

placed vertically above the sliding plate. Supposing each hopper to be alike, and filled with the same amount of the same grade of sand, what will be the proportion in the rate of flow from the two hoppers? In other words, will the two hoppers be emptied in the same length of time, or in the inverse ratio of the diameter of the eccentrics? I trust that I am not imposing too much upon your kindness, and thank you beforehand. A. As the slots in the sliding plates coincide with those at the bottom of the hopper at the end of the stroke of the former, the time during which the sliding slot coincides with the fixed one will be practically the same for both slots in spite of the difference of diameter of the eccentrics. Were the points at which the slots register in the middle of the strokes of the sliding plate, the plate operated by the 8-inch eccentric would be traveling twice as fast as that of the 4-inch, and the slot would therefore be open half the time and half the quantity of sand would be discharged; but as the speed of the sliding plate is variable, due to the conversion of rotary to sliding motion, and both plates must come to rest at each end of their strokes, the period during which each is at rest will not be measurably different. It is probable that in a long continuous run a little more sand would be found discharged through the plate operated by the 4-inch than by the 8-inch eccentric, but the quantities discharged would not differ by an amount approaching the inverse ratio of the strokes.

NEW BOOKS, ETC.

RUGS ORIENTAL AND OCCIDENTAL, ANTIQUE AND MODERN. A Hand Book for Ready Reference. By Rosa Belle Holt. Chicago: A. C. McClurg & Co., 1908. Quarto; 202 pp. Price, \$5.

Since the first edition of this book was published, circumstances connected with the buying and selling of Oriental rugs have changed, and the number of reliable authorities has increased considerably. The illustrations are of the highest possible order. They are some of the finest examples of color printing which have been brought out in years. The frontispiece is a magnificent reproduction of a beautiful antique Tabriz silk rug. The other plates are equally fine, and will be a great treat to all lovers of rugs. The work begins with the history and details of rug weaving, then the subject of rug weaving in Egypt, Persia, and Turkey is taken up, followed by a description of rug weaving as conducted in India, Afghanistan, Beluchistan, Central Asia, and the Caucasus region. Then miscellaneous Oriental rugs are treated, such as rugs of the Holy Land, Chinese rugs, Japanese rugs, Polish rugs, silk rugs, felt rugs, prayer rugs, hunting rugs. Rug weaving in Europe and the United States is treated separately, the European countries being Greece, Morocco, Spain, Bosnia, Servia, Roumania, Bulgaria, England, and France. The last chapter, giving miscellaneous information, takes up the question of inscriptions on rugs, Oriental symbols, Chinese symbols, Japanese symbols, Persian symbols, Turkish symbols, miscellaneous symbols, and the meanings of some of the place names associated with rugs. There is also some valuable geographical data and an excellent list of authorities.

THE OCEAN CARRIER. By J. Russell Smith, Ph.D. New York: G. P. Putnam's Sons, 1908. 12mo.; 344 pp. Price, \$1.50 net.

At last we have a history and analysis of ocean transportation with a discussion of its rates. This book fills a very much neglected niche in the history of transportation. It is the outgrowth of the study of three questions: The development of line traffic; the combination among carriers to control rates, and the combination of steamship lines and railways. Numerous writers have dealt with the activities of the ocean, which is a fascinating subject. Biographies of men and of ships, technical details of ships, appear to have been the interesting things. Who built the ship; just when; just where; how long she was to an inch; how wide; how deep; the material; the tonnage; the exact size of her engines; the number of strokes per minute, her speed; her best voyage-record; who captained her, etc. Such information can be collected by the volume, but there is an astonishing silence in the pages of the past as to what these wonderful ships actually did and how much they paid; what they carried; where they carried it; for whom; under what method of management, are things rarely, if ever, told by writers of maritime topics. Such records do, however, exist, as incidental statements in a wide variety of documents, and the present work takes up this information in the most painstaking manner. From the immense mass of materials available, the author traces out the main lines of past development and detects the dominant factors in the present situation. The book is well illustrated by carefully chosen engravings of vessels, and by excellent maps dealing with the great trade routes and the activities of the great steamship companies.

THE WONDER BOOK OF MAGNETISM. By Edwin J. Houston, Ph.D. New York: Frederick A. Stokes Company, 1908. 12mo.; 325 pp. Price, \$1.50 net.

The purpose of "The Wonder Books of Science" is to bring home to the young reader the fascination of the marvels of nature, and to explain the wonderful laws which govern them.

The author is singularly happy in getting the point of view of the youthful reader. Having been, during his life, a practical scientist and a successful teacher of boys, he combines the most desirable forms of experience. In this book the author tells of magnetic batteries and magnetic currents; lodestones; magnets that remember and magnets that forget; the compass, the curious causes of its variations and the methods of preventing them; peculiarities of the earth's magnetism; the Auroral Lights; the telephonograph, or talking newspaper, and many other marvels.

GLASS MANUFACTURE. By Walter Rosenban, B.A., B.C.E. New York: Van Nostrand Company, 1908. 12mo.; 264 pp. Price, \$2 net.

The present volume on glass manufacturing has been written chiefly for the benefit of those who are users of glass, and therefore makes no claim to be an adequate guide or help to those engaged in glass manufacture itself. For this reason, the account of manufacturing processes has been kept as non-technical as possible; no appliances have been given, and only a few diagrams have been introduced for the purpose of avoiding lengthy verbal descriptions. There are few industries where the processes of manufacturing are kept more secret, so that the path of the author who would give an accurate account of the best modern processes used in any given department of the industry, is beset with great difficulties. The author has endeavored to steer the best course open to him under these circumstances, and he appeals to the paucity of glass literature in the English language as evidence of the difficulty to which he refers. The physical and mechanical properties of glass are first taken up, then the raw materials of glass manufacture are treated, which is followed by a chapter on crucibles and furnaces for the fusion of glass, the process of fusion, processes used in the working of glass, bottle glass, rolled or plate glass, sheet and crown glass, colored glasses, optical glass, and miscellaneous products.

THE DESIGN OF HIGHWAY BRIDGES AND THE CALCULATION OF STRESSES IN BRIDGE TRUSSES. By Milo S. Ketchum, C.E. New York: The Engineering News Publishing Company, 1908. 8vo.; 544 pp. Price, \$4.

The aim in writing this book has been to give a brief course in the calculation of the stresses in bridge trusses, followed by a systematic discussion of the details and the design of highway bridges. While there are many excellent books in which the different types of railway bridges are discussed in detail, little attention has heretofore been given to the design of highway bridges. As a consequence of this neglect, many of our highway bridges have been very badly designed, the design of these structures being ordinarily left to an engineer without experience or the agent of some bridge company who was more interested in the resulting profit than in obtaining a good design. The calculation of the stresses in highway and railway bridges is similar, but the problems in the design of the two types are very different, due to the different requirements and conditions. The problem of the design of a highway bridge includes the design of both the superstructure and the substructure. Most of the treatises on bridge design deal with the superstructure only, but in this book, due attention has been given to the design of both superstructure and substructure, and to the effect of the design of one on the other. The author discusses in detail the costs of the different parts of highway bridges. These costs are of value principally to the student and to the experienced engineer who is familiar with the conditions of the particular piece of work. The book is freely illustrated with drawings, diagrams, photo-engravings, and tables. It is an extremely valuable book for the engineer.

GENERAL LECTURES ON ELECTRICAL ENGINEERING. By Charles Proteus Steinmetz, A.M., Ph.D. Edited by Joseph Le Roy Hayden. Schenectady, N. Y.: Robson & Adee. 8vo.; pp. 284. Price, \$2.

The book contains a collection of seventeen lectures of a general nature, dealing with problems of generation, control, transmission, distribution, and utilization of electric energy. The work is largely descriptive and not mathematical. An appendix on light and illumination, and another on lightning and lightning protection, are also included in the volume.

SHOP TESTS ON ELECTRIC CAR EQUIPMENT. By Eugene C. Parham, M.E., and John C. Shedd, Ph.D. New York: McGraw Publishing Company. 12mo.; 55 illustrations; pp. 121. Price, \$1.

This is a small practical handbook adapted for the use of inspectors and foremen in the testing of electric car equipments. The tests are of such a character that they may be performed with the instruments and facilities available in a car house. In order to fix the rules and tests in the minds of the readers, many examples are given and a set of questions is provided at the end of the book.

MEMORIES OF MY LIFE. By Francis Galton, F.R.S. With eight illustrations. New York: E. P. Dutton & Co., 1909. Pp. 339. Octavo. Price, \$3.50.

Francis Galton is probably the hardest scientist to classify of our day, for the simple

reason that he was never a specialist for any great length of time, but has been what may be called a good "all-around" man of science. He has been an able statistician, a meteorologist, a "finger-print" classifier, a founder of anthropometrical and psychological laboratories, an explorer, a pedagogue, an authority on heredity, and the founder of "eugenics." These pleasantly written memoirs of his tell the story of his manifold activities in a simple, unaffected way, and give one many a rare glimpse of the great scientists who made the closing half of the nineteenth century one of the most remarkable periods in the history of the world. It is but natural that a man who has such strong notions on the subject of heredity should open his memoirs with a fairly exhaustive statement of his family stock.

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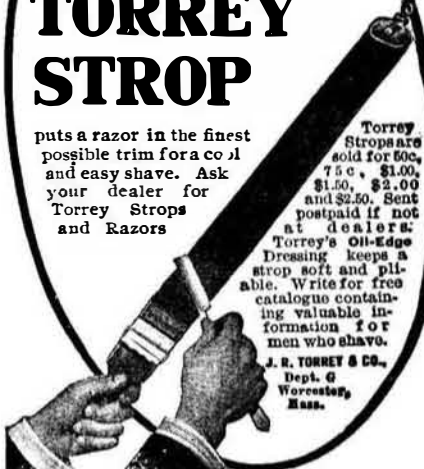
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GOES LIKE SIXTY SELLS LIKE SIXTY \$60 GILSON GASOLINE ENGINE For Pumping, Cream Separators, Churns, Wash Machines, etc. FREE TRIAL. Ask for catalog—all sizes. GILSON MFG. CO. 309 Park St. Fort Washington, Wis.

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Their Construction Simply Explained

Scientific American Supplement 160 describes the making of a 1 1/2-inch spark coil and condenser. Scientific American Supplement 1514 tells you how to make a coil for gas-engine ignition. Scientific American Supplement 1522 explains fully the construction of a jump-spark coil and condenser for gas-engine ignition. Scientific American Supplement 1124 describes the construction of a 6-inch spark coil. Scientific American Supplement 1087 gives a full account of the making of an alternating current coil giving a 5-inch spark. Scientific American Supplement 1527 describes a 4-inch spark coil and condenser. Scientific American Supplement 1402 gives data for the construction of coils of a definite length of spark. The above-mentioned set of seven papers will be supplied for 70 cents. Any single copy will be mailed for 10 cts. MUNN & COMPANY, Publishers 561 Broadway New York

Table listing various mechanical and electrical items with their respective prices and manufacturers. Items include sawmill appliances, scale tickets, sewing machines, and various tools.

Keeps Contents Hot a Day and a Night

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Buy a Vacuum Bottle as you would a watch—not by the outside of the case—but the inside works. Exercise this same caution, and you will unhesitatingly choose the CALORIS. The CALORIS BOTTLE will stand much harder usage than any other Vacuum Bottle. The fact that we give you a lifetime guarantee while other makers limit their confidence to 60 days, tells you which bottle to buy. Note patented construction in shadowgraph picture. "Indestructible" CALORIS—mounted nickel case with gold lined cap—removable glass bottle.

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Futz Pomades, Pastes, Liquids, Powders and Soaps for polishing metals, are contained in SCIENTIFIC AMERICAN SUPPLEMENT Nos. 1284, 1285 and 1289. Price 10 cents each from this office and all newsdealers.

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Advertising in this column is 75 cents a line. No less than four nor more than ten lines accepted. Count seven words to the line. All orders must be accompanied by a remittance. Further information sent on request.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. There is no charge for this service. In every case it is necessary to give the number of the inquiry. Where manufacturers do not respond promptly the inquiry may be repeated.

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A RESPONSIBLE PROFESSIONAL MAN and laboratory worker invites attention to a new artificial material analogous to celluloid, zylonite and the like, and which would seem to be adapted to a variety of industrial uses. Samples, both finished and unfinished, will be submitted to interested persons. Correspondence is invited. Address Box 233, Higganum, Conn.

Inquiry No. 8877.—For manufacturers of convex glass for pictures.

MY BOOK, "Building a Business," tells how mail order agency business can be started with capital of \$50 to \$100, and make several thousand dollars annually. It's free. Robert Hicks, St. Louis, Mo.

Inquiry No. 8885.—For manufacturers of the "Mysterious Ball" like that of Mr. Lepere's—a man in a ball.

PARTNER WANTED.—Will give any State in union, one-half profits of other, for giving Car Brake No. 39835 on the market. For further information address J. G. Kerr, Ionia, Kans.

Inquiry No. 8889.—Wanted to buy a machine which breaks and divides apricot stones.

CAPITAL OR MANUFACTURER DESIRED.—Patented window frame, etc. for movable shade roller. Royalty and lump sum. Address G. K., Box 773, N. Y.

Inquiry No. 8894.—For manufacturers of an automatic camera for making photographs on pin trays, etc.

HALLAS.—Oey Tjiaw Bi in Bandoeng, Java, desires to become agent for manuf. of auto cars and wagons.

Inquiry No. 8897.—For the manufacturers of the "Lid on" can opener.

PATENTS BOUGHT, sold, capital interested, articles desired for mail, agents, salesmen wanted everywhere. Manufacturers & Inventors Sales Co., Binghamton, N. Y.

PATENTS FOR SALE.

FOR SALE.—U. S. Patent No. 816,483. Canadian Patent No. 116,225, moulding flask and jacket. Non-collapsible and expandable, of great merit, cheap and durable. Schrag & Murray, 72 Macdonell Ave., Toronto, Canada.

Inquiry No. 8904.—Wanted to buy new or second hand machinery for making "bow type" mouse and rat trap springs and wire parts, single machine or full outfit.

FOR SALE.—Patent No. 904,273. Bullet mould. Practical and effective. Its interchangeability will make it a pleasure to load bullets, for every pistol or rifleman. Sell reasonable. A. J. Mundt, Ontonagon, Mich.

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FOR SALE.—Patent No. 68,450. "Den'Dron." Nature's remedy used both internally as well as externally. For further particulars address E. Wiyick, 1090 Tremont Street, Roxbury, Mass.

Inquiry No. 8909.—For a machine to paint shade or blind rollers.

FOR SALE.—Patent No. 484,703. An improved pool and billiard cue tip, but tapered dove-tailed style. Needs no repairs. Simply insert new tip when old one wears out. Manufacturers and players get the tip that wins the game. Ask for sample. For further particulars and full information address William M. Dunn, Box 214, Atlanta, Ind.

Inquiry No. 8918.—For manufacturers of "Wyd't's Electro-Catalytic Sparking Plug."

FOR SALE.—French, Austrian, Belgian and Spanish patents on useful device which has large sale to banks and public in America. For further particulars address "Device," Box 773, New York.

Inquiry No. 8921.—For the manufacturers of gilt paper.

FOR SALE.—Patent 770,716. Most scientific finger-cramp preventer, easy writer and finger-rest penholder. Write with it all day, and your hand never tires. Address J. Engel, 711 Eighth St., Milwaukee.

Inquiry No. 8922.—Wanted the address of Worthington Boiler Co.

THE PATENT RIGHTS IN U. S. of "Locke's Wire Strainer" for \$1,200, cash sale. Offers from bona fide manufacturers to make on royalty will be considered by Duncombe, Hobart, Tasmania.

WANTED at once offers from reliable firms in Canada to manufacture in Canada Locke's Patent Wire Strainer, No. 12779, to preserve patent rights in that country. Duncombe, Hobart, Tasmania.

Inquiry No. 8928.—For the manufacturers of a steam rotary excavator as described in the Scientific American of December 12, 1908, page 347.

HELP WANTED.

LOCAL REPRESENTATIVE WANTED.—Splendid income assured right man to act as our representative after learning our business thoroughly by mail. Former experience unnecessary. All we require is honesty, ability, ambition, and willingness to learn a lucrative business. No soliciting or traveling. This is an exceptional opportunity for a man in your section to get into a big paying business without capital and become independent for life. Write at once for full particulars. Address E. R. Marden, Pres., The National Co-operative Real Estate Company, Suite 378, Marden Building, Washington, D. C.

Inquiry No. 8931.—For parties who manufacture the Western Stump Borer for boring stumps.

WANTED, by large machinery manufacturing concern, chief inspector. Must be first-class mechanic, experienced on gasoline motor work, capable of organizing and directing corps of inspectors. Good permanent position to right man. Give references, experience and salary wanted. Address Chief Inspector, Box 773, N. Y.

LISTS OF MANUFACTURERS.

COMPLETE LISTS of manufacturers in all lines supplied at short notice at moderate rates. Small and special list compiled to order at various prices. Estimates should be obtained in advance. Address Munn & Co., List Department, Box 773, New York.

Inquiry No. 8936.—Wanted machinery used to spin or wrap paper pencils in the manner that paper pencils are made.

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MISCELLANEOUS.

"HOW TO SUCCEED AS AN INVENTOR." 100-page book written by an expert, sent for two stamps Address Goodwin B. Smith, No. 700 Stafford Building, Philadelphia, Pa.

Inquiry No. 8941.—For manufacturers of machinery for making fly screens.

Inquiry No. 8943.—Wanted a portable hand machine for breaking stones for installing road surface To be worked by two or three men.

Inquiry No. 8944.—For the address of the manufacturers of the King or lever collar button.

Inquiry No. 8948.—For manufacturers of gearing, noiseless or otherwise, suitable for speed of 3,000 to 4,000 r. p. m. for wheels 5 inches diameter.

Inquiry No. 8950.—For manufacturers of machinery for the production of Coquito, Palm, Babosa, and Mame seed or nuts.

Inquiry No. 8951.—For manufacturers of machinery for making milk bottles sanitary fiber caps.

Inquiry No. 8952.—For firms making apparatus for using oil for fuel under a steam boiler instead of coal.

Inquiry No. 8953.—For manufacturers of water turbines.

Inquiry No. 8954.—For machinery used in manufacturing collar buttons.

Inquiry No. 8955.—For a machine to extract the small kernel from the pea-nut.

Inquiry No. 8956.—For makers of wood distilling machinery, also makers of philosophical instruments and chemists' hardware.

Inquiry No. 8957.—Wanted manufacturers of angle bars either malleable steel or sheared.

Inquiry No. 8960.—For the address of the Wm. Mfg. Co., manufacturers of waterproof collars and cuffs.

Inquiry No. 8961.—For the manufacturers of imitation pearls.

Inquiry No. 8962.—For the manufacture of the different parts of vacuum systems such as electric motor and pumps.

Inquiry No. 8963.—Wanted a machine for wrapping coin.

Inquiry No. 8964.—For address of parties making imitation horse hair.

Inquiry No. 8965.—Wanted the address of the Dirt Mover Magazine.

Inquiry No. 8966.—Wanted the address of the Cohendet Motor Co.

Inquiry No. 8967.—Wanted to buy cheap grade of cotton by the bale.

Inquiry No. 8968.—Wanted to buy a machine for crushing and grinding tobacco stems to a powder.

Inquiry No. 8969.—Wanted machines that make accordion dress plaiting (steam).

Inquiry No. 8970.—For manufacturers of equipment for denatured alcohol.

Inquiry No. 8971.—For manufacturers of a metal placket fastener for women's skirts or a metal fastener for the front of men's trousers.

Inquiry No. 8972.—Wanted to buy complete outfit for making meat hooks.

Inquiry No. 8973.—Wanted to buy a gasoline engine with equipment ready to put on a hearse or other vehicle of like order, work to be done by any local mechanic.

Inquiry No. 8974.—For address of firms interested in fishing reels.

Inquiry No. 8975.—Wanted the address of the builders of moving stair cases.

Table listing various mechanical parts and their prices, including Valve grinding device, Valve regulator, Valve reseating machine, etc.

DESIGNS.

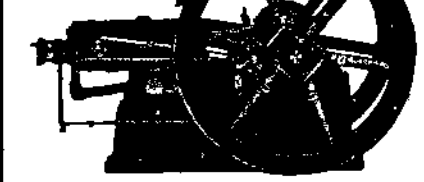
Table listing various designs and their prices, including Cabinet, sewing, H. R. Miller, Card, menu, M. Altman, etc.

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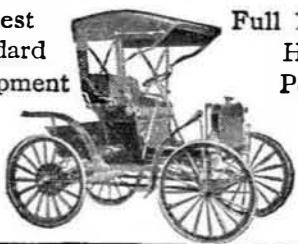
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TRADE MARKS.

Table listing various trade marks and their prices, including Abrasive, crushed steel, Antiseptic salves, Asbestos slat-like building materials, Boilers, New Orleans Acid & Fertilizer Co., etc.

LABELS.

Table listing various labels and their prices, including "Ceres Flour," "Crawford" for peaches, "Elliott's Dandruffage," etc.

PRINTS.

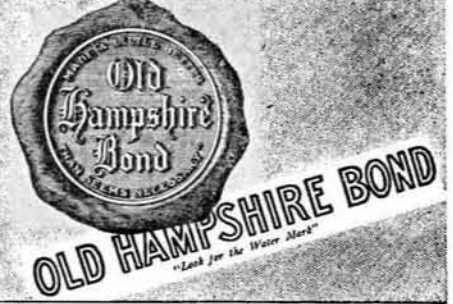
Table listing various prints and their prices, including "Sapolin Gold Enamel," Gerstendorfer Bros.

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We say that "clothes don't make the man," but, except his hands and face, they're all we see of him during business hours; and they reveal a good many things in his habits and character.

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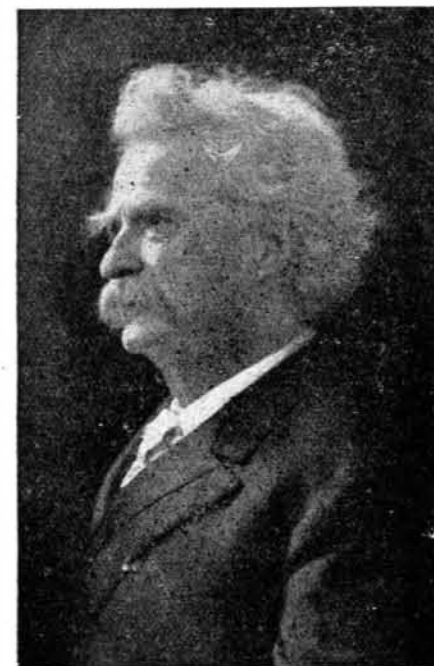
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