

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.

"U. S." metal polish. Indianapolis. Samples free. Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Smith's Leather Pattern Fillet, Akron, O. Sample free. For mud dredging engines. J. S. Mundy, Newark, N. J. Practical Ammonia Refrigeration. Redwood, Cloth, \$1. Spon & Chamberlain, 12 Cortlandt St., New York. Sewing machines, milling machines, and drill presses. The Garvin Mach. Co., Laight and Canal Sts., New York. Centrifugal Pumps. Capacity, 100 to 40,000 gals. per minute. All sizes in stock. Irvin Van Wie, Syracuse, N. Y. Emerson, Smith & Co., Ltd., Beaver Falls, Pa., will send Sawyer's Hand Book on Circulars and Band Saws free to any address.

FREE GROUND GIVEN, in Phila. suburbs, to large manufacturing plants. Railroad facilities. Hoffman, 60 and Balt. Ave., Phila.

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.

Woven wire brushes.—The Belknap Motor Co., of Portland, Me. are the patentees and manufacturers of the best woven wire commutator brush on the market.

For the original Bogardus Universal Eccentric Mill, Foot and Power Presses, Drills, Shears, etc., address J. S. & G. F. Simpson, 26 to 36 Rodney St., Brooklyn, N. Y.

Competent persons who desire agencies for a new popular book of ready sale, with handsome profit, may apply to Munn & Co., Scientific American office, 361 Broadway, New York.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.

NEW BOOKS AND PUBLICATIONS.

HENDRICKS' ARCHITECT'S AND BUILDER'S GUIDE AND CONTRACTOR'S DIRECTORY OF AMERICA FOR BUILDERS, CONTRACTORS, MANUFACTURERS AND DEALERS IN ALL KINDS OF BUILDING SUPPLIES. For the years 1894-95. New York: Published annually by Samuel E. Hendricks Company. Pp. xxx, 709. Price \$5.

The title of this book sufficiently describes its contents. It is enough for us to say that now it covers the entire United States and presents a very long list of those concerned in the architect's profession and in the building trade.

TWO YEARS' WORK IN AN ARCHITECT'S OFFICE. By Manly N. Cutter. Suburban, New York: A. L. Chatterton & Company. 1894. Pp. 204. Price \$6.

This very attractive work contains a number of architectural designs with short descriptions and specifications referring to country and to suburban houses. The preface, which is short, contains a quantity of good sense and gives points for building which, if carried out, would inevitably result in good work.

THE MINOR TACTICS OF CHESS. A treatise on the development of the forces in obedience to strategic principle. By Franklin K. Young and Edwin C. Howell. Boston: Roberts Brothers. 1894. Pp. 219. Price \$1.

This little work presents an eminently attractive appearance, treating as it does of the game of chess from the tactical standpoint, not by the method of giving merely sample games, gambits and openings. It is illustrated as required and possesses an index. Its treatment of the subject of the single move as altering the entire disposition of all the forces on the board, all of them being potential and active, is excellently put.

LETTERING OF WORKING DRAWINGS. By J. C. L. Fish. New York: D. Van Nostrand Company. 1894. 13 plates. Price \$1.

This eminently useful work is in the direction of obtaining a species of standard of lettering for working drawings. So much depends on the lettering that the man who can draw well but letters poorly cannot rank at all as an accomplished draughtsman. To many the obtaining of skill in lettering is so difficult that they have a special man letter their drawings. This volume is intended to aid draughtsmen to perform this important detail.

QUALITATIVE CHEMICAL ANALYSIS OF INORGANIC SUBSTANCES. As practiced in Georgetown College, D. C. New York: Cincinnati, Chicago: American Book Company. 1894. Pp. 61. Price \$1.50.

We would like very much to give more space to the review of this work than we possibly can. It consists of an abstract in tabular or abbreviated form of what is to a great extent the Fresenius separation. In places it seems not very clear, as where, page 7, it directs the filtrate from the ammonio-magnesium phosphate precipitate to be tested for sodium. This, however, is an inadvertence, because, as the author depends on the spectroscopic for the recognition of the alkali metals, they can be tested for them without removing the magnesium. As Table I. now reads, sodium is to be tested for in the filtrate from the magnesium precipitate, which filtrate inevitably contains sodium from the precipitant. It is in Table I. that the confusion occurs, but it is made clear in Table VIII. what process the author wishes to adopt. Nickel and copper are separated by the bromide test. Aluminum, chromium and iron are separated by the fusion process, with sodium carbonate and potassium ni-

trate. We have given some little space to this book, as Georgetown College has long been recognized as one of the leaders in science, and we are glad to see in the present work an indication of the development of a full analytical course in chemistry. We warmly recommend it as a text book for use on the laboratory table.

AIDS TO ENGINEERS' EXAMINATIONS. Prepared for applicants of all grades, with questions and answers. A summary of the principles and practice of steam engineering. By N. Hawkins. New York: Theo. Audel & Co. 1894. Pp. 206. Price \$2.

This is one of the frequent catechisms published, there seeming to be a disposition on the part of many authors to believe that practical engineers require a treatment of their subjects by question and answer, and the large circulation which many of these catechisms have received goes far to prove the correctness of this idea. Steam and electrical engineering are covered in this work, which is very nicely got up in rather a showy style of red binding, with a box to hold it.

UNDER THE CORSICAN. By Emily Howland Hoppin, author of "From Out of the Past," etc. New York: J. Selwin Tait & Sons. Pp. 333. Price \$1.

SCIENTIFIC AMERICAN BUILDING EDITION.

FEBRUARY, 1895.—(No. 112.)

TABLE OF CONTENTS.

Table of contents listing various architectural and engineering projects, including residences, cottages, and industrial buildings, with their respective architects and locations.

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.

(6400) C. T. W. asks: What is meant by the gearing on safety bicycles, and what effect being geared high or geared low has on the running of a wheel? A. Multiply the stated gearing by 31-7, and it will give the approximate distance the bicycle will go for one revolution of the crank. The higher the gear, the harder is the bicycle to drive, but high gearing gives speed within certain limits. The figures of gearing express the size of wheel equivalent to the rear wheel as geared.

(6401) A. C. W. asks: Can you inform me through your answers to correspondents how to prepare gray iron castings for tinning, so that they can be coated with tin the same day, the usual process being to water tumble the castings 3 or 4 days? Also give me a way of coating the castings with a cheaper finish, as by mixture of lead or other substances with the tin. A. The gray iron castings may be quickly tinned by following the instructions in the section on tinning in "Scientific American Cyclopaedia of Receipts," and then treating to a dip in a solution of sal-ammoniac in water, when the articles may be dipped in the melted tin bath, or a mixture of tin and lead as used for tinner's solder, or equal parts of tin and lead. A cheaper method is the galvanizing or coating with zinc, which is fully described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 176.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted February 5, 1895, AND EACH BEARING THAT DATE.

(See note at end of list about copies of these patents.)

Index of inventions listing various patents granted, including adjustable tables, air moisteners, alarm systems, bicycle parts, and machinery.

Continuation of the index of inventions, listing patents for items such as carpet, carrier, castings, and various mechanical devices.