood; What Seasoning is; Advantages of Seasoning; Difficulties of Drying Wood; How Wood is Seasoned; Kiln-Drying of Wood; Types of Dry Kilns; Dry Kiln Specialties; Helpful Appliances in Kiln Drying.

Wallis-Taylor, A. J. The Preservation of Wood. A descriptive treatise on the processes and on the mechanical appliances used for the preservation of wood. 119 illustrations. 5½ x 9. cloth. New York, 1918. $4.00

Contents: Introduction; The Destruction of Wood by Decay and the Ravages of Insects; Seasoning by Drying Wood; The Preservation Treatment of Wood; Principal Preservation Agents and Processes; Various Proprietary and Other Preservative Solutions; The Absorption Limit and Life of Preserved Wood; Fire-Proofing and Fire-Retardant Treatment of Wood; Cost of Preservative Treatment; Useful Formulæ, Tables, Memoranda, etc.

Weiss, Howard F. The Preservation of Structural Timber. 29 illustrations, 33 plates. 6½ x 9¼. cloth. 330 pp. New York, 1915. $3.50

SANITATION

Bailey, E. H. S. A Text-book of Sanitary and Applied Chemistry, or the Chemistry of Water, Air, and Food. *Fourth Edition, revised.* 5¼ x 7¾. cloth. 421 pp. New York, 1917. $1.75

Contents: Part I. Sanitary and Applied Chemistry; The Atmosphere; Fuels; Heating and Ventilation; Lighting; Water; Purification of Water Supplies; Sewage: Disposal of Household Waste and Garbage; Textiles; Cleaning: Soap, Bluing, and Bleaching; Disinfectants, Antiseptics and Deodorants; Poisons and Their Antidotes. Part II. Food; Cellulose, Starch, Dextrin, Legumes; Bread; Breakfast Foods and Other Special Foods; Sugars; Glucose or Grape-sugar Group; Leaves, Stalks, Roots, etc., Used as Food; Composition and Food Value of Fruits; Edible Fats and Oils; Food Value of Nuts; Nitrogenous Foods; Meats; Eggs; Milk, Cheese and Butter; Non-Alcoholic Beverages; Alcoholic Beverages; Food Accessories; Preservation of Foods; Coloring of Food Products; Economy in the Selection and Preparation of Food Dietaries.

Bashore, H. B. Outlines of Practical Sanitation, for Students, Physicians, and Sanitarians. 42 illustrations. 5 x 7¼. cloth. 214 pp. N. Y., 1906. net, $1.25

Contents: Habitations; Water-supply; The Collection and Disposal of Waste; Milk-supply; Food-supplies; School Sanitation; Car Sanitation; The Cause and Prevention of Contagious and Infectious Diseases; Vital Statistics; Municipal Sanitation; Rural and Suburban Sanitation; Personal Hygiene.

Chapin, C. V. The Sources and Modes of Infection. 5½ x 8¼. cloth. 407 pp. New York, 1910. net, $3.00

Contents: Life of Disease Germs Outside of the Body; Carriers and Missed Cases; Limitations to the Value of Isolation; Infection by Contact; Infection by Fomites; Infection by Air; Infection by Food and Drink; Infection by Insects.

Christian, M. Disinfection and Disinfectants. Translated from the German by Chas. Salter. 18 illustrations. 5¼ x 7¾. cloth. 112 pp. London, 1913. $2.50

Contents: Physical Disinfection. Heat, Light and Other Rays; Electric Currents and Mechanical Influences. *Chemical Disinfection.* Liquid Disinfectants; Tablets; Gaseous Disinfectants; Combined Systems of Disinfection; Gartner's Method of Disinfecting Books; Formalin Vapor Method.

Egbert, S. A Manual of Hygiene and Sanitation. *Seventh Edition, enlarged and thoroughly revised* 160 illustrations, 5 plates. 5½ x 8¼. cloth. 562 pp. Philadelphia, 1919. $3.00

Contents: Introduction; Bacteriology and Parasitology; The Atmosphere-Air; Ventilation and Heating; Water; Food; Stimulants and Beverages; Personal Hygiene; School Hygiene; Disinfection; Quarantine; The Removal and Disposal of Sewage; Industrial Hygiene and Occupational Diseases; Military Hygiene; Vital Statistics; The Examination of Air, Water, and Food.

Hooker, A. H. Chloride of Lime in Sanitation. 6¼ x 9½. cloth. 236 pp. New York, 1913. $3.00

Contents: Chloride of Lime; Chloride of Lime for Water Purification; Sewage Disinfection; Street Sprinkling and Flushing; Epidemics, Surgery and General Sanitation; Chloride of Lime on the Farm; The War Against the Infectious House Fly; Abstracts and References.

MacNutt, J. S. A Manual for Health Officers. 4 plates 5¼ x 8. cloth. 658 pp. New York, 1915. $3.50

Contents: Local Health Authorities; State Health Authorities; The Federal Health Authorities; Unofficial Organizations; The New Public Health; Communicable Disease; Child Hygiene; Milk and Other Food Supplies; Water Supplies; Housing and Industrial Hygiene; Nuisances; Sanitary Law; The Annual Report; Vital Statis-

tics; Publicity. *Appendices.* Disinfection; Standard Rules for Production and Handling of Milk, Legal Status of Tuberculin-Testing of Dairy Cattle, The Health Department Laboratory, Rules of Statistical Practice of the American Public Health Association, Joint Sanitary Administration for Small Communities, Plan for Annual Reports, Glossary of Technical Public Health Terms.

Pakes, W. C. G. The Science of Hygiene. A textbook of laboratory practice for public health students. New edition revised by A. T. Nankivell. 80 illustrations. 5¾ x 7¾. 176 pp. London, 1912. net, $1.75

Contents: Water Analysis; Interpretation of Results; Standard Solutions; Analysis of: Milk, Butter, Flour, Bread, Coffee, Spirits, Wines, Beer, Vinegar, Air, Soils, Disinfectants; Microscopy; Meat Inspection; Appendix.

Tinkler, C. K., and Masters, H. Applied Chemistry. A practical handbook for students of household science and public health. Vol. I., Water, Detergents, Textiles, Fuels, etc. Illustrated. 6 x 9. cloth. 304 pp. London, 1920. *In Press*

Contents: Water Analysis; Water Softeners and "Soda" Substitutes; Soap; Textile Fibres; Bleaching Agents; Dry Cleaning; Air Analyses, etc.; Gaseous Fuels; Liquid and Solid Fuels, etc.; Materials Used for the Protection of Wood, Metal and Other Surfaces.

Woodman, A. G., and Norton, J. F. Air, Water and Food, from a Sanitary Standpoint. *Fourth Edition, revised and rewritten.* Illustrated. 6 x 9. cloth. 253 pp. New York, 1914. net, $2.00

AGRICULTURAL CHEMISTRY

Aikman, C. M. Manures and the Principles of Manuring. *Third Edition.* 5 x 7½. cloth. 623 pp. London, 1902. *Reprinting*

Contents: Introduction; Fertility of the Soil; Functions Performed by Manures; Nitrogen; Nitrification; Phosphoric Acid; Potash; Farmyard Manure; Guano; Nitrate of Soda; Sulphate of Ammonia; Bones; Mineral Phosphates; Superphosphates; Thomas-Phosphate or Basic Slag; Potassic Manures; Minor Artificial Manures; Sewage as Manure; Composts; Indirect Manures; Gypsum; Salt; Application of Manures; Manuring of the Common Farm Crops; Methods of Application and Mixing Manures; Valuation and Analysis; The Rothmansted Experiments.

Babcock, Ernest B., and Clausen, Roy E. Genetics in Relation to Agriculture. Illustrated, color plates. 6¼ x 9¼. cloth. 675 pp. N. Y., 1918. net, $3.50

Babcock, E. B., and Collins, J. L. Genetics Laboratory Manual. Illustrated. 6 x 9. cloth. 67 pp. New York, 1919. $1.00

Bourcart, E. Insecticides, Fungicides and Weedkillers. Translated and revised by D. Grant. 83 tables, 12 illustrations. 6 x 8¾. cloth. 450 pp. London, 1913. $6.00

Contents: Plant Pathology; Etiology; Animal Parasites; Vegetable Parasites; Microbe Parasites; Balanced Disinfection; Therapeutics; Vegetable Surgery; Prophylaxy; Insecticides, Fungisides, and Weed Killers; Dictionary of Insects Injurious to Plants; Dictionary of Fungoid Diseases of Plants.

Brown, E., and Hunter, H. H. Planting in Uganda. Coffee, Para Rubber, Cocoa. With contributions by Prof. Dunstan and George Massee. 42 plates, 2 maps. 6 x 9. cloth. 192 pp. London, 1913. net, $3.50

Contents: Physical Features of the Country; History of Products in Uganda; Probable Life of Trees and How to Prolong It; Choice of Land for Plantations; Nurseries; Laying Out Plantation; Clearing and Planting; Weeds and Weeding, and Upkeep; Factory and Machinery; Collection and Preparation of Coffee, Para Rubber, and Cocoa; Estate Management; Costs of Establishing Plantations and of preparing Products; Insect Pests; Fungoid Diseases; Table of Distances for Planting; Appendix.

Burgess, Paul S. Soil Bacteriology Laboratory Manual. 5½ x 7½. cloth. 131 pp. Easton, 1917. $1.25

Cameron, Frank K. The Soil Solution. The nutrient medium for plant growth. Illustrated. 6 x 9. cloth. 141 pp. Easton, 1911. $1.25

Contents: Soil; Management and Control; Analysis and the Historical Methods of Investigations; Plant-Food Theory of Fertilizers; Dynamic Nature of Phenomena; Film Water; Mineral Constituents of Solution; Absorption; Relation of Plant Growth to Concentration; Balance Between Supply and Removal of Mineral-Plant Nutriments; Organic Constituents of the Solution; Fertilizers; Alkali.

Chamberlain, Joseph S. Organic Agricultural Chemistry. (The Chemistry of Plants and Animals.) A Textbook of general agricultural chemistry, or elementary biochemistry for use in the colleges. 5½ x 8. cloth. 336 pp. New York, 1916. $1.90

Contents: Systematics; Physiological; Crops, Foods, and Feeding.

Church's Laboratory Guide. A manual of practical chemistry for colleges and schools, specially arranged for agricultural students. *Ninth Edition, revised and largely rewritten,* by E. Kinch. 45 illustrations. 5½ x 7¾. cloth. 385 pp. New York, 1912. $2.50

Contents: Chemical Manipulation; Qualitative Analysis of the Elements; Of Reagents and Tests: Of Reactions; Method of Analysis; Preliminary Examination; Preparation of the Solu-

tion; Analytical Schemes for the Metals or Basic Radicles and for the Non-Metallic or Acid Radicles; For the Examination of insoluble Substances and of Alloys; Table of Solubilities; An Example of a Qualitative Analysis. *Quantitative Analysis.* Preliminary Instructions in Quantitative Operations; Sampling and Analysis of Manures; Analysis of Soils, of Waters, and of Foods.

Coleman, J. B., and Addyman, F. T. Practical Agricultural Chemistry for Elementary Students. 5 x 7½. cloth. 92 pp. London, 1913. $0.90

Collins, S. Hoare. Chemical Fertilizers and Parasiticides. Illustrated. 5½ x 8¾. cloth. 285 pp. London, 1920. (Industrial Chemistry Series.) $3.50

Contents: The Need for Fertilizers. Plant Growth Without Fertilizers; The Increase of Crops by the Use of Fertilizers. *The Sources of Fertilizers.* Mineral Deposits of Fertilizers; Fuel By-Products; Metal Industry By-Products; Alkali Industry By-Products; Plant and Animal Refuse of Value as Manure; Atmospheric Nitrogen. *The Manufacture of Fertilizers.* Inorganic Nitrogen Fertilizers; Organic Nitrogen Fertilizers; Phosphorus Fertilizers; Potassium Fertilizers; Bone Manures; Compound Manures. *The Use of Fertilizers.* The Trade in Fertilizers; The Distribution of Fertilizers Over the Rotation of Crops; Manufacture for Special Soils and Climates; Manures for Special Crops. *The Future of Fertilizers.* New Sources of Fertilizers; Improvements in the Manufacture of Fertilizers; Improvements in the Use of Fertilizers. *Chemical Insecticides and Fungicides.* Inorganic Poisons; Organic Poisons.

Collins, S. H. Plant Products and Chemical Fertilizers. 5½ x 8¾. cloth. 252 pp. London, 1919. (Industrial Chemistry Series.) $3.00

Contents: Introduction. *Fertilizers.* Nitrogen Group of Fertilizers; The Phosphorus Group of Fertilizers; Potassium Group of Manures; Mixed Fertilizers. *Soils.* Soils and Their Properties; Special Soil Improvers; Soil Reclamation. *Crops.* Photosynthesis; The Carbohydrates Produced in Crops; The Oil-Bearing Plants; The Nitrogen Compounds in Plants; Miscellaneous Plant Products; Produce Variability. *The Production of Meat.* The Foods Fed to Beasts; Calorific Value of Foods; Dairy Products; Future Developments.

Copeland, Edwin B. The Coco-Nut. 23 illustrations and plates. 5¼ x 8¼. cloth. 227 pp. London, 1914. net, $3.25

Cowie, G. O. The Fertilization of Tea. Illustrated. 5 x 7. paper. 75 pp. London, 1908. $1.25

Fraps, G. S. Principles of Agricultural Chemistry. *Second Edition.* 94 illustrations. 6 x 9. cloth. 499 pp. Easton, 1917. $5.00

Contents: Introduction; Essentials of Plant Life; The Plant and the Atmosphere; Origin of Soils; Physical Composition and Classes of Soils; Physical Properties of Soils; The Soil and Water; Chemical Constituents of the Soil; Chemical Composition of the Soil; Active Plant Food and Water Soluble Constituents of the Soil; Chemical Changes in the Soil; Soil Deficiencies; Losses and Gains by the Soil; Manure; Sources and Composition of Fertilizers; Purchase and Use of Fertilizers; Constituents of Plants; Composition of Plants; Digestion; Utilization of Food; The Maintenance and Fattening Rations; Feeding Work Animals and Growing Animals; Feeding Milk Cows; Calculation of Rations.

Fritsch, J. The Manufacture of Chemical Manures. Translated from the French, with numerous notes, by Donald Grant. 69 illustrations. 108 tables. 6 x 8¾. cloth. 355 pp. London, 1911. $5.00

Contents: Phosphoric Acid; Principal Phosphate Deposits; Drying and Enrichment of Phosphates; Historical Review of Superphosphate Manufacture; Manufacture of Soluble Phosphates; Superphosphate Manufacture; Crushing, Sifting, Drying, and Storing of Sulphate; Retrogradation; Compound Manures; Manufacture of Phosphoric Acid, Double Superphosphates and Various Products; Manufacture of Bone Dust and Bone Superphosphate (Vitriolized Bones); Manufacture of Basic Slag; Nitrogenous Manures; Manufacture of Manure from Animal Waste; Recovery of Nitrogen from Distillery Spent Wash; Manufacture of Cyanamide and of Nitrate of Lime; Nitrogenized Phosphatic Manures; Potassic Manures; Transference and Handling of Raw Materials and Finished Products.

Griffiths, A. B. A Treatise on Manures, or the Philosophy of Manuring. A practical handbook for the agriculturist, manufacturer, and student. *Third Edition, revised and enlarged.* Illustrated. 5¼ x 7¾. cloth. 469 pp. London, 1903. *Reprinting*

Contents: The Constituents of Plants; Vegetable Physiology; Natural Manures; Artificial Manures; Phosphatic Manures; The Manure Works; Artificial Nitrogenous Manures; Various Mineral Manures; Iron Sulphate as a Manure; Ville's System of Manuring; Application of Manures.

Gross, E. Hops, in Their Botanical, Agricultural and Technical Aspect, and as an Article of Commerce. Translated from the German by Charles Salter. With tables and diagrams. 78 illustrations. 6¼ x 9. cloth. 353 pp. London, 1900. $5.00

Contents: History; The Hop Plant Cultivation; Preservation and Storage; Physical and Chemical Structure of the Hop Cone; Judging Value of Hops; Statistics of Production; The Hop Trade.

Haas, Paul, and Hill, T. G. An Introduction to the Chemistry of Plant Products. *Second Edition.* Illustrated. 6 x 9. cloth. 423 pp. New York. 1917. net, $3.50

Contents: Fats, Oils and Waxes; Carbohydrates; Glucosides; Tannins; Pigments; Nitrogen Bases; Colloids; Proteins; Enzymes.

Hall, A. D. Fertilizers and Manures. Illustrated. 5 x 7. cloth. 399 pp. New York, 1915. $2.00

Contents: Fertilizers Containing Nitrogen; The Function and Comparative Value of Nitrogenous Manures; Phosphatic Manures; Functions and Use of Phosphatic Fertilizers; The Potassic Fertilizers; Farmyard Manure; Peruvian Guano and Other Mixed Fertilizers; Materials of Indirect Fertilizing Value; Theories of Fertilizer Action; Systems of Manuring Crops; Valuation and Purchase of Fertilizers; The Conduct of Experiments with Fertilizers.

Hall, A. D. The Feeding of Crops and Stock. An introduction to the science of the nutrition of plants and animals. With 24 illustrations and diagrams. 5½ x 8. cloth. 314 pp. N. Y., 1911. $2.00

Contents: What the Plant is Made of; The Work of the Leaf; The Work of the Roots; Changes of Composition Within the Plant; The Origin and Nature of Soils; Cultivation and the Movements of Soil Water; The Living Organisms of the Soil; The Chemical Composition of the Soil; Foods; The Utilization of Food by the Animals; Food Required by the Growing and Fattening Animal; Farmyard Manure; Artificial Manures and Fertilizers; Milk, Butter, and Cheese.

Hall, A. D. The Soil. An introduction to the scientific study of the growth of crops. *New Edition.* Illustrated. 6 x 9. cloth. London, 1908. $2.00

Hall, Alfred D. The Book of the Rothamsted Experiments. Revised by E. J. Russell; issued with the authority of the Lawes Agricultural Trust Committee. *Second Edition.* Illustrated. 9 x 12. cloth. 372 pp. New York, 1917. $5.00

Halligan, J. E. Elementary Treatise on Stock Feeds and Feeding. Illustrated. 6 x 9¼. cloth. 310 pp. Easton, Pa., 1911. $3.00

The book has been written to furnish the readers with a knowledge of stock feeds, the principles of feeding and the care of farm animals. It is so arranged that it may be used as a text-book, or for farmers, or for those interested in commercial feeds.

Halligan, J. E. Fertility and Fertilizer Hints. 12 illustrations. 6 x 9. cloth. 162 pp. Easton, 1911. $1.50

Contents: Chemical Elements Needed by Plants and the Composition of Plants; The Fertility of the Soil; Maintaining Soil Fertility; Farm Manures; High Grade Nitrogenous Materials; Low Grade Nitrogenous Materials and Functions of Nitrogen; Phosphates; Superphosphates and Effect of Phosphoric Acid; Potash Fertilizers; Miscellaneous Fertilizer Materials; Lime, Gypsum and Green Manures; Commercial Fertilizers; Valuation of Fertilizers; Home Mixtures; A Few Remarks About Fertilizers.

Halligan, J. E. Soil Fertility and Fertilizers. 23 illustrations. 6½ x 9. cloth. 410 pp. Easton, Pa., 1912. $4.00

Contents: Chemical Elements Needed by Plants and the Composition of Plants; The Fertility of the Soil; Maintaining Soil Fertility; Farm Manures; High Grade Nitrogenous Materials; Low Grade Nitrogenous Materials and Functions of Nitrogen; Phosphates; Superphosphates and the Effect of Phosphoric Acid; Potash Fertilizers; Miscellaneous Fertilizer Materials; Lime, Gypsum and Green Manures; Commercial Fertilizers; Valuation of Fertilizers; High, Medium and Low Grade Fertilizers; Home Mixtures; A Few Remarks About Fertilizers; Fertilizer Formula for Crops; Appendices.

Hart, Edwin B., and Tottingham, William E. General Agricultural Chemistry. Illustrated. 5¾ x 8. cloth. 344 pp. New York, 1913. $2.00

Contents: The Atmosphere; The Soil; Natural Waters; The Plant; Farm Manure; Commercial Fertilizers; Crops; The Animal Body; Feeding Standards; Food Requirements of Animals; Milk and Its Products; Insecticides and Related Substances; Appendix.

Hart, J. H. Cacao. A manual on the cultivation and curing of cacao. 64 illustrations and plates. 6¼ x 9¼. cloth. 333 pp. London, 1911. net, $3.00

Contents: Botany and Nomenclature; Selection of Land; Nurseries; Planting, Shading, Manuring, Pruning and Diseases of Cacao; The Fauna of the Cacao Field; Road-making, Draining, Picking, Harvesting, Shelling and Breaking; Fermentation; Drying Apparatus, etc.; Temperature and Climate; Agricultural Chemistry; Yield, Value and Prices of Cacao; Available Land, and Value of an Estate; Production, Food Value and Manufacture of Cacao; Transport of Cacao Plants and Seeds; Miscellaneous Notes; How José Formed his "Cocoa" Estate; Health of the Cacao Estate.

Henry, W. A. Feeds and Feeding. A Handbook for the student and stockman. *Eleventh Edition.* 6½ x 9¼. cloth. 619 pp. Madison, Wis., 1911. $2.50

Contents: Plant Growth and Animal Nutrition; Feeding Stuffs; Feeding Farm Animals; Composition of American Feeding Stuffs; Digestibility; Digestible Nutrients and Fertilizing Constituents; Mineral Constituents; Wolff-Lehmann Feeding Standards.

Henry, Thos. A. The Plant Alkaloids. 6 x 9. cloth. 473 pp. London, 1913. $8.50

Contents: Introduction; Pyrrole Group; Pyridine Group; Alkaloids with Diheterocyclic Nuclei; Quinoline Group; Isoquinoline Group; Glyoxaline Group; Purine Group; Alkaloids Derived from Aliphatic Amines; Alkaloids of Unknown Constitution; Appendix-Recent Works on Alkaloids.

Ibbetson, A. Tea, from Grower to Consumer. 30 illustrations. 4¾ x 7¼. cloth. 122 pp. London, 1910. $1.00

Ingle, Herbert. Elementary Agricultural Chemistry. A handbook for junior agricultural students and farmers. Illustrated. 5 x 7. cloth. 259 pp. London, 1908. $1.75

Contents: Introduction; The Atmosphere; The Soil; Natural Waters; The Plant; Manures; Crops; The Animal Body; The Feeding of Animals; The Dairy; Miscellaneous.

Ingle, Herbert. A Manual of Agricultural Chemistry. *Fourth Revised and Enlarged Edition.* 16 illustrations. 5½ x 8¾. cloth. 440 pp. London, 1920. $5.00

Contents: Fundamental Principles; The Atmosphere; The Soil; The Reactions Occurring in Soils; The Analysis and Composition of Soils; Manuring and General Manures; Application of Manures; The Analysis and Valuation of Manures; The Chemical Constituents of Plants; The Plant; Crops; The Animal; Foods and Feeding; Milk and Milk Products; Miscellaneous Products Used in Agriculture; Appendix.

Johnston, J. F. W., and Cameron, Chas. Elements of Agricultural Chemistry. *Twenty-first Edition.* 5¼ x 7½. cloth. 502 pp. London, 1912. net, $2.60

Contents: Chemical Nomenclature; Constituents of Plants and Animals; Composition of the Atmosphere; Growth of Plants; Soils; Rocks; Improvement of Soils; Lime; Irrigation; Exhaustion of Soils; Germination of Seeds; Assimilation by Plants; Manures; Manuring; Animal Nutrition; Vegetable Foods; Fodder Crops; Seed Furnishing Crops; Roots and Tubers; Milk; Butter; Cheese; Food Rations.

Keable, B. B. Coffee, from Grower to Consumer. 22 illustrations. 4¾ x 7¼. cloth. 126 pp. London, 1910. $1.00

Keitt, T. E. The Chemistry of Farm Practice. Illustrated. 5 x 7¾. cloth. 255 pp. New York, 1917. $1.50

Contents: Elements, Atomic Weights, Molecules, Symbols, Molecular Weights, Oxidation, Reduction; Compounds, Mixtures, Valence, Formulas, and Equations; Acids, Bases, Salts, Anhydrides, Dissociation, and Nomenclature; Elements Necessary for Plant Growth; Water, Springs, Wells, Hardness and Household Water; Soil Water-Air in Soils; Assimilation of Plant Food; Formation, Composition and Fertility of Soils; Animal Manures; Agricultural Lime; Phosphorus; Nitrogen; Sources and Use of Potash Salts; Measuring Plant Food Requirements; Mixing of Fertilizers; Animal Nutrition; Feeds and the Calculation of Rations; Milk and its Products; Insecticides; Fungicides and Disinfectants; Paints and Whitewashes; Materials Producing Heat and Light; Fire Extinguishers; Concrete.

Killebrew, J. B., and Myrick, Herbert. Tobacco Leaf; Its Culture and Cure, Marketing and Manufacture. Illustrated. 5¼ x 7½. cloth. 520 pp. New York, 1916. net, $2.00

Contents: Essentials in Tobacco Culture; Heavy Leaf and Manufacturing Tobaccos; Cigar Leaf Tobaccos; Tobacco Manufacture.

Lambert, T. Bone Products and Manures. An account of the most recent improvements in the manufacture of fat, glue, animal charcoal size, gelatine, and manures. *Second Revised Edition.* 17 illustrations. 5½ x 8½. cloth. 174 pp. London, 1913. $3.50

Contents: Bone Products. The Treatment of Bones; Glue; Gelatine; Uses of Glue, Gelatine and size. *Manures.* Soils and Plant Life; Natural Manures; Artificial Manures, Raw and Other Phosphates, Bones; Mineral Manures, Superphosphates; Analysis of Raw and Finished Products; Appendices.

Lloyd, Strauss L. Mining and Manufacture of Fertilizing Materials and Their Relation to Soils. Illustrated. 5¼ x 8. cloth. 159 pp. N. Y., 1918. $2.00

Contents: Chemistry of Fertilizers; Origin and Composition of Soils; The Relation Between Soils and Fertilizing Materials; Pebble Phosphate Ore Dressing and Milling; Hard Rock Phosphate Ore Dressing and Milling; Phosphorus; Artificial Manure Manufacture; Manufacture of Superphosphate; Compound Manures; Nitrogenous Manures; The Fixation of Atmospheric Nitrogen; Manufacture of Cyanamide and Nitrate of Lime—Experiments with Cyanamide; Potassic Manures—Manufacture from Crude Salt, Feldspar, Sunflower and Kelp Plants; On the Examination of Commercial Fertilizers and Materials; On the Examination of Soils.

Lock, C. G. W. Coffee. Its Culture and commerce in all countries. 11 plates, 15 illustrations. 4¾ x 7½. cloth. 275 pp. London, 1888. net, $3.00

Contents: The Plant; The Estate; Cultivation; Diseases and Enemies; Preparation of the Berry; Markets and Statistics; Local Details of Culture and Production; Bibliography.

Murray, J. A. Soils and Manures. 33 illustrations. 8vo. cloth. 367 pp. (Van Nostrand's Westminster Series.) New York, 1910. net, $2.00

Contents: Introductory; The Origin of Soils; Physical Properties of Soils; Chemistry of Soils; Biology of Soils; Fertility; Principles of Manuring; Phosphatic Manures; Phospho-nitrogenous Manures; Nitrogenous Manures; Potash Manures; Compound and Miscellaneous Manures; General Manures; Farmyard Manures; Valuation of Manures; Composition and Manural Value of Various Farm Foods.

Newland, H. O. The Planting, Cultivation, and Expressions of Cocoanuts, Kernels, Cacao and Edible Vegetable Oils and Seeds of Commerce. A practical handbook for planters, financiers, scientists and others. Illustrated. 5½ x 8½. cloth. 111 pp. London, 1919. $2.50

Pranke, Edward J. Cyanamid. Manufacture, chemistry and uses. 8 illustrations. 6 x 9. cloth. 118 pp. Easton, 1913. $1.50

Contents: Discovery and Manufacture of Cyanamid; Preparation and Properties of Cyanamid; Analytical Methods; Storage of Cyanamid; Decomposition of Cyanamid in the Soil; Retention of Cyanamid Nitrogen in Soil; Nitrification of Cyanamid Nitrogen; Toxicity of Fertilizers; Agricultural Use of Cyanamid; Making Fertilizer Mixtures with Cyanamid; Permanganate Availability of Cyanamid; Fire and Water Hazard of Cyanamid.

Russell, E. J. Soil Conditions and Plant Growth. *Third Edition.* Illustrated. 6 x 9. boards. 251 pp. (Monographs on Biochemistry.) London, 1918. $2.50

Sanderson, E. D. Insect Pests of Farm, Garden and Orchard. 513 illustrations. 6 x 8½. cloth. 696 pp. New York, 1912. net, $3.00

Contents: Injury to Crops by Insects; Beneficial Insects, Predaceous and Parasitic; Structure and Development of Insects; Farm Method for the Control of Insects; Insecticides; Spraying and Dusting Apparatus; Insects Injurious and Affecting Grains, Grasses, Forage and Miscellaneous Crops; Some Insects Injurious to Orchard Fruits.

Stopes, M. C. The Study of Plant Life. *Second Edition.* 156 illustrations. 7 plates. 6 x 9. cloth. 214 pp. London, 1910. net, $2.00

Contents: Life of the Plant; Parts and Uses of a Plant's Body; Specialization; The Five Great Classes; Plants in their Homes.

Tanner, Arthur E. Tobacco, from the Grower to the Smoker. 15 illustrations. 4¾ x 7¼. cloth. 128 pp. London, 1912. $1.00

Van Hall, C. J. J. Cocoa. 140 illustrations, 1 map. 5½ x 8¼. cloth. 542 pp. London, 1914. net, $3.50

Ville, M. G. Artificial Manures: Their Chemical Selection and Scientific Application to Agriculture. New and revised translation by William Crookes and John Percival. Illustrated. 6 x 9. cloth. 388 pp. London, 1909. $3.50

Voorhees, E. B. Fertilizers. The source, character and composition of natural, home-made and manufactured fertilizers, and suggestions as to their use for different crops and conditions. *Revised Edition.* Illustrated. 5 x 7½. cloth. 365 pp. N. Y., 1916. $1.60

Wheeler, H. J. Manures and Fertilizers. A textbook for college students, and a work of reference for all interested in the scientific aspects of modern farming. Illustrated. 5 x 7½. cloth. 389 pp. New York, 1913. $1.60

Wiley, Harvey W. Principles and Practice of Agricultural Analysis. A manual for the study of soils, fertilizers, and agricultural products. For the use of analysts, teachers, and students of agricultural chemistry. *Second Edition, revised and enlarged.* Three volumes. Illustrated. 6½ x 9¼. cloth.

Vol. I. Soils. 92 illustrations. 648 pp. Easton, 1906. net, $4.00

Vol. II. Fertilizers and Insecticides. 47 illustrations. 690 pp. Easton, 1908. net, $4.50

Vol. III. Agricultural Products. 118 illustrations. 862 pp. Easton, 1914. net, $6.00

DAIRY CHEMISTRY

Billing, G. T., and Walker, A. H. Milk and Food Inspectors' Examinations. Model answers to questions set by the Royal Sanitary Institute and other examining bodies. 5¼ x 7¾. cloth. 164 pp. London, 1911. $1.50

Farrington, E. H., and Woll, F. W. Testing Milk and Its Products. A manual for dairy students, creamery and cheese factory operators, food chemists and dairy farmers. *Twenty-third Edition, revised and enlarged.* Illustrated. 5 x 7. cloth. 297 pp. Madison, Wis., 1916. $1.25

Fleischmann, W. The Book of the Dairy. A manual of the science and practice of dairy work. Translated by C. M. Aikman and R. P. Wright. 85 illustrations. 6¼ x 9. 368 pp. London, 1916. $4.50

Contents: The Secretion, Properties, and Composition of Milk; The Extraction, Immediate Sale, and Testing of Milk; Milk in its Relation to Micro-organisms; Dairying and Bacteriology; The Manufacture of Butter; Cheese and Cheese Making; Preparation of Keeping Milk; Fermented Milk, and the By-products of Milk; Economic Aspects of Dairying; Margarine and Margarine Cheese.

Guthrie, E. S. The Book of Butter. A text on the nature, manufacture and marketing of the product. Illustrated. 5 x 7½. cloth. 270 pp. New York, 1918. $2.00

Hunziker, Otto F. Condensed Milk and Milk Powder. Prepared for the use of milk condenseries, dairy students and pure food departments. *Second Edition, revised and enlarged.* 66 illustrations. 6¼ x 9¼. cloth. 350 pp. La-Grange, Ill., 1918. $5.00

Contents: Condensed Milk; Manufacture of Sweetened Condensed Milk; Manufacture of Unsweetened Condensed Milk—Evaporated Milk; From Factory to Consumer; Condensed Milk Defects, Their Causes and Preventions; Manufacture of Milk Powder.

Kilbourne, Chas. H. The Pasteurization of Milk from the Practical Viewpoint. 34 illustrations. 4¼ x 6. cloth. 252 pp. New York, 1916. net, $1.25

Contents: Pasteurization in General; Heaters; Holders; Temperature Controllers and Recorders; Cleaning and Cooling the Milk; Home Pasteurization; Efficiency of Various Apparatus; Changes in the Cream Line Due to Pasteurization of Milk; Conclusions.

Lane-Clayton, Janet E. Milk and Its Hygienic Relations. Illustrated, 8 plates. 6¼ x 9. cloth. 256 pp. London, 1916. net, $2.50

Larsen, C., and White, W. Dairy Technology. A treatise on the city milk supply, milk as a food, ice-cream making, by-products of the creamery and cheesery, fermented milks, condensed and evaporated milks, milk powder, renovated butter, and oleomargarine. 47 illustrations. 6 x 8½. cloth. 312 pp. New York, 1913. $2.00

Leffmann, Henry. Analysis of Milk and Milk Products. *Fourth Edition, revised and enlarged.* Illustrated. 5 x 7¼. 122 pp. Phila., 1915. $1.75

Contents: Milk; Analytic Data and Processes; Milk Products; Cream; Condensed Milk; Butter; Cheese; Fermented Milk Products.

McKay, G. L., and Larsen, C. Principles of Butter-Making. A treatise on the chemical and physical properties of milk and its components. The handling of milk and cream and the manufacture of butter therefrom. 177 illustrations. 6 x 9. 364 pp. N. Y., 1915. $2.00

Contents: Composition of Milk; Milk Secretion; Properties of Milk; Ferments in Milk; Abnormal Milk; Variation of Fat in Milk; Receiving, Sampling, and Grading Milk and Cream; Composite Samples; Creamery Calculation; Heating Milk Previous to Skimming; Separation of Cream; Farm Separators; Pasteurization; Cream-ripening; Starters; Churning and Washing Butter; Salting and Working of Butter; Packing and Marketing Butter; Composition of Butter; Judging and Grading Butter; Appendix; A Laboratory Course in Farm Dairying Consisting of Fourteen Exercises on Handling, Separating, and Testing Milk and Cream Under Farm Conditions; Legal Standards for Milk—Dairy Laws; Metric System of Weights and Measures, with Tables for Converting Them into Customary United States Equivalents and the Reverse.

Melick, C. W. Dairy Laboratory Guide. 52 illustrations. 5¼ x 7½. cloth. 134 pp. New York, 1907. $1.25

Contents: Cream Separators; Babcock Tester; Lactometer; Acidity of Milk; Pasteurization; Starter Making; Curd; Cream Ripening and Grading; Churning; Tests on Butter; Cheese; Ice Cream; Dairy Bacteriology; Tests for Preservatives and Oleomargarine; Repairing Machinery; Milk Preparations; Disinfectants; Refrigeration; Bookkeeping.

Parker, Horatio N. City Milk Supply. 63 illustrations. 6¼ x 9¼. cloth. 506 pp. New York, 1917. net, $5.00

Race, Joseph. The Examination of Milk for Public Health Purposes. 5½ x 8¼. cloth. 230 pp. N. Y., 1918. net, $1.75

Contents: Constituents of Milk; Normal Composition of Milk; Chemical Examination; Bacteria in Milk; The Enumeration of Bacteria in Milk; Excremental Organisms; Pathogenic Organisms; Cells, Dirt and Debris; Miscellaneous; Appendix.

Richmond, H. D. Dairy Chemistry. *Second Edition, revised.* 49 illustrations. 6 x 8. cloth. 434 pp. London, 1914. $6.00

Contents: Introductory; The Constituents of Milk; The Analysis of Milk; Normal Milk: Its Adulteration and Alterations and Their Detection; The Chemical Control of the Dairy; Biological and Sanitary Matters; Butter; Other Milk Products; The Milk of Mammals Other Than the Cow; Standardization and Calibration of Apparatus; Appendix; Useful Tables; Index.

Richmond, Henry D. The Laboratory Book of Dairy Analysis. *Second Edition, revised.* Illustrated. 6 x 9. cloth. 106 pp. Philadelphia, 1905. $1.25

Sheldon, J. P. British Dairying. A handy volume on the work of the dairy farm. *Third Edition, revised.* 39 illustrations. 5¼ x 7½. 180 pp. London, 1908. net, $1.00

Contents: An Ideal Dairy Farm; The Best Breeds of Dairy Cattle; Breeding and Treatment of Dairy Cattle; Summer and Winter Feeding of Dairy Cattle; Crops on Dairy Farms; A Farm in the Peak of Derbyshire; The Dairy; Cheese-making; Cheese and Butter Factories; Butter-making; Foreign Butter-making; Milk and Cream Trade; Technical Education in Dairy Work; Common Ills of Cattle; Pigs.

Snyder, Harry. Dairy Chemistry. Illustrated. 5 x 7½. cloth. 200 pp. New York, 1914. net, $1.00

Contents: Composition of Milk; Milk Testing; Milk Fats; The Lactometer and its Use in Determining Milk Adulteration; Milk Sugar and Lactic Acid; Cream; Chemistry of Butter Making; Sanitary Conditions of Milk; Chemistry of Cheese Making; Milk By-Products; Adulteration of Dairy Products; Market Milk and Cream; Influence of Different Foods upon the Quality of Milk and Dairy Products; The Rational Feeding of Dairy Stock; Appendix; References.

Stocking, W. A. Manual of Milk Products. Illustrated. 5 x 7½. cloth. 578 pp. New York, 1917. $2.50

Thomson, G. S. Milk and Cream Testing and Grading Dairy Products, for School, Farm and Factory. With an introduction by Samuel Lowe. Illustrated with plates. 5 x 7½. cloth. 224 pp. London, 1911. $2.25

Contents: The Milk Supply; Experiments to Ascertain Fat Variations in Milk; Milk Standard; Errors in Sampling Tests; Testing; Bacteriology; Grading of Produce; Equipment of Factories for Grading; Butter Grading.

Van Slyke, L. L. Modern Methods of Testing Milk and Milk Products. *Second Edition.* 52 illustrations. 5¼ x 7½. cloth. 298 pp. New York, 1916. net, $1.00

Contents: Chemistry of Cow's Milk and Milk Products; Sampling and Preserving Milk; The Babcock Test, Description of Apparatus and Materials; Method of Operating the Babcock Test; Testing Cream, Skim-milk, Whey, etc.;

Testing Butter for Fat, Water, Salt, etc.; Methods of Commercial Testing and Scoring of Butter and Cheese.

Van Slyke, L. L., and Publow, C. A. The Science and Practice of Cheese Making. Illustrated. 5¼ x 7½. cloth. 499 pp. New York, 1909. net, $1.75

A treatise on the manufacture of American cheddar cheese and other varities intended as a text book for the use of dairy teachers and students in classroom and workroom; prepared also as a handbook and work of reference for the daily use of cheese-makers in cheese factory operations.

Ward, A. R., and Taffa, M. E. Pure Milk and the Public Health. A manual of milk and dairy inspection. 17 illustrations. 6 x 9. cloth. 231 pp. Ithaca, N. Y., 1909. net, $2.00

Willoughby, Edward F. Milk, Its Production and Uses. With chapters on dairy farming, the diseases of cattle, and on the hygiene and control of supplies. Illustrated. 5 x 7. cloth. Philadelphia, 1904. $2.00

DYES AND DYEING

Art of Dyeing Wool, Silk and Cotton. Translated from the French of M. Hellot, M. Macquer and M. Le Pileur D'Apligny. First published in English in 1789. Illustrated. 6 x 8¾. cloth. 466 pp. London, 1901. $2.00

This volume describes methods used by the pioneer French and English dyers in dyeing wool and woolen cloths, stuffs yarn, worsted, silk, cotton and linen thread, giving formulas for mixing colors and applying them, together with methods for stamping silks and cottons.

Barnett, E. D. Coal Tar Dyes and Intermediates. 5½ x 8¾. cloth. 229 pp London, 1919. (Industrial Chemistry Series.) $3.50

Contents: Introduction. *The Intermediate Compounds.* Nitration; Amidation; Sulphonation; Hydroxylation; Miscellaneous Intermediates. *The Dyestuffs.* The Nitroso-Dyes; The Nitro-Dyes; The Azo-Dyes; The Diphenylmethane Dyes; The Triphenylmethane Dyes; The Indamines and Indophenols; The Azines; The Oxazines; The Thiazines; The Indigoid Dyestuffs; The Anthraquinone Dyes; The Quinoline Dyes The Acridine Dyes; The Sulphur or Sulphide Dyes.

Barnett, E. DeB. Synthetic Dyes. 5½ x 8¾. cloth. (Industrial Chemistry Series.) *In Press*

Beacall, T., Challenger, F., Martin, G., and Saud, H. J. S. Dyestuffs and Coal-Tar Products. Their chemistry, manufacture and application. 29 illustrations. 6½ x 10. cloth. 166 pp. New York, 1915. $5.00

Contents: Industry of Coal-Tar and Coal-Tar Products; Industry of the Synthetic Coloring Matters; The Industry of Natural Dyestuffs; The Dyeing and Color-Printing Industry; Modern Inks; Saccharine and Other Sweetening Chemicals; Industry of Modern Synthetic Drugs; Industry of Photographic Chemicals.

Beech, F. Dyeing of Woolen Fabrics. With diagrams and figures. 33 illustrations. 5¾ x 8¾. cloth. 243 pp. London, 1902. $3.50

Contents: Wool Fibre; Processes Preparatory to Dyeing; Dyeing Machinery and Manipulations: Principles and Practice of Wool, Mixed Cotton and Wool, Gloria Dyeing; Operations Following Dyeing; Experimental Dyeing and Comparative Dye Testing; Testing the Color of Dyed Fabrics.

Beech, Franklin. The Dyeing of Cotton Fabrics. A practical handbook for the dyer and student. *Second Revised Edition.* 44 illustrations. 5½ x 8½. cloth. 267 pp. London, 1917. $5.00

Contents: Structure of the Cotton Fibre; Bleaching of Cotton Fabrics Prior to Dyeing; Dyeing Machinery and Manipulations; The Principles and Practice of Dyeing; Cotton, Mixed Cotton and Wool; Satin; Operations Following Dyeing; Testing the Color of Dyed Fabrics; Experimental Dyeing and Comparative Dye Testing.

Cain, John C. The Chemistry and Technology of the Diazo-Compounds. *Second Edition.* 5½ x 8½. cloth. 211 pp. London, 1920. $4.20

Contents: Introduction; Preparation of the Diazo-Compounds; The Mechanism of the Diazotising Process; The Reactions of the Diazo-compounds; Action of the Various Reagents on Diazo-compounds; Formation of Diphenyl Derivatives in the Diazo-Reaction; Interchange of Groups in Diazo-compounds; Action of Light on Diazo-compounds; Diazoamino-compounds; Azo-compounds; Metallic Diazo-derivatives; Diazo-Hydroxides; Diazo-compounds of the Aliphatic Series; Heterocyclic Diazo-compounds; Constitution of the Diazo-Salts After 1894; Other Views of the Constitution of the Diazo-compounds from 1895; A Review of the Various Theories of the Diazo-compounds to 1907; Theory of the Constitution of the Diazo-compounds Since 1907.

Cain, John C. The Manufacture of Intermediate Products for Dyes. *Second Edition.* 25 illustrations. 5¾ x 8¾. cloth. 284 pp. London, 1919. $3.75

In the short period since this book was first published considerable additions have been made to the scientific and technical literature of the subject, particularly in America. These have been incorporated in the present revision of the book; several of the descriptions have also been expanded, and some useful suggestions made by the reviewers have been adopted.

Cain, John C., and Thorpe, Jocelyn F. The Synthetic Dyestuffs; and the Intermediate Products from Which They are Derived. *Third Edition, revised.*

Illustrated. 6¼ x 9. cloth. 440 pp. London, 1917. $9.00

Theoretical. A theoretical description of the intermediate products and dyestuffs. *Practical.* Methods for preparing the more important intermediate products and dyestuffs on the laboratory scale. *Analytical.* The analysis and identification of intermediate products and dyestuffs, together with methods for detecting dyestuffs on the fibre.

Dreaper, W. P. Chemistry and Physics of Dyeing. Being an account of the relations between fibres and dyes, the formation of lakes, and the general reactions of colloids and their solution state. Diagrams. 6 x 9. cloth. 323 pp. London, 1906. $5.50

Contents: Properties of Fibres and Their Reactions; Dyes and Lakes, and Their Properties; Action and Nature of Mordants; State of Fibres, and Action of Assistants; Solution and Properties of Colloids; Physical Action and Solid Solution; Evidence of Chemical Action in Dyeing; Part Played by Colloids in Dyeing; Action of Light on Dyeing Operations and Dyed Fabrics; Methods of Research.

Farrell, F. J. Dyeing and Cleaning. A practical handbook. *Third Edition, revised and enlarged.* 81 illustrations. 5¾ x 7¾. cloth. 265 pp. London, 1912. net, $2.00

Contents: Technology of the Textile Fibres; Dry Cleaning; Wet Cleaning; Dyeing; Dry Dyeing; Special Methods; Cleaning and Dyeing Skin Rugs; Feathers and Hats; Finishing; Appendices.

Fay, Irving W. The Chemistry of Coal-Tar Dyes. *Second Edition, revised and enlarged.* 6 x 9. cloth. 500 pp. New York, 1919. $5.00

Contents: Introduction; Coal-Tar and its Products; The Hydrocarbons and Their Derivatives; The Nitro and Nitroso Dyes; The Triphenylmethane Dyes; The Classification of the Coal-Tar Dyes; The Azo Dyes; The Seven Food Colors; The Pyronines; The Indamines, Indophenols, Thiazines, Oxazines; The Eurhodines and Safranines; The Quinoxaline, Quinoline, and Acridine Dyes; Aniline Black; The Alizarin Dyestuffs; Indigo; The Sulphur Dyes; Mordants; Vat Dyes; Thiazol Dyes; Experimental Work.

Fort, M., and Lloyd, L. L. The Chemistry of Dyestuffs. A manual for students of chemistry and dyeing. 12 illustrations. 6 x 9. cloth. 324 pp. London, 1917. net, $2.50

Contents: Bibliography; Historical Introduction; Tar Distillation; Intermediate Compounds; Nitro and Amido Compounds; Sulphonic Acids; Halogen and Phenolic Compounds; Quinones; Acylation and Oxidation; Aldehydes and Carboxylic Acids; Sulphur and Diazo Compounds; Dyestuffs; Application of Dyestuffs; Colour and Constitution; Azo Dyestuffs; Stilbene, Pyrazolone, and Thiazol Dyestuffs; Di- and Triphenylmethane Dyestuffs; Xanthene Dyestuffs; Acridine and Quinoline Dyestuffs; Indamines and Indophenols; Azine, Oxazine and Thiazine Dyestuffs; Sulphide, Vat and Natural Dyestuffs; Appendix; Drawings of Plant.

Fraps, G. S. Principles of Dyeing. 22 illustrations. 5½ x 7½. cloth. 283 pp. London, 1916. $1.90

Contents: Congo Red—Primuline; Fushsine; Bilbrich Scarlet—Alkali Blue; Logwood-, Indigo-, Chrome-Yellow; Vegetable Fibers—Cotton; Linen—Other Vegetable Fibers; Animal Fibers—Wool; Silk; Operations Preliminary to Dyeing; Bleaching Cotton and Linen; Wool and Silk Scouring and Bleaching; Dyeing Machinery and Manipulations; General Observations on Dyeing; Direct Cotton Colors; Basic Colors; Acid Colors; Mordant Dyestuffs; Insoluble Colors; Mercerization—Artificial Silk; Dyeing of Union Goods; Dye Mixing; Dye Testing.

Green, Arthur G. The Analysis of Dyestuffs. And their identification in dyed and colored materials, lake-pigments, foodstuffs, etc. *Second Edition.* 31 tables. 6¼ x 9. cloth. 153 pp. London(1916. $3.75

Contents: Introduction to Dyestuff Chemistry; Classification of Dyestuffs; Analysis of Coloring Matters in Substance; Identification of Dyestuffs on Animal Fibres; Identification of Dyestuffs on Vegetable Fibres; Analysis of Indigo in Substance and upon the Fibre; Analysis of Pigments and Lakes; Determination of the Constitution of Azo Dyestuffs.

Heermann, Paul. Dyers' Materials. An introduction to the examination valuation and application of the most important substances used in dyeing, printing, bleaching and finishing. Translated by Arthur C. Wright. *Second Edition,* revised and enlarged by H. B. Stocks. Illustrated. 5 x 7½. cloth. 159 pp. London, 1919. $3.00

Contents: General; Primary Materials; Inorganic Materials; Organic Compounds; Appendix: Atomic Weights of the Elements.

Higgins, S. H. The Dyeing Industry. Being a *Third Edition* of "Dyeing in Germany and America." 5¾ x 9. cloth. 197 pp. Manchester, 1919. $3.40

Contents: General; Cop-Dyeing; Sulphur Colors and Indigo; Mercerising; Bleaching; German and English Flannelettes; The Industry in the United States; Lowell, Lawrence and Fall River, Massachusetts; Conditions of Life in the Industry; Efficiency in the Industry; Instruction in Dyeing; Progress in the Industry During the War Period; Color Production.

Hurst, George H. Silk Dyeing, Printing and Finishing. 20 illustrations, 11 plates showing 66 dyed specimens. 4½ x 7. cloth. 234 pp. London, 1892. net, $2.00

Knecht, E. Rawson, and Loewenthal, R. A Manual of Dyeing. For the use of practical dyers, manufacturers, students, and all interested in the art of dyeing. *Third Edition.* In two volumes. 118 illustrations, 5 plates. 6½ x 9¼. cloth. 914 pp. London, 1916. $15.00

Contents: Fibres, Coloring Matters, and Mordants; The Dyeing Process; Theory of Dyeing;

Chemical Technology of the Textile Fibres; Water; Washing and Bleaching; Acids, Alkalies, Mordants, etc.; Natural Coloring Matters; Artificial Organic Coloring Matters; Mineral Colors; Machinery Used in Dyeing; Experimental Dyeing and Fastness of Dyes Colors; Analysis and Valuation of Materials Used in Dyeing; Appendix.

Kress, Geo. K. The Practical Dry Cleaner. Illustrated. 5½ x 8. cloth. 94 pp. Allentown, Pa. 1915. net, $3.50

Contents: How to Begin a Dry Cleaning and Pressing Shop; How to do Dry Cleaning, Successful Methods; Wet Cleaning and Bleaching; Kid Glove Cleaning; The Art of Spotting; Plume and Feather Cleaning and Dyeing; How to Press Garments, Illustrated; Useful Hints to Any Cleaner and Tailor.

Matthews, J. M. Laboratory Manual of Dyeing and Textile Chemistry. 6 x 9. cloth. 375 pp. N. Y., 1909. $3.50

Contents: Introductory; Apparatus Required; Chemical Study of the Fibres; Scouring the Textile Fibres; Bleaching the Wool; Bleaching of Cotton; Classification of Dyes; Application of Acid Dyes; Application of Acid Dyes; Representative Acid Dyes; Testing the Fastness of Colors; Application of Basic Dyes to Wool and Silk; Basic Dyes on Cotton; Representative Basic Dyes; Application of Substantive Dyes to Cotton; Substantive Dyes on Wool and Silk; Representative Substantive Dyes on Cotton; Application of Mordant Dyes to Wool; Developed Dyes on Cotton and Silk; Sulphur Dyes on Cotton; Use of Logwood in Dyeing; The Minor Natural Dyes; The Mineral Dyestuffs; The Vat Dyes; The Testing of Dyestuffs; Chemical Reactions of Dyestuffs; Miscellaneous Tests in Dyeing; Testing the Fastness of Colors; Analysis of Textile Fabrics; Analysis of Textile Fabrics; Useful Data for Dyers and Textile Chemists.

Mulliken, Samuel P. Identification of the Commercial Dyestuffs. Being Volume III of A Method for the Identification of Pure Organic Compounds by a systematic analytical procedure based on physical properties and chemical reactions. Containing classified original descriptions of nearly 170 synthetic and natural dyestuffs, references to many allied brands, suggestions on the examination of dyestuffs in mixtures and a color standard. 6¾ x 10¼. cloth. 280 pp. New York, 1910. $5.00

Nietzki, R. Chemistry of the Organic Dyestuffs. Translated by A. Collin and Richardson. 6 x 9. cloth. 328 pp. London, 1892. net, $6.00

Contents: Nitro-compounds; Azo-Dyestuffs; Amidoazo-compounds; Oxyazo-compounds; Azo-Dyes from Diazo-carbonic Acids; Azo-Dyes from Carbonic Acids and Diazo-compounds; Tetrazo- or Disazo-Dyestuffs; Oxyquinones and Quinone-oximes; Ketoneimides and Hydrazides; Triphenylmethane Dyestuffs; Quinoneimide Dyestuffs; Azine Dyestuffs; Aniline Black; Indulines and Nigrosines; Quinoline and Acridine Dyestuffs; Indigo Dyestuffs; Euxanthic Acid and Galloflavine; Canarine; Mureide; Dyestuffs of Unknown Constitution; References.

Owen, F. A. The Dyeing and Cleaning of Textile Fabrics. A handbook for the amateur and the professional. Based partly on notes of H. C. Standage. 5 x 7. cloth. 259 pp. New York, 1909. $2.50

Pawlie, Edward. The Practical Handbook of Garment Dyeing and Cleaning. Including scouring, bleaching, dry cleaning and finishing of garments, feathers, fur, leather, etc. Illustrated. 6 x 9. cloth. 376 pp. Phila., 1909. net, $3.75

Contents: Materials; Cleansing Operations; Coloring Operations; Finishing Operations; Special Methods; Recipes; Tables; Lists of Dyestuffs.

Pellew, Chas. E. Dyes and Dyeing. *New and Enlarged Edition.* Illustrated. 5½ x 8. cloth. 282 pp. New York, 1918. $2.50

A book for the home craftsman. Stenciling, batik and tied and dyed work are thoroughly treated as well as the dyeing of feathers, basketry, leather, silks, cotton, woolens, in fact all material that can be dyed.

Perkin, A. G., and Everest, A. E. The Natural Organic Coloring Matters. 6 x 9. cloth. 655 pp. London, 1918. $9.50

Contents: The Anthraquinone Group; The Naphthaquinone Group; The Benzophenone Group; The Xanthone Group; Flavone Group; The Chalkone and Flavanone Groups; Flavonol Group; Pyran Group; Dihydro-Pyran Group; Pyrone or Coumarin Group; Dicinnamoyl-Methane Group; Diphenyl-Dimethylolid Group: Tannins; Coumarane Group; Indole Group; Lichens, Lichen Acids, and Coloring Matters Derived Therefrom; Iso-Quinoline Group; Coloring Matters of Unknown Constitution; Lakes from Vegetable Coloring Matters; Appendices.

Ramsey, A. R. J., and Weston, H. C. Artificial Dyestuffs, Their Nature, Manufacture and Uses. Illustrated. 5¾ x 8¾. cloth. 221 pp. London, 1917. $2.00

Rawson, C., Gardiner, W., and Laycock, W. F. A Dictionary of Dyes, Mordants, and Other Compounds Used in Dyeing and Calico Printing. 6 x 9¾. cloth. 372 pp. London, 1917. $7.50

A practical work for use in the laboratories of color chemists, dyers and manufacturers. It comprises a general description of dyes, mordants and other substances employed in dyeing and calico printing, with their properties and uses, and wherever possible the methods of examining and assaying these various bodies.

Reisig, F. W. The Guide for Piece-Dyeing. Containing one hundred receipts, with samples. 6 x 9½. cloth. 117 pp. New York, 1889. net, $25.00

Schultz, G., and Julius, P. A Systematic Survey of the Organic Coloring Matters. Revised throughout and greatly

enlarged by Arthur G. Green. 7¼ x 10¾. cloth. 292 pp. London, 1908. $9.00

Contents: Raw Products. Coal Tar. *Intermediate Products.* Nitro Compounds; Sulphonic Acids of Hydrocarbons; Carboxylic Acids of Hydrocarbons; Primary Amines and Their Sulphonic and Carboxylic Acids; Secondary and Tertiary Amines and Their Derivatives; Diamines and Their Sulphonic Acids; Primary Amines and Diamines Used in the Preparation of Substantive Cotton Colors; Phenols and Their Sulphonic and Carbooxylic Acids; Amidophenols and Their Derivatives; Halogen Compounds; Aldehydes, Ketones, and Quinones. *Coloring Matters.*

Schultz, Gustav. Farbstofftabellen. Fünfte Vollständig Umgearbeitete Und Stark Vermehrte Auflage Der Tabellarischen Ubersicht Der Im Handel Befindlichen Künstlichen Organischen Farbstoffe Von Gustav Schultz Und Paul Julius. 6¼ x 9¼. cloth. 484 pp. Berlin, 1914. $10.00

Soxhlet, D. H. Art of Dyeing and Staining Marble, Artificial Stone, Bone, Horn, Ivory and Wood. Translated from the German by Arthur Morris and Herbert Robson. 5¼ x 7½. cloth. 176 pp. London, 1902. $2.50

Contents: Mordants and Stains; Natural Dyes; Artificial Pigments: Coal Tar Dyes; Staining Marble and Artificial Stone; Dyeing, Bleaching and Imitation of Bone, Horn and Ivory; Wood Dyeing; Varnishes and Polishes.

Von Georgievics, G. Chemistry of Dyestuffs. Translated from the *Second German Edition* by Charles Salter. 6 x 8¾. cloth. 412 pp. London, 1903. *Reprinting*

Contents: Coal Tar; Intermediate Products in the Manufacture of Dye-Stuffs. *The Artificial Dyestuffs.* Nitroso; Nitro; Azo; Substantive Cotton; Azoxystilbene; Hydrazones; Ketonimides; Triphenylmethane; Rosolic Acid; Xanthene; Xanthone; Flarones; Oxyketone; Quinoline and Acridine; Quinonimide; The Azine Group; Eurhodines; Safranines; Quinoxalines; Indigo; Dyestuffs of Unknown Constitution; Sulphur or Sulphine Dyestuffs; Development of the Artificial Dyestuff Industry; Natural Dyestuffs; Mineral Colors.

Wahl, Andre, and Atack, F. W. The Manufacture of Organic Dyestuffs. Authorized translation, with additions, from the French; with a preface to the *.English .Edition* by Edmund Knecht. 5 x 7½. cloth. 352 pp. London, 1918. $2.25

Contents: Raw Materials; Coal-Tar; Hydrocarbons; The Phenols. *Intermediate Products.* Sulphonation; Alkaline Fusion; Nitration; Reduction of Nitro-Compounds; Alkylation. *The Organic Dyestuffs.* Classification of Dyestuffs; Nitro-Dyestuffs or Quinone-Oximes; Azo-Dyestuff Hydrazones; Stilbene Dyestuffs; Diphenylmethane Dyestuffs; Triphenylmethane Dyestuffs; Xanthene Dyestuffs; Acridine Dyestuffs; Anthracene Dyestuffs; Quinone-Imide Dyestuffs; Indigo and Indigoid Dyestuffs; Thiazol Dyestuffs; Sulphur Dyestuffs; Aniline Black.

Whittaker, C. M. The Application of the Coal Tar Dyestuffs. The principles involved and the methods employed. 5½ x 8¾. cloth. 225 pp. London, 1919. (Industrial Chemistry Series.) $3.00

Contents: General Survey of Dyeing; The Varied Uses of the Basic Dye stuffs; The Application of the Acid Dyestuffs; The Turkey-Red Industry, and Other Uses of the Alizarine Dyestuffs; The Application of the Direct Cotton Dyestuffs, Including Those Which Develop on the Fibre; The Azo-coloring Matters and Their Special Use in Dyeing; The Properties of the Resorcine Dyestuffs; The Application of the Sulphur Dye stuffs; The Application of the Vat Dyestuffs; The Dyeing of Union Materials, Including Garments; Colors Produced on the Fibre by the Oxidation of Coal Tar Products; Other Uses of Coal Tar Dyestuffs; Dyestuffs Other Than Coal Tar Dyestuffs Still in Use; The Valuation and Detection of Dyestuffs.

Wood, John K. The Chemistry of Dyeing. 5¼ x 7½. cloth. 90 pp. (Van Nostrand's Chemical Monographs, No. 2.) New York, 1914. net, $1.00

Contents: The Chemical Composition and Properties of the Textile Fibres; Dyes and Their Properties; The Nature of the Dyeing Process; Bibliography.

Zerr, G., and Rubencamp, R. A Treatise on Color Manufacture. Translated by Charles Mayer. A guide to the preparation, examination, and application of all the pigment colours in practical use. 50 illustrations. 6½ x 9. cloth. 618 pp London, 1908. $11.50

Contents: The Artificial Mineral Colors; The Manufacture of the Artificial Mineral Colors; The Raw Materials Used in Color Making; The Natural Mineral Colors (Earth Colors); Black Pigments; Organic Coloring Matters and Their Utilization in Making Lake Pigments; The Uses of Colors; Appendix.

Zimmerman, W. The Art of Mordanting and Staining, and the Complete Treatment of Wood Surfaces. A handbook and aid for architects, cabinet makers, decorators, painters, piano factories and trade schools. 5¾ x 8¾. cloth. 140 pp. Boston, Mass., 1912. $3.00

TEXTILES

Ball, W. L. The Cotton Plant in Egypt. Studies in Physiology and Genetics. 72 illustrations. 6¼ x 9. cloth. 218 pp. London, 1912. net, $1.60

Barker, A. F. Textiles. 86 illustrations. 6 x 8½. cloth. 387 pp. New York, 1911. $4.00

Contents: History of Textiles Industries, Inventions and Inventors; The Wool, Silk, Cot-

ton, Flax, Etc., Growing Industries; The Mercerized and Artificial Fibres Employed in the Textile Industries; Dyeing of Textile Materials; Principles of Spinning; Processes Preparatory to Spinning; Principles of Weaving; Of Designing and Coloring, of Finishing; Textile Calculations; The Woolen, Worsted, Dress Goods, Stuff, Linings, Tapestry, Carpet and Cotton Industries; Silk Throwing and Spinning; The Linen Industry Historically and Commercially Considered; Recent Developments and the Future of the Textile Industries.

Barker, Aldred F., and Midgely, Eber. Analysis of Woven Fabrics. 82 illustrations. 5¾ x 8¾. cloth. 319 pp. New York, 1914. $3.50

Contents: Qualities of Raw Materials and of Yarns; Calculations Relating to Yarns, and to the Weight of Cloths; Setts and Setting of Cloths; Weave Analysis; Drafts and Pegging Plans; Effects of Dyeing and Finishing on Wool Cloths, on Union Dress Fabrics, Lining and Cotton Cloths; Obtaining the Loom Particulars from a Small Sample of Finished Cloth; Examples in the Analysis of Woven Fabrics; Quick Methods of Analysis, Standard Weights and Gauges; Qualitative and Quantitative Analysis of Fibres in Woven Fabrics; Costing of Woven Fabrics; Glossary of Terms Applied to Woven Fabrics; Appendix.

Bean, Percy, and McCleary, W. The Chemistry and Practice of Finishing. A practical treatise on bleaching and the finishing of white, dyed, and printed cotton goods. *Second Edition.* Two volumes. 43 plates. 6½ x 9. cloth. 824 pp. Manchester, 1912. $18.00

Contents: Chemicals Employed in Bleaching; Physical and Chemical Properties of Cotton and Linen, and the Chemical Examination of the Various Textile Fibres; Practical Bleaching of Cotton and Linen Piece Goods; Bleaching of Cotton Goods Woven with Coloured Borders and Headings; Stains and Faults in Cloth Due to Imperfect Bleaching and Faulty Manufacture; Water and the Purification of Water Used for Bleaching Purposes; Machinery Used in Bleaching; Practical Finishing; Adhesive and "Thickening" Substances Used in the Finishes; Starch, Gums, etc.; Materials Used for Giving Weight to the Fabric; Ingredients Used to Soften the Fabric; Deliquescent Substances Used for Softening and Weighting the Fabrics; Ingredients Used for Preserving the Fabrics from Mildew; Colours Used for Tinting the Cloth and the Filling; Substances Used for Rendering Fabrics Fireproof and Waterproof; Practical Finishing of Cotton Piece Goods; Machinery Used in Piece Goods; Making Up and Packing Machinery; Soft and Finished Patterns of Cloth; Analysis of Finished Cloth.

Beaumont, R. Color in Woven Design. A treatise on the science and technology of textile coloring. *Second Edition, rewritten and enlarged.* 367 illustrations, 39 colored plates. 6½ x 9. cloth. 396 pp. net, $6.00

Contents: Theories of Color; Attributes of Colors; Contrast and Harmony; Color Standardization; Mixtures; Elements of Textile Coloring-stripes; Check Patterns; Simple Colorings; Compound Colorings; Fancy Shades Applied to Special Designs; Coloring of Combination Designs; Spotted Effects; Coloring of Double Weaves and Reversibles; Figured Textiles; Colored in the Warp; Weft-colored Figured Fabrics—Curl Textures.

Beaumont, Roberts. The Finishing of Textile Fabrics. (Woollen, Worsted, Union and other cloths.) 151 illustrations. 5½ x 8¾. cloth. 279 pp. London, 1910. $5.00

Contents: Woollen, Worsted and Union Fabrics; Processes of Finishing and their Effects; The Process of Scouring; Scouring Machines; Theory of Felting: Fabric Structure, Compound Fabrics; Fulling and Milling Machinery; The Theory of Raising; Raising Machinery and Raising Process; Cutting, Cropping or Shearing, Lustring Process and Machinery; Methods of Finishing.

Beaumont, Roberts. Standard Cloths. Structure and manufacture *(general, military and naval).* 150 illustrations, 16 color plates. 5¾ x 8½. cloth. 342 pp. New York, 1916. $6.00

Contents: Microscopic Features; Fabric Quality; Synopsis of Cloths; Standard Grades of Manufacture; Weaves Types; Fabrics Light in Weight and Structure; Medium Weight Woollens; Medium Weight Worsteds; Overcoating Group of Fabrics; Army and Navy Cloths; Fibrous-Faced Fabrics; Felt Manufactures; Appendix.

Beaumont, Roberts. Woollen and Worsted. The theory and technology of the manufacture of woollen, worsted and union yarns and fabrics. 469 illustrations, 42 plates, 18 tables. 7 x 10¼. cloth. 676 pp. London, 1915. $12.00

Contents: Materials; Woollen Yarn Manufacture; Wool Sorting, Scouring, and Blending; Woollen Yarn Construction; Worsted Yarn Construction; Yarn Structure; Principles of Fabric Structure: Fundamental Weaves; Loom Mounting, or Preparation of the Yarn for the Loom; Hand-Looms; Power-Looms; Weave Combinations; Drafting; Pattern Design; Color Applied to Plain, Twilled, and Fancy Weaves; Compound Fabrics; Fabric Analysis and Calculations; Finishing of Fabrics.

Bottler, Max. Modern Bleaching Agents and Detergents. Translated from the German by Charles Salter. 16 illustrations. 12mo. cloth. 175 pp. London, 1910. net, $2.50

Contents: AGENTS; Old and New Bleaching Methods and Bleaching Agents; Sodium Peroxide; Perforates; Ozone; Sodium Bisulphite and Hydrosulphurous Acid; Discharging Color from Textile Fabrics with Hydrosulphurous Acid; Permanganate; Hydrogen Peroxide; New Process for Bleaching Fats and Oils; Solid, Stable Calcium Hypochlorite and Bleaching Soda; Electric Bleaching. DETERGENTS: Benzine Soaps; Extractive Detergents and Detergent Mixtures; Carbon Tetrachloride; Aceto Oxalic Acid as a Detergent; Bleaching Processes Used in Chemical Cleaning; Hydrogen Peroxide; Oxygenol; Sodium Peroxide; Sundry New Detergents and Cleaning Agents.

Bowman, F. H. Structure of the Cotton Fibre and Its Relation to Technical Applications. Illustrated. 5 x 7. cloth. 470 pp. London, 1908. net, $2.75

Bowman, F. H. Structure of Wool Fibre in Relation to the Use of Wool for Technical Purposes. Illustrated. 5 x 7. cloth. 495 pp. London, 1908. net, $2.75

Brannt, Wm. T., and Gray, J. B. (Editors). Practical Dry Cleaner, Scourer and Garment Dyer. *Fifth Edition, revised, enlarged and entirely reset.* 41 illustrations. 5 x 7½. cloth. 396 pp. New York, 1919. $3.00

Contents: Chemical or French Cleaning; Removal of Stains, or Spotting; Wet Cleaning; Finishing Cleansed Fabrics; Cleaning and Dyeing Feathers; Cleaning and Renovating Felt, Straw and Panama Hats; Bleaching and Dyeing Straw and Straw Hats; Cleaning and Dyeing Gloves; Garment Dyeing; Stripping Colors from Garments and Fabrics; Analysis of Textile Fabrics; Practical Chemistry for the Cleaner and Dyer.

Carter, H. R. Bleaching, Dyeing and Finishing of Flax, Hemp and Jute Yarns and Fabrics. 20 illustrations. 5½ x 8¾. cloth. 172 pp. London, 1911. $1.25

Contents: Chemistry of Bleaching; Materials; Art of Dyeing; Dyes and Dyestuffs; Printing; Finishing; Bleach and Dye Works.

Carter, H. R. Ramie (Rhea), China Grass. The new textile fibre and all about it. A book for planters, manufacturers and merchants. Illustrated. 8vo. cloth. 140 pp. London, 1910. $3.00

Contents: The Ramie Plant; Its Varieties; Soil and Climate Essential for Culture; Ramie Cultivation; Method of Planting and Gathering the Crop; Yields Obtainable; The "Bon" or "Ban" Rhia or Rhea; The Decortication of Rhea or Ramie Fibre; Methods of Preparing Ramie Ribbons for the Market; De-gumming Ramie of Rhea; Preparing and Combing; Drawing, Roving, and Spinning Ramie and China Grass, Twisting, etc.; Weaving, Dyeing, Printing, and Finishing of Rhea, China Grass or Ramie Fibre; Ramie, Rhea and China Grass in Great Britain, on the European Continent, in the United States of America, and in South Africa; Uses to Which Ramie, Rhea, and China Grass Yarns can be put in Trade; How to Manufacture It Profitably; Ramie Cultivation in China and the Chinese Grass Cloth Industry.

Dannerth, F. The Methods of Textile Chemistry. Being the syllabus of a lecture course adapted for use in textile laboratories. 5 x 7. cloth. 172 pp. New York, 1908. $2.00

Contents: Qualitative Analysis. Reactions of: Wool and Hair Fibres; Natural Silk Fibres; Jute and Hemp Fibres; Cotton, Flax and Ramie Fibres; Imitation Silk Fibres; Detection of: Rosin, Mineral, and Vegetable Oil, in Textiles; Mordants on Wool, etc.; Weighting on Silk, etc.; Sizings on Cotton, etc.; Finishing Materials, in Textiles. *Quantitative Analysis.* Analysis of a: Wool-cotton Fabric; Wool-silk Fabric; Cotton-silk Fabric; Cotton-silk Wool-fabric; Silk-imitation Silk Fabric; Waterproof Fabric. Analysis of: Raw Vegetable Fibres; Raw Wool Fibres; Determination of: The "Boiling-off" Loss of Raw Silk; The "Washing-out" Loss of Raw Silk; The "Shrinkage" of Raw Wools; Mineral Matter in Textiles; Moisture in Textiles; Arsenic in Textiles; Oils and Grease in Textiles; Weighting in Silk Fabrics; Finishing in Cotton Fabrics. Determination of Tensile Strength: Humidity; Specific Gravity; Yarn Counts; The Fastness of Dyes on the Fibre. *Materials, Processes and Products.* Cotton Bleaching; Turkey-red Dyeing; Aniline Black Dyeing; Mercerization; Carbonization. *Glossary.*

Ermen, W. F. A. The Materials Used in Sizing. Their chemical and physical properties, and simple methods for their technical analysis and valuation. Illustrated. 5¼ x 7½. cloth. 130 pp. London, 1912. net, $2.00

Contents: The Starches and Other Agglutinants; Weighting Materials; Softening Ingredients; Antiseptics; Analysis of Sized Warps and Cloth; The Preparation of Normal Volumetric Solutions; Tables.

Garner, J. H. Treatment of Effluents from Dyehouses and Textile Factories. Illustrated. 35 pp. London, 1913. net, $1.25

Goulding, E. Cotton and Other Vegetable Fibres; Their Production and Utilisation. With a preface by Wyndham H. Dunstan. Illustrated. 5½ x 8½. cloth. 251 pp. London, 1919. $3.00

Contents: Introductory; Cotton; Cotton Production in the Principal Countries and the Chief Commercial Varieties; Cotton Growing in British West Africa and Other Parts of the British Empire; Flax, Hemp and Ramie; Jute and Similar Fibres; Cordage Fibres; Miscellaneous Fibres.

Hannan, Wm. I. The Textile Fibres of Commerce. Illustrated. 6 x 9. cloth. 236 pp. Philadelphia, 1902. $3.50

A handbook on the occurrence, distribution, preparation, and uses of the animal, vegetable, and mineral fibres used in cotton, woolen, paper, silk, brush, and hat manufacture.

Herzfeld, J. The Technical Testing of Yarns and Textile Fabrics. With reference to official specifications. Translated by Charles Salter. *Second Edition.* 69 illustrations. 5½ x 8¾. cloth. 223 pp. London, 1898.

Revised Edition in Press

Contents: Microscopical Examination of Fibres; Chemical Examination; Yarn Number Determination; Testing the Length of Yarns; External Appearance of Yarn; Twist of Yarn and Twist; Tensile Strength and Elasticity; Percentage of Fat; Moisture; Mode of Weaving; Warp and Weft Threads; Shrinkage; Constituents of Warp and Weft; Dressing; Waterproof Properties of Cloth; Hygroscopicity; Fastness of Dye Test; Length Determinations; Mordants and Dyes; Arsenico.

Hooper, Luther. Silk. Its production and manufacture. 58 illustrations. 4¾ x 7¼. cloth. 134 pp. London, 1916. $1.00

Hubner, J. Bleaching and Dyeing of Vegetable Fibrous Materials. With an in-

troduction by R. Meldola. 95 illustrations, 3 folding plates. 6¼ x 9. cloth. 458 pp. London, 1920. $7.50

Contents: The Vegetable Fibres; Water; Chemicals and Mordants; Bleaching; Mercerising; Mineral Colors; Natural Coloring Matters; Artificial Dyestuffs; Basic and Substantive Cotton Dyestuffs; Sulphur Dyestuffs; Acid and Resorcine Dycstuffs; Insoluble Azo-Colors; The Vat Dyestuffs; Mordant Dyestuffs; Colors Produced on the Fibre by Oxidation; Dyeing Machinery; Testing of Dyestuffs and Fibres; Appendices.

Hurst, George H., and Simmons, W. H. Textile Soaps and Oils. A handbook on the preparation, properties, and analyses of the soaps and oils used in textile manufacturing, dyeing and printing. *Second Edition, revised and partly rewritten.* 11 illustrations. 5½ x8¾. cloth. 204 pp. London, 1914. $3.50

Contents: Textile Soaps. Introductory; Methods of Making Soaps; Special Textile Soaps; Relation of Soap to Water for Industrial Purposes; Treating Waste Soap Liquors; Soap Analysis. *Animal and Vegetable Oils and Fats.* Tallow, Lard, Bone Grease, Tallow Oil, Lard Oil, Whale Oil or Train Oil; Palm Oil, Palm-Nut or Palm-Kernel Oil, Cocoa-Nut Oil, Olive Oil, Arachis Oil, Cotton-Seed Oil, Soya-Bean Oil, Linseed Oil, Castor Oil, Maize (Corn) Oil, Rape Oil. *Glycerine. Textile Oils.* Wool Oils, Oleines, Wool Oils, Oleic Acid, Blended Wool Oils, Oils for Cotton-Dyeing, Printing and Finishing, Color Oil, Turkey-Red Oils; Turkey-Red Oil; Alizarine Oil; Oleine; Oxy-Turkey-Red Oils; Soluble Oil; Analysis of Turkey-Red Oil; Finishers' Soluble Oil, Finishers' Soap Softenings, Oil and Fat Analysis.

Knecht, E., and Fothergill, J. B. The Principles and Practice of Textile Printing. 80 illustrations, 13 plates. 6¾ x 9¼. cloth. 632 pp. London. 1912. $12.50

Contents: Methods of Printing; Preparation of the Cloth for Printing; Preparation of Colours for Printing; Treatment of Goods After Printing; Mordants, etc.; Styles of Printing: Finishing of Printed Calicoes; Wool Printing; Silk and Half-Silk Printing; Addenda.

Kretschmar, Karl. Yarn and Warp Sizing in all its Branches. Translated from the German by C. Salter. 122 illustrations. 6¼ x 10. cloth. 192 pp. London, 1911. $5.00

Contents: The Materials to be Sized; The Materials Used in Sizing; The Sized Material; The Sizing Process; Sizing Recipes for Different Effects; Combined Dyeing and Sizing; The Purchase and Testing of Sizing Ingredients.

Matthews, J. M. Laboratory Manual of Dyeing and Textile Chemistry. 6 x 9. cloth. 375 pp. N. Y., 1909. $3.25

Contents: Chemical Study of the Fibres; Scouring the Textile Fibres; Bleaching of Wool and Cotton; Classification of Dyes; Application of Acid Dyes; Testing the Fastness of Colors; Application of Basic Dyes; Application of Substantive Dyes; Application of Mordant Dyes to Wool; Developed Dyes on Cotton and Silk; Sulphur Dyes on Cotton; Use of Logwood in Dyeing; The Minor Natural Dyes; Mineral Dyestuffs; Vat Dyes; Testing Dyestuffs; Chemical Reactions of Dyestuffs; Miscellaneous Tests in Dycing; Analysis of Textile Fabrics; Useful Data.

Matthews, J. M. The Textile Fibres; Their Physical, Microscopical and Chemical Properties. *Second Edition, rewritten.* With figures and tables. Illustrated. 6 x 9. cloth. 480 pp. New York, 1907. $4.50

Contents: Classification of the Textile Fibres; Wool and Hair Fibres; The Chemical Nature and Properties of Wool and Hair Fibres; Shoddy and Wool Substitutes; Minor Hair Fibres; Silk, Its Origin and Cultivation; Physical Properties of Silk; Chemical Nature and Properties of Silk; The Vegetable Fibres; Cotton; The Physical Structure and Properties of Cotton; Chemical Properties of Cotton; Cellulose; Mercerized Cotton; The Minor Seed-Hairs; Artificial Silks; Linen; Jute, Ramie, Hemp, and Minor Vegetable Fibres; Analysis of the Textile Fibres; Analysis of Textile Fabrics and Yarns; Bibliography of the Textile Fibres.

Mierzinski, S. The Waterproofing of Fabrics. Translated from the German by Arthur Morris and Herbert Robson. *Second Edition, revised and enlarged.* 29 illustrations. 5 x 7½. cloth. 140 pp. New York, 1914. net, $2.50

Contents: Definition; Preliminary Treatment of the Fabric; Waterproofing with Acetate of Alumina; Impregnation of the Fabric; Drying; Waterproofing with Paraffin Wax, Ammonium Cuprate and Insoluble Soaps of Metallic Oxides; Dyeing Waterproof Fabrics; Waterproofing with Gelatine, Tannin, Caseinate of Lime and Other Bodies; Manufacture of Tarpaulin; British Waterproofing Patents.

Mitchell, C. A., and Prideaux, R. M. Fibres Used in Textile and Allied Industries. 66 illustrations. 5¾ x 8¾. cloth. 208 pp. London, 1910. $3.50

Contents: Introduction; Wool; Silk; Cotton; Mercerized Cotton; Artificial silks; Linen and Ramie; Jute and Other Fibres; Brush Fibres; Vegetable Downs and Upholstery Fibres.

Monie, Hugh. Sizing Ingredients, Siz Mixing and Sizing. Illustrated. 6 x 9. cloth. 88 pp. Manchester, 1908. net, $1.50

A complete practical work dealing with everything relating to the modern processes of sizing.

Nichols, Henry W. A Method of Determining Costs in a Cotton Mill. 6½ x 9½. cloth. 115 pp. New Bedford, 1915. net, $3.00

Contents: Part I. Labor Costs. Part II. Overhead Costs. Part III. Raw Stock Costs. Part IV. Summary of All Costs and Conclusion.

Nisbet, H. Grammar of Textile Design. *Second Edition, revised and enlarged.* 635 illustrations. 5½ x 8½. cloth. 515 pp. London, 1919. $7.50

Contents: Introduction; The Plain Weave and its Modifications; Twill and Kindred Weaves;

Diamond and Kindred Weaves; Bedford Cords; Backed Fabrics; Fustians; Terry and Loop Pile Fabrics; Gauze and Net Leno Fabrics; Leno Brocade Fabrics; Tissue, Lappet, and Swivel Figured Fabrics; also Ondule Fabrics; Brocade Fabrics; Damask Fabrics; Alhambra and Kindred Fabrics; Piques or Toilet Welts; also Matelasse Fabrics; Toilet Quilting Fabrics; Patent Satin or Mitcheline Fabrics; Tapestry Fabrics; also Kidderminster or Scotch Carpet Fabrics.

Nisbet, H. Theory of Sizing. Illustrated. 5¼ x 7¾. cloth. 90 pp. Manchester, 1912. net, $1.25

Contents: Commercial and Technical Policy of Sizing Yarn; Sizing Ingredients; Size Mixing and Boiling: Data for Size-Mixing Recipes. Also Useful Formula and Data Relating to Sizing Ingredients.

Noelting, E., and Lehne, A. Aniline Black and Its Applications in Dyeing and Printing. Translated by Arthur Morris. Illustrated. 45 specimens of dyed and printed fabrics. 6 x 9. cloth. 220 pp. London, 1909. net, $5.00

Patterson, D. Color Matching on Textiles. A manual intended for the use of dyers, calico printers, and textile color chemists. 29 illustrations. 5½ x 8¾. cloth. 140 pp. London, 1901.
8¾. cloth. 140 pp. London, 1901. $3.50

Contents: Light and Color; Structure and Function of the Eye; Daylight for Color Matching; Color Constants; Difficulties in Matching; Reflected Light Examination; Transmitted Light Matching; Color Modifying Influences in Dyed Textiles; Use of Tinted Films; Color Blindness; Matching Dyed Silks and Old Fabrics; Aspect of Shades Under Artificial Lights.

Patterson, D. Color Printing of Carpet Yarns. A useful manual for color chemists and textile printers. Illustrated. 6 x 8¾. cloth. 148 pp. London. net, $3.50

Contents: Wool Fibre; Yarn Scouring; Scouring Materials; Water; Purification of Lime; Bleaching Carpet Yarns; Colors, Dyes and Color Making; Color Printing Pastes; "Hank" Printing; Yarn Printing; Steaming; Washing; Aniline Colors; Glossary of Drugs and Dye Wares Used in Wool Yarn Printing; Tables.

Patterson, D. Textile Color Mixing. A manual intended for the use of dyers, calico printers, and color chemists. *Second Edition, revised.* 41 illustrations, 5 plates. 5½ x 8¾. cloth. 140 pp. London. $3.50

Contents: Color a Sensation; Light Waves; Objects Luminous and Illuminated; Colors of Illuminated Bodies; Production of Color by Absorption; Diffraction; Dispersion; Fluorescence; Colors of Opaque and Transparent Bodies; Surface Color; Analysis of Light; Spectrum; Homogeneous Colors; Ready Method of Obtaining a Spectrum; Simple Absorption Spectra; Aid of Spectroscope; Examination of Solar Spectrum; Dark Lines; Locality of the Colors; The Spectroscope: Its Construction; Absorption Spectra; Colorists' Use of the Spectroscope. *Color by Absorption.* Absorption of Color Produced by Admixture; Absorption Spectra; Solutions and Dyed Fabrics; Luminosity Curves; Absorption Curves; Dichroism; Dichroic Colored Fabrics in Gaslight; Color Primaries of the Scientist *Versus* the Dyer and Artist; Color Mixing by Rotation and by Dyeing; Secondary and Tertiary Colors; Constants; Hue, Purity, Brightness; Tints, Shades, Scales, Tones, Sad and Sombre Colors; Complementary Colors. *Color Mixing.* Mixing Qualities of Colors; Pure and Impure Green, Orange and Violet; Large Variety of Shades from Few Colors; Consideration of the Practical Primaries, Red, Yellow and Blue; Secondary Colors; Orange; Green; Violet; Nomenclature of Violet and Purple Group; Violet from Rhodamine Pink and Wool Green; Purple; Tints and Shades of Violet; Changes in Artificial Light. *Tertiary Shades.* Broken Hues; Maroons; Browns; Citrines and Olives; Absorption Spectra of Tertiary Shades; Dyed Patterns; Appendix; Four Plates with Dyed Specimens Illustrating Text..

Polleyn, F. Dressings and Finishings for Textile Fabrics and Their Application. Description of all the materials used in dressing textiles; their special properties, the preparation of dressings and their employment in finishing linen, cotton, woollen and silk fabrics, fireproof and waterpoof dressings, together with the principal machinery employed. Translated from the third German edition by Chas. Salter. 60 illustrations. 5¾ x 8½. cloth. 279 pp. London, 1911. $3.50

Contents: The Dressing Process and Materials for Same; Stiffenings and Glazes; Adhesive Dressings; Materials for Soft Dressings; Dressings for Filling and Loading; Antiseptic Dressing Ingredients; Dyeing and Blueing Agents; Various Dressings; The Preparation of Dressing; Recipes for Dressings; Dressings for Linens; Yarn Dressings; Laundry Glazes; Yarn Sizing; Finishing Woollen Goods; Finishing Silk Fabrics; Waterproof Dressings; Fireproof Dressings; Special Finishing Process; The Application of Dressing Preparations; Testing Dressings.

Practical Manual of Cloth Finishing. Comprising the finishing of woollen, worsted and union fabrics. By the editors of "The Dyer and Calico Printer." Illustrated. 6½ x 9¼. cloth 316 pp. London, 1911. $10.00

Contents: Construction and Arrangement of Works; Drugs Used in Woollen Finishing; Wool Fibres and Their Properties; Processes; Special Processes; Special Machinery.

Smith, W. Chemistry of Hat Manufacturing. Lectures delivered before the hat manufacturers' association. Revised and edited by Albert Shonk. Illustrated. 5 x 7¼. cloth. 131 pp. London, 1912. $3.50

Contents: Textile Fibres, Principally Wool, Fur and Hair; Water, Its Impurities and Their Action; Acids and Alkalis; Boric Acid; Borax; Soap; Shellac; Wood Spirit; Stiffening and Proofing Process; Mordants; Dyestuffs and Colors; Dyeing of Wool and Fur; Optical Properties of Colors.

Tailfer, L. Practical Treatise on the Bleaching of Linen and Cotton Yarn and Fabrics. Translated by J. G. McIntosh. *Second English Edition.* 50 illustrations. 5¼ x 8¾. cloth. 348 pp. London, 1917. $7.00

Contents: Water; The Solvent for Impurities in the Fibres and the Vehicle for Reagents Used in Bleaching; Installation of a Bleach Works; Definition of Bleaching; Steeping; Singeing; Washing, its End and Importance; Lime-Boiling; Caustic and Carbonated Alkali; Lye-Boiling; General and Special Methods; Soap; Bleaching on Grass or on the Bleaching Green or Lawn; Bleaching by Peroxides, Ozone; Chlorine and Chloride of Lime and Their Use in Bleaching; Energy of Hypochlorites and Bleaching by Electricity; Sours; Linen Bleaching; Examples of Methods; Bleaching of Cotton Fabrics; Bleaching of Hemp and Jute; Of Cotton Yarns; Drying by Steam; By Hot Air; Damages to Fabrics in Bleaching and in Warehousing.

Thornley, T. Cotton Waste. Its production, manipulation and uses. 60 illustrations. 6 x 8¾. cloth. 292 pp. New York, 1913. $3.50

Contents: Production, Characteristics, and Regulation of Cotton Waste; Treatment of Best Cotton Wastes in Cotton-Spinning Mills, with other notes; Opening and Cleaning of Cotton Waste; Carding of Cotton Waste; Final Spinning Machines for Cotton Wastes; Use of Cotton Waste Yarns in Weaving; Various Notes.

Tompkins, D. A. Cotton and Cotton Oil. Full information for investor, student and practical mechanic. 100 illustrations. 6 x 9. cloth. 300 pp. Charlotte, 1901. net, $7.50

Contents: Cotton, Cotton Seed Oil Mills; Cattle Feeding; Fertilizers.

Tompkins, D. A. Cotton Mill Commercial Features. For the use of textile schools and investors. 60 illustrations, tables. 6 x 9. cloth. 300 pp. Charlotte, 1899. net, $5.00

Contents: Cotton as a Factor in Progress; Values in Cotton—Raw and Manufactured; Organization of Company to Build Mill; Location and Surroundings for a New Mill; Raising Capital for Building a Mill; Investments, Costs, and Profits; Bookkeeping and Accounting; Labor; Operatives' Homes; Power; Sale of Products; Textile Education; Road Building; Mill Construction and Fire Insurance; Farm and Factory; Biographical Notes; Statistical Tables and Notes.

Tompkins, D. A. Cotton Mill Processes and Calculations. An elementary textbook for the use of textile schools and for home study. *Second Edition.* 50 illustrations. 6 x 9. cloth. 300 pp. Charlotte, N. C., 1902. net, $5.00

Contents: Picker-Room; Carding; Combing; Drawing; Railway Head; Hanks and Numbers; Slubbing and Roving; Ring Spinning; Mule Spinning; Preparation of Yarn for Weaving; Weaving; Loom Supplies; Cloth Room; Preparation of Yarn for Market; Organization of, Machinery, and Equipment of Mills.

Tompkins, D. A. Cotton Values in Textile Fabrics. A collection of cloth samples arranged to show the value of cotton when converted into various kinds of cloth. Charlotte, 1900. net, $2.50

Trotman, S. R., and Thorp, E. L. Principles of Bleaching and Finishing of Cotton. 131 illustrations. 6¾ x 9. cloth. 359 pp. London, 1911. $6.00

Contents: Structure of Cotton Fibre; Constituents of Cotton; Testing; Carbohydrates; Water; Bacteria in Bleaching; Cotton Piece Goods; Steeping; Transmission, Impregnation, and Plaiting of Cloth; Alkali Boiling-Materials Used in Lye Boiling; Soap; Soap Making; Organic Solvents; Kiers; Washing Machines; Bleaching and Bleaching Powder; Chemicing and Souring Apparatus; Sodium Hypochlorite and Electrolytic Bleaching Solutions; Other Bleaching Agents; Acid Souring; Processes; Colored Goods; Stains and Discolorations; Finishing and Materials Used; Mangling, Drying, and Conditioning; Stiffening; Auxiliary Machines and Processes; Beetling; Calendering; Combined Finishing Processes.

Von Georgievics, G. The Chemical Technology of Textile Fibres. Their origin, structure, preparation, washing, bleaching, dyeing, printing and dressing. *Second Edition, revised.* 47 illustrations. 5¾ x 8¾. cloth. 414 pp. London, 1920. $7.00

Contents: The Textile Fibres. Washing, Bleaching, Carbonising. Mordants and Mordanting. Dyeing. Theory of Color; Theory of Dyeing; Classification of Dyestuffs; Dyeing on a Manufacturing Scale; Sample Dyeings. *Printing.* Reproductions of Patterns by Direct Printing; Combined Printing and Dyeing; Discharge Style Printing; Reserve Style Printing; Topping Printing. *Dressing and Finishing.* Starch, Gum, Fatty Substances; Hydroscopic Materials; Loading Ingredients; Coloring for the Dressing Preparations; Metals or Their Sulphites; Waterproofing; Fireproofing Antiseptics for Prevention of Mould.

Watt, George. Wild and Cultivated Cotton Plants of the World. 53 plates, 9 colored. cloth. 420 pp. New York, 1907. $10.50

Wilson, G. B. Air-Conditioning. Being a short treatise on the humidification, ventilation, cooling and the hygiene of textile factories, especially with relation to those in the U. S. A. Illustrated. 5 x 7. cloth. 143 pp. New York, 1908. net, $1.50

Zerr, George. Tests for Coal-Tar Colors in Aniline Lakes: a review of the coal-tar coloring matters generally used in the lake industry and their behavior with distinct chemical reagents. Translated by Charles Mayer. 6½ x 9. cloth. 230 pp. London, 1910. $6.00

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Vol. I., 1908. 41 illustrations, 5 folding plates. 212 pp. N. Y., 1909. net, $6.00

Contents: Steam Power Plant Economies, by William Miller Booth; Testing and Performance of Steam Generating Apparatus, by A. Bement; The Examination of Flue Gases in Boiler Tests, by H. August Hunicke; Heating of Industrial Furnaces with Pulverized Fuel, by Richard K. Meade; Modern Electrical Resistance Pyrometry, by Edwin T. Northrup; Chemical Specifications for Sulphite Pulp, by J. A. DeCew; Purity of Commercial Liquefied Ammonia Gas and Apparati for Testing It, by F. W. Frerichs; The Sanitary Conditions of the Southern End of Lake Michigan, by J. Herbert Brewster; The Ferric Iron Contact Process of Making Sulphuric Acid from Smelter Fumes, by Thorn Smith; Calculations for Dryer Design, by Wm. M. Grosvenor. Charts accompanying this paper (in pocket in back cover): Table Ia, Density, Humid Volume, etc., of Air Under Various Conditions; Table Ic, Rate of Cooling of Water-Saturated Air; Table IIb, Rate of Convection in Pipes; Humidity Chart; Loss of Heat from Pipes.

Vol. II., 1909. 50 illustrations, 1 folding plate. 312 pp. N. Y., 1910. net, $6.00

Contents: The Centering of Great Industries in the New York Metropolitan District, by Chas. F. McKenna; Chemical Industries of America, by Chas. E. Munroe; Conservation and the Chemical Engineer, by Samuel P. Sadtler; Efficiency Limits in the Power-Gas Producer, by W. D. Ennis; Utilization of Low Grade Fuels in the United States, by O. K. Zwingenberger; Heat Efficiency of Smokeless Combustion and Heat Absorbing Capacity of Boilers, by A. Bement; Chemical Composition of Illinois Coal and the Relation of Heating Value to composition, by A. Bement; Creosote Oil from Water Gas Tar, by S. P. Sadtler; Some Experiments on the Case Hardening of Steel by Gases, by John C. Olsen, J. S. Wiffenback and J. R. Brierly; An Automatic Acid Egg, by R. K. Meade; A Method of Clay Control for the Manufacture of Cement, by J. G. Dean; Colloids and the Ultra-microscope, by J. Alexander; The Utilization of Waste India Rubber, by S. P. Sharples; On the Permanence and Acidity of Hydrogen Peroxide Solution, by L. W. Andrews; Commercial Extraction of Grease and Oils, by William Booth; Glycerine Refining in Multiple Effect Stills, by F. J. Wood; The Advantages of Multiple-Effect Distillation of Glycerine and Other Products, by A. C. Langmuir; Electric Furnace for the Smelting of Iron Ore, by Edward R. Taylor; Waterways and Water Power, by E. R. Taylor.

Vol. III., 1910. 59 illustrations, 2 folding plates. 411 pp. N. Y., 1911. net, $6.00

Contents: Evolution of Portland Cement Processes, Chas. F. McKenna; Study of Materials in Chemical Engineering, Chas. F. McKenna; Report of the Committee on Chemical Engineering Education, presented at New York Meeting, F. W. Frerichs; Remarks on Chemical Engineering Education, F. W. Frerichs; Development of the Chemist as an Engineer, F. W. Atkinson. The Training of Chemical Engineers which Meets the Requirements of Manufacturers, M. C. Whitaker; Teaching Industrial Chemistry, A. H. Sabin; Commercial Manipulation of Refractory Elements for Incandescent Lamp Purposes, Ralph E. Meyers; The Manufacture and Industrial Applications of Ozone, Oscar Linder; The Changes in Industrial Chemistry caused by Electricity, E. R. Taylor; Notes on the Corrosion of Iron & Steel and Its Prevention, G. W. Thompson; Protal; A New Product for Use in the Arts, F. G. Wiechmann; Chemical Industries of Canada, J. C. De Cew; Underground Waters for Manufacturing Purposes, Wm. M. Booth; Loss in Coal Due to Storage, A. Bement; Nitric and Mixed Acids, Schuyler Frazier; Plant Design; Wm. M. Grosvenor; The Fitzgibbon Boiler, J. Alexander; Manufacture of Hydrated Lime, R. K. Meade; Bleaching Oils with Fuller's Earth, David Wesson. *Symposium on Sewage Disposal:* Principles of Sewage Disposal, G. C. Whipple; Sewage Disposal in Europe, Rudolph Hering, Sewage Disposal in New York City and Vicinity, G. A. Soper; Sanitary Conditions in Their Relations to Water Supplies in the Vicinity of New York, N. S. Hill, Jr.; Unsolved Problems of Sewage Disposal, C. E. A. Winslow.

Vol. IV., 1911. 78 illustrations, 6 folding plates. 525 pp. N. Y., 1912. net, $6.00

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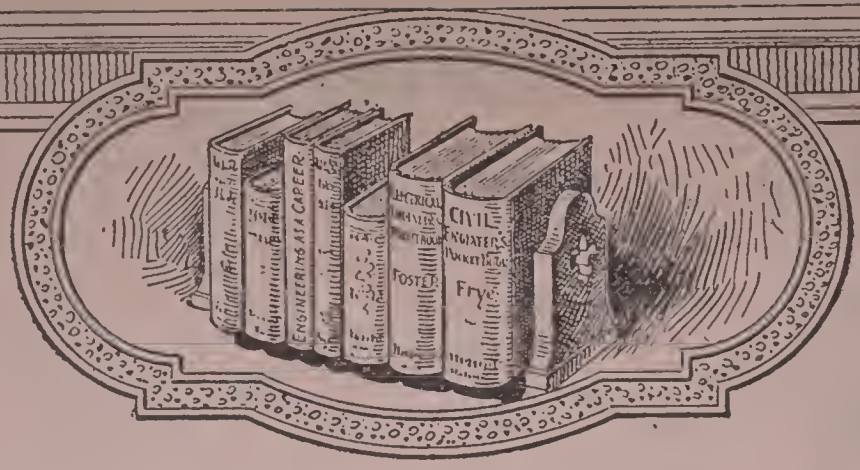

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