

Important things and places. We are afraid, however, that our sailor friends will find that the author has been somewhat loose in his use of nautical terms and phrases, as on page 31 and elsewhere, when he refers to the schooner as a "ship" [now a "ship" in its broad sense is a large seagoing vessel, and specifically a large vessel with bowsprit and three (recently also with four and even five) masts, each of which carries square sails; a "schooner" is a fore-and-aft rigged vessel of two or more masts], and of waves "striking us fairly and squarely aft of our quarters," which would amuse most sailors. On page 53 we find that every rope was "neatly flemished," which is, of course, improbable.

INDUCTIVE MASTER METHOD. German for Educated Americans, With or Without Teacher. Course of Seventy-eight Lessons for Thirteen Weeks, Fifteen Sentences Daily. Additional Selections of German Proverbs, Sayings, Quotations, Poems, etc. By A. L. Hermann. Minneapolis, Minn. Whole Course (Five Parts), \$2.25.

Whatever may be the merits of this method of studying German, one thing at least is certain—it is assuredly unique. To teach a language by induction is, to be sure, no new idea; but the means whereby the author of the present system endeavors to impart this inductive knowledge are decidedly original. Each day's lesson consists of a typical German sentence, which is modified into fifteen different forms. A short key to pronunciation and a German proverb or poetical quotation conclude the day's lesson. At the end of the thirteenth week the student is supposed to have learned enough German to master Uhland's "Des Sängers Fluch."

QUICK AND EASY METHODS OF CALCULATING. A Simple Explanation of the Theory and Use of the Slide Rule, Logarithms, etc. By R. G. Blaine, M.E. London and New York: Spon & Chamberlain. 1898. 18mo. Pp. 144. Price \$1.

Mechanical adjuncts in calculating are now almost a necessity, and of these the slide rule is probably the most important. The student, toiling along by arithmetical methods, can hardly fail to regard with wonder and admiration the ease and rapidity with which practically the same results are obtained by one expert in the use of this little instrument. A clear perception of the elementary principles on which the rule is constructed will enable the student to soon work out for himself satisfactory methods of calculating, and when he is once master of the slide rule and the use of logarithms, he will certainly never return to the clumsy methods which he formerly used.

KILBURN'S STANDARD HAND BOOK FOR RAILROAD MEN. By A. Kilburn. 18mo. Pp. 141. Illustrated. Price \$1.

The present pocket book is intended for the use of railroad men, and it contains full information on the modern railroad locomotive and all its attachments, including air brake, air pumps, triple valve, brake pump governors, locomotive brake arrangement, pressure retaining valve, trainmen's signal valve, signals, switches, brake leverage, etc., also directions for operating and caring for all the parts. A set of questions and answers on braking, breakdowns, blocking, etc., are added. It is also claimed to be a valuable help in preparing for examination. A full set of double trip daily time sheets is also included.

ELECTROLYSIS AND ELECTROSYNTHESIS OF ORGANIC COMPOUNDS. Dr. W. Löb. New York: John Wiley & Sons. 1898. 12mo. Pp. 103. Price \$1.

The field covered by the present volume is a broad and interesting one, and electricity, which possesses such a diversity of applications, has now obtained a recognized position in organic chemistry. The very nature of the subject suggested the possibility of solving synthetic and analytical problems by it which had, as yet, remained unanswered. The book aims to give as briefly as possible a review of what has already been accomplished, and at the same time to create an interest in the performance of experiments on the electrolysis and electrosynthesis of organic compounds.

NEUBAUTEN IN NORD AMERIKA. By Paul Graf. With photographic plates, plans and explanatory text, with a preface by K. Hinkeldeyn, Berlin: Julius Becker. 1898. Price \$1.50.

The number before us, like the other numbers which have preceded it, is filled with beautiful gelatine prints of prominent architectural examples in the country. They are admirably executed.

PHOTOGRAPHIC MOSAICS. An Annual Record of Photographic Progress. Edited by E. L. Wilson. New York: E. L. Wilson. 1898. 12mo. Pp. 286. Price 50 cents.

"Mosaics" is always a welcome visitor, dealing as it does in concise form with the very latest developments in photography. It is in many ways the most interesting photographic annual with which we are acquainted. The present volume is embellished with a beautiful collection of well-printed half-tone engravings.

THE AMERICAN SUGAR INDUSTRY. By Herbert Myrick. New York: The Orange Judd Company. 1899. Pp. 211. Price \$1.50.

A practical manual on the production of sugar beets and sugar cane and on the manufacture of sugar therefrom lies before us. It is prefaced by a treatise on the economic aspects of the whole sugar question, and its bearings upon American agriculture, manufactures, labor, and capital, constituting a hand book for the farmer or manufacturer, capitalist or laborer, statesman or student. We have already published two illustrated articles on the manufacture of beet sugar, and we know, from the widespread interest which they awakened, that the subject is fast becoming of vital importance to the farmers of America. The volume before us is an

admirable treatise, clear and to the point. The illustrations are excellent and numerous. It is a book which we can commend.

THE INTERNATIONAL ANNUAL OF ANTHONY'S PHOTOGRAPHIC BULLETIN. Vol. X. For 1898. New York: E. & H. T. Anthony Company. 1898. 8vo. Pp. 303. Price 75 cents.

The "International" is always a welcome visitor, and the volume before us, like its predecessors, is full of readable and valuable articles, which are beautifully illustrated. Without the several photographic annuals, a vast amount of important information would be almost wasted, for few can preserve many periodicals.

HOW TO MAKE AN INDICATOR. By A. C. Lippincott. New York: New York Publishing and Model Company, 1 Cortlandt Street. 1898. 24 pp. pamphlet. Price 75 cents in cloth, 50 cents in paper.

An admirable little publication, containing all instructions and working drawings required by an ordinary machinist to enable him to construct an accurate steam engine indicator, make and test the springs, all from material readily obtained in any locality. The high price of indicators has prevented many steam users from possessing them, but with a manual like the present, any mechanic can construct a reliable instrument, especially as the company supply materials, castings, and even partially finished instruments.

HAND BOOK OF METALLURGY. By Dr. Carl Schnable. Translated by Henry Lewis, M.A. Vol. I. Copper, Lead, Silver, and Gold. Vol. II. Zinc, Cadmium, Mercury, Bismuth, Tin, Antimony, Arsenic, Nickel, Cobalt, Platinum, Aluminum. London and New York: The Macmillan Company. 1898. 8vo. Pp. 876 + 732. 927 illustrations. Price \$10.

It is a curious fact that there does not exist in the English language a single complete treatise on metallurgy. There are, indeed, a number of smaller text books, mainly adapted for the use of students, which cover the entire field, but make no pretension to describing it with any thoroughness or detail. Such being the position in regard to the literature of the subject, the translator has rendered the English-speaking metallurgist a distinct service in translating the most recent and exhaustive work on the subject in any language, from the pen of an eminent metallurgical authority. The book gives a complete account of the metallurgical treatment of every one of the metals ordinarily employed, together with the recent improvements in the art, not neglecting the scientific principles underlying each process; and it is illustrated by examples drawn from actual practice in various parts of the world. The author's travels have been extensive, which results in his experience being very great, and, of course, amply qualifying him for his task. After a careful examination of the two volumes, we feel we can safely say that it is one of the most important contributions ever made to metallurgical literature. The matter is so condensed as to be readily available, and there would have been no difficulty whatever in extending it over several additional volumes. The illustrations are numerous, well selected, and admirably executed, and serve to elucidate the text in an excellent manner. The index pleases us particularly.

A GUIDE TO THE STUDY OF THE GEOLOGICAL COLLECTIONS OF THE NEW YORK STATE MUSEUM. Albany. 1898. 8vo. Pp. 262, maps. Price 40 cents.

The University of the State of New York has just issued as Museum Bulletin 19, "A Guide," etc., by Dr. Frederick J. H. Merrill, director and State geologist. The bulletin aims to supplement the collections with such general information as cannot be given by cabinet specimens, and to direct visitors to reliable sources for more detailed information, since few persons have the preliminary training to enable them to obtain from the collections such advantage as they might receive if they fully understood their purpose and value.

MINERALS IN ROCK SECTIONS. Practical Methods of Identifying Minerals in Rock Sections with the Microscope. By Lea McIlvaine Luquer, C.E., Ph.D. New York: D. Van Nostrand Company. 1898. 8vo. Pp. 117. Price \$1.50.

The work is specially arranged for students in technical and scientific schools, and the author's position in the Department of Mineralogy, of Columbia University, renders him particularly competent to deal with the subject. The identification of minerals in rock sections with the microscope, including as it does a knowledge of optical mineralogy, is often difficult for beginners, but the knowledge thus obtained is of the greatest possible value. Unfortunately, the most of the publications on the subject are in French and German, and they are usually entirely too confused in arrangement to be of much value to the student. For these reasons this text book has been prepared by the writer, with a view of putting before the students only those facts which are absolutely necessary for the proper recognition and identification of common minerals in the rock sections. A valuable table gives a scheme for the optical determination of common minerals in rock sections.

T SQUARE CLUB. Catalogue of the Architectural Exhibition. Philadelphia, January 14 to February 2, 1899. Pp. 224. 8vo. Price 50 cents.

The handsome volume before us is filled with superb reproductions of architectural designs and is worth many times its price as a study book for architects. The advertisers in the volume are many and its merit deserves their patronage, for the book is one to be preserved. The most important section, "An Unaffected School of Modern Architecture in America—Will it Come?" is a symposium of letters from celebrated American architects, such as Louis H. Sullivan, John M. Carrère, D. H. Burnham, Ernest Flagg, Russell Sturgis and others.

DICTIONNAIRE TECHNIQUE FRANCOIS-ANGLAIS DES OUTILS ET USTENSILES EMPLOYÉS DANS LES METIERS MANUELS LA PETITE INDUSTRIE, ETC. By A. S. Lovendal. Paris: Boyveau et Chevillet. 1899. Price 60 cents.

A book of this kind is always useful, as nothing is more difficult than to give the exact equivalents of tools in foreign languages. The only trouble is in understanding the classification. After that all is easy. The present dictionary will certainly prove of value.

BERG'S COMPLETE TIMBER TEST RECORD. By Walter G. Berg. Chicago: B. S. Wasson & Company. 1899.

This pamphlet is filled with valuable tables dealing with the strength of timber of all kinds. It will prove interesting to architects, inspectors of wood and construction, contractors, bridgemen, etc.

TESTING MILK AND ITS PRODUCTS. A Manual for Dairy Students, Creamery and Cheese Factory Operators, Food Chemists and Dairy Farmers. By E. H. Farrington and F. W. Woll. Madison, Wis.: Mendota Book Company. 1898. Pp. 256. 16mo. Price \$1.

It is a thoroughly scientific treatise on the subject by competent professors of the University of Wisconsin. It is now in its fourth edition. The vital importance of a pure supply of unadulterated milk is recognized by sanitarians the world over, and they are given very substantial help by such a treatise as the present volume. It is fully illustrated and is written in a clear style.

HOW TO FRAME A HOUSE; OR, BALLOON AND ROOFING FRAMING. By Owen B. Maginnis. New York: Published by the author. 1898. Pp. 47 + 28. 8vo. Price \$1.

This volume is an eminently practical book which will prove useful to all carpenters, houseframers and architects. It also includes full directions for framing the timbers for a brick house. The book is freely illustrated with well executed engravings.

TRIBUNE ALMANAC AND POLITICAL REGISTER FOR 1899. Henry E. Rhoades, editor. Published by the New York Tribune. Pp. 352. 12mo. Price 25 cents.

The Tribune Almanac has established an enviable reputation for the accuracy of its figures and for its general reliability. As a political register it is unrivaled.

FIFTH ANNUAL REPORT OF THE COMMISSIONER OF PUBLIC ROADS OF THE STATE OF NEW JERSEY FOR 1898. Trenton, N. J. 1898. Pp. 207. 8vo. Illustrated.

We are always interested in this report of the Commissioner of Public Roads, for, to a certain extent, New Jersey, which has such splendid roads and such atrociously bad roads, may be regarded as the experiment ground of the modern road builder. Some of the illustrations show the abominable conditions of the roads and the improvements which have been introduced in them. If the farmers could only be brought to realize the enormous value of good roads, the work of the Road Commissioner would be simple.

RECENT EARTH MOVEMENT IN THE GREAT LAKES REGION. By Grove Karl Gilbert. Washington: Government Printing Office. 1898. 8vo.

The pamphlet before us is an extract from the Eighteenth Annual Report of the United States Geological Survey, and contains a vast amount of scientific information on a little appreciated phenomenon.

ELEVENTH BIENNIAL REPORT OF THE KANSAS STATE BOARD OF AGRICULTURE. Topeka: Kansas State Board of Agriculture. 1899. Pp. 840.

When we look at the portly volume, which is larger than the Government Agricultural Report, we congratulate Kansas upon her prosperity. "What is the matter with Kansas?" is now only a memory, and, if nothing else were needed, the volume before us would demonstrate that there is nothing the matter with Kansas. We feel sure that the prosperity of Kansas is not grudged by her sister States.

THE LOCOMOTIVE UP TO DATE. By Charles McShane. Chicago: Griffin & Winters. 1899. 8vo. Pp. 711. Profusely illustrated. Price \$2.50.

The volume before us is of an encyclopedic nature and will certainly prove of value to locomotive engineers and those engaged in building or repairing them. The author acknowledges his indebtedness to a number of contributors from locomotive works and to mechanical journals. One particularly valuable feature of this book is its comprehensiveness; it seems to include everything which is connected with a locomotive and is really up to date. The arrangement is admirable and the illustrations are, many of them, the best we have seen. It would take more space than we have at our disposal to give even a brief outline of its contents. The book will be valuable even to those who already have the standard books upon the locomotive, such as those of Forney and Sinclair. The book is a large one for the money, and the purchaser will certainly find that he has received good value.

Natural Science. A Monthly Review of Scientific Progress. We have received the first few numbers of Natural Science, under the new management. It is now published in Edinburgh and London by Young J. Pentland. The valuable features which make this periodical so notable are continued, and it is very much improved in appearance. The quality of the original contributions is high, and the notes and comments, book notices, etc., show most careful editing. The subscription price, outside of Great Britain, is fourteen shillings per annum.

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue.

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Handle & Spoke Mch. Ober Lathe Co., Chagrin Falls, O.
Schwaab Stamp & Seal Co., Milwaukee. Send for cat'g.
Automatic Variety Wood Turning Lathes. H. H. Frary, Waterbury, Vt.

Small Accumulators. A new book. Illus. Cloth. 50c. Spon & Chamberlain, 12 Cortlandt St., New York.
Inventions developed and perfected. Designing and machine work. Garvin Machine Co., 141 Varick St., N. Y.
Order White Metal and Brass Pattern Letters and Figures of H. W. Knight & Son, Seneca Falls, N. Y. Drawer 1115.

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The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y.

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The American Waltham Watch Company, of Waltham, Mass., have just published a thirty-six page illustrated brochure which treats of the perfected American watch, and is a dainty and beautiful product of the printer's art. The many illustrations are artistically arranged, and the book is enclosed in a handsomely embossed cover. The author has made a most entertaining book and conclusively proves that Waltham watches have earned for Americans the title of watchmakers to the world.

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Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(7626) G. K. asks: Where can I buy pure hydrogen? What degree of heat has the hydrogen flame? A. Any dealer in chemical supplies can furnish you hydrogen. It is very much cheaper to make it yourself, for which you can find instructions in text books of chemistry. Hydrogen is made by the action of hydrochloric acid on zinc. The temperature of an oxygen-hydrogen flame is variously estimated at from 4,000° to 4,350° Fah.

(7627) K. D. R. asks: 1. What is the size of the coils used in making the recording voltmeter described on page 455 of "Experimental Science"? Why are two needles used, the inner one swinging in the central opening in the coils, the outer one being located behind the coils, and what is the length of each needle? How much wire is wound on each coil? What is the resistance of both coils? If I wish to use the coils, needles, and index in a needle telegraph, would No. 22 wire be the right size to wind the coils? A. The working parts, coils, needles, etc., of galvanometer of "Experimental Science," page 455, are those of an astatic galvanometer. Three inches will do for the length and 1 to 1½ inches for the thickness of the spools. Two needles are used to render the system astatic. Make the needles 2 inches or so long. The winding of the spools would vary with the voltage current to which the instrument is to be used. 2. Do you publish in any of the back numbers of the SCIENTIFIC AMERICAN SUPPLEMENT an article on making a double needle telegraph? A. The needle telegraph is the subject of a chapter in Prescott's "Electricity and the Electric Telegraph," price \$7.

(7628) F. A. B. asks: Does aluminum become extremely brittle when cooled to the temperature of liquid air or liquid nitrogen? And does the tensile strength of this metal increase at these temperatures? A. Aluminum is said to remain pliable when cooled to the temperature of liquid air. All metals have their tensile strength increased by cooling. Aluminum would be about twice as strong at 300° below zero Fah. as at the ordinary temperature.

(7629) G. F. W. writes: In a Sunday school room, an empty seat (with back) vibrates with the organ and even with the sound of a speaker's voice. How can I utilize the vibrations of the seat to telephone them to a distant point? A. You will not be able to transmit the music of an organ to a distance by means of a telephone and a seat in the rear of the room in which the organ is, for this reason: The seat does not take up all the vibrations of the organ, but only a small part of them. This is a case of sympathetic vibration. See Tyndall on "Sound," price \$2.50; Zahm's "Sound and Music," price \$3.50, by mail. It is possible to arrange a telephone transmitter so as to take up the rattle of the seat and transmit it, but is not worth while.

(7630) Reader asks: How can I make a battery, the exciting fluid of which shall be a solution of sal ammoniac, that will give a practically undiminished

Advertisements.

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AMERICAN PATENTS.—AN INTERESTING and valuable table showing the number of patents granted for the various subjects upon which petitions have been filed from the beginning down to December 31, 1894.

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strength of current sufficient to operate for say an hour at a time? A. You ask the impossible. No sal ammoniac battery can run continuously for even a quarter of an hour without great reduction in the current.

(7631) L. A. D. asks: Is there any danger in amalgamating the zinc of the gravity battery in putting on the mercury too thick? Also, in making the regular Crowfoot do they add the mercury while melting the zinc, or do they rub the mercury on afterward?

(7632) A. R. T. asks: Should the rubber plates of a sectorless machine be shellacked? A. Nothing is gained in shellacking the rubber plates of an induction machine beyond giving them a polished appearance and preventing the deposit of moisture upon them.

TO INVENTORS.

An experience of fifty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

MARCH 21, 1899,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions with patent numbers. Includes: Acetylene generators, safety escape and pressure indicator, Acid and making same, Axle rest, Baling press, Barrel, Basket blanks, Battery, Bearing, Bedstead brace, Bell, bicycle, Belt, Bicycle bearing adjustment, Bicycle boat, Bicycle brake, Bicycle gear, Bicycle parcel carrier, Bicycle propelling device, Bicycle saddle, Bicycle seat, Bicycle or velocipede, pneumatic device for, Binder, temporary, Blind fastening device, Boat supporting and launching device, Boiler, Boiler fires, device for feeding fuel to, Boiler water bottom, steam, Book, account and sales, Book, manufacturing, Book support, adjustable, Boot or shoe tree, Boot tree, L. H. Leadam, Boring and tapping machine, Bottle, A. Caben, Bottle stopper lock, Bracket, See Lantern bracket, Brake, See Bicycle brake, Vehicle brake, Brake adjusting mechanism, Brakebeam, P. B. Harrison, Brick machine, R. A. Willett, Brick or tile cutting plant, J. Bensing, Bridge, M. Waddell, Bridge construction, C. M. Horton, Bromine derivative of phtalimide and making same, J. Bredt, Brush, feather, W. E. Hoag, Bucket, lunch, N. E. Richardson, Buckle, C. F. Knight, Buckstay, W. & J. Layton, Burglar alarm, E. P. Johnson, Burglar alarm system, electric, D. W. McCaughey, Burial case, G. S. Hill, Burner, See Gas burner, Hydrocarbon burner, Incandescent burner, Vapor burner, Button machine, C. W. Garis, Cabinet, kitchen, W. H. May, Cable grip, R. Jonsrud, Calendar, perpetual, R. R. Vernon, Camera, magazine, W. H. Doering, Camera, panoramic, L. Stark, Can, See Key opening can, Car bolster, A. K. Mansfield, Car door lock and hanger, I. W. Donat, Car doors and sides, means for protecting, J. E. Jones, Car fender, H. Knowles, Carbonaceous agents for enriching spirits, producing, H. Hempel, Carousel, floating, C. & F. Wiemer, Carpet fabric, ingrain, Dornan & Cuscaden, Carpet stretcher, H. C. Peyton, Carpet sweeper, W. J. Drew, Carriage, E. J. Gavin, Carriage or vehicle, automotor, W. J. Brewer, Carriage top support, folding, J. S. McConnell, Cartridge belt, C. F. Batt, Cartridge holders, construction of, H. S. McKenzie, Carving fork guard and knife sharpener, combined, C. Holyland, Case, See Paper case, Sample case, Caster, ball, K. M. Grove, Catch, G. A. Brachhausen, Cement, lime, etc., kiln, F. Ruppel, Check protector, F. Hachmann, Checking apparatus, sales, L. G. Whitney, Checkrein hook, M. J. O'Sullivan

(Continued on page 207)

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