Business and Personal Wants.

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. **In every case it is necessary to give the number of the inquiry.**

MUNN & CO.

Marme Iron Works. Chicago. Catalogue free.

Inquiry No. 6063.—For manufacturers of salt driers.

AUTOS.—Duryea Power Co., Reading, Pa.

Inquiry No. 6064.—For manufacturers of rainmakers supplies, canvas, explosives, etc.

"U. S." Metal Polish. Indianapolis. Samples free.

Inquiry No. 6065.—For a computing device consisting of two or more dials, operated with a stylus or like article, to be used in multiplication and division only.

For bridge erecting engines. J. S. Mundy, Newark, N. J.

Inquiry No. 6066.—For parties to manufacture men's collars to order, also for makers of machines for securing metal tips to shoe strings.

Perforated Metals, Harrington & King Perforating Co., Chicago.

Inquiry No. 6067.—For parties to do drop press work on wire steel.

Handle & Spoke Mchy. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

Inquiry No. 6068.—For makers of Newhall and Julius Smith's electric firing batteries.

If it is a paper tube we can supply it. Textile Tube Company, Fall River, Mass.

Inquiry No. 6069.—For makers of machines and supplies for tattooing.

Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.

Inquiry No. 6070.—For manufacturers of hollow glass novelties.

D. A. Beaton, Practical Lead Burner, P. O. Box 334 Woburn, Mass. Fifteen years' experience.

Inquiry No. 6071.—For manufacturers of pin-pointed wires.

Special Machinery to order, manufacturing, metal stampings, etc., Brickner Machine Co., Tiffin, Ohio.

Inquiry No. 6072.—For makers of solder for soldering aluminum.

American inventions negotiated in Europe. Wenzel & Hamburger, Equitable Building, Berlin, Germany.

Inquiry No. 6073.—For machinery for extracting oils from oranges and lemons, and for parties engaged in the same.

Patented inventions of brass, bronze, composition or aluminum construction placed on market. Write to American Brass Foundry Co., Hyde Park, Mass.

Inquiry No. 6074.—For apparatus for burning wood into charcoal.

FOR SALE.—Valuable patent, 666,159. Specifications and drawings sent on request. H. O. Robinson, 445 Saratoga Street, East Boston, Mass.

Inquiry No. 6075.—For a very light-draft, stem wheel gasoline boat 25 to 35 feet length.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Machine Company Foot of East 138th Street, New York.

Inquiry No. 6076.—For makers of small Ferris wheels.

DRY BATTERIES.—How to make and use them. Practical, with original drawings. Mailed for 25 cents. Spon & Chamberlain, 123 S Liberty Street. New York.

Inquiry No. 6077.—For manufacturers of napping machines.

Sheet metal, any kind, cut, formed any shape. Die making, wire forming, embossing, lettering, stamping, punching. Metal Stamping Co., Niagara Falls, N. Y.

Inquiry No. 6078.—For a railroad lantern which burns acetylene gas.

WANTED.—Hardware novelties and other articles of merit. Must be good sellers. Will buy outright or sell on royalty basis. The Cleveland Sales Company, 407 Arcade, Cleveland, Ohio.

Inquiry No. 6079.—For a thermometer which will register 500 deg. or 600 deg. below zero Fah.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery and tools. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.

Inquiry No. 6080.—For makers of worms for corkscrews.

Two patents for sale. Supply tanks for water service, No. 769,550. Valve, a cut-off, for supply tanks, No. 737,941. Can furnish some valves, cut-off, in working order. P. J. Leithauser, Clarendon, Texas.

Important Patent For Sale.—The only perfect horn for talking machines. Patent No. 771,441 is a basic patent absolutely necessary to manufacturers of talking machines. Address Horns, Box 773, New York.

WANTED.—First-class man for engineering department. One familiar with shop practice and designing, and able to draw up ideas. State age, experience and salary expected. Address The Ohio Brass Co., Mansfield, Ohio.

FOR SALE.—Canadian patent No. 83,867, dated Nov. 10, 1903. Covering vital points in telephone development. Important subsequent improvements free to purchaser. Address Dennis O'Brien, Limestone, New York.

Winona, Minnesota.—Population, 24,000—Wants Manufacturing Plants. For particulars address Geo. W. Gregory, Secretary of Board of Trade.

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

FOR SALE.—U. S. patent No. 767,866, patented August 16, 1904. Variable speed and reversing gear can be applied directly to any machine, motor carriage and launches. Address John C. Busche, 17 Brown Ave., Turtle Creek, Pa.

Wanted—Revolutionary Documents, Autograph Letters, Journals, Prints, Washington Portraits, Early American Illustrated Magazines, Early Patents signed by Presidents of the United States. Valentine's Manuals of the early 40's. Correspondence solicited. Address C.A.M., Box 773, New York.

WANTED.—A first-class, all-around mechanic, tool maker and tool designer, preferably between 35 and 45 years of age, with considerable executive ability in handling men; one having had considerable experience in the designing and building of special tools, jigs and fixtures, such as are used on fine special machinery requiring accuracy and duplication of parts. A man capable of bringing tools and machinery up to the highest possible point of efficiency. A first-class position, and one of rapidly growing responsibility to the right man. Address, giving age, experience in full, stating positions held in past, references, and salary desired, to Ability, Box 773, New York.

Notes and 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.

(9465) S. A. C. asks: Will you please tell me why the problem of squaring the circle is said to be impossible? I know that the ratio of circumference to diameter, which enters into the problem, is an incommensurable ratio, but how can anyone say that a method can never be found for drawing two lines in that ratio? We have many lines which are related to each other by incommensurable ratios, and I fail to see why that particular ratio should be impossible. I am always laughed at when I say I am trying to square the circle. A. The problem of squaring the circle requires the finding of the side of a square whose area shall be equal to that of the given circle. No such square can be found. The area of a circle is πr^2, as is proved in geometry. The numerical value of π is 3.141592, etc. It has been calculated to 250 places of decimals, and will never end. That means that it has no exact value. Any desired degree of approximation may be used, but in the end there is only an approximation, and not a definite, accurate result. Since π has not an exact numerical value, πr^2 has not an exact numerical value. No circle can have its area expressed in a whole number if its radius, or diameter, or circumference is expressed in a whole number; and on the other hand, if the area of a circle were a whole number, the radius, diameter, or circumference could not be a whole number. Now, if the area of a circle is not a whole number, the square root of that area, which is the side of the square of the same area, will not be a whole number, nor will the square root ever terminate, however far it is carried out. Thus you will see that the side of a square of the same area as any given circle cannot be found. All such constructions as you inclose are more or less close approximations, useful in mechanical drawing, but of no value in exact mathematical work. The squaring of the circle is known to every mathematician to be impossible. In application of this, take 1 inch as the radius of a circle; the area is 3.1416 square inches nearly. The side of the equivalent square is 1.7668 inches. This is close enough for ordinary purposes, but is not mathematically exact and never can be calculated to exactness. This is what is meant when it is said that the squaring of a circle is impossible.

(9466) C. E. F. asks: Could you tell me the properties that they use in making dry batteries? A. The materials used in dry batteries are sal-ammoniac, zinc oxide, plaster of Paris, sometimes flour or starch and water. Powdered carbon and binoxide of manganese are used on the carbon plate. For full instructions how to proceed in making dry cells, we would refer you to SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 1001, 1383, and 1387, price 10 cents each. These give the whole story with drawings, sizes, and descriptions.

(9467) H. S. asks: Will you kindly give in your Notes and Queries brief explanation of the optics of the so-called fixed focus lens used in cameras of the "Kodak" type? A. A "fixed-focus" lens is one so adjusted that all objects in the field are in sufficiently good focus for a landscape picture. It must have a short focus, and can only be used on a comparatively small plate. The shorter the focus the greater the depth of focus, that is, objects will be in focus over a wider range. This is, however, a relative matter. In no lens can objects at all distances be in equally good focus. The rule frequently employed in making fixed-focus cameras, as laid down by a writer on the subject, is: "If the diameter of the stop be a fortieth part of the focus of the lens, the depth of focus will range from infinity to a distance equal to four times as many feet as there are inches in the focal length of the lens." Thus with a four-inch lens, all objects beyond sixteen feet will be in focus. A different result is given in a table published in Taylor's "Optics of Photography," price $1, from the report of a committee of the Amateur Photographic Society of New York.

(9468) G. R. F. asks: 1. Can you oblige me with a good formula for dry cells? A. A very useful formula for dry cells is: Oxide of zinc, 1 part; ammonium chloride, 1 part; plaster of Paris, 3 parts; zinc chloride, 1 part, water, 2 parts. All parts are given by weight. All dry cells owe their action to ammonium chloride. We have published in the SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 1383 and 1387, price 10 cents each, most excellent directions and drawings for making dry cells. You cannot do better than to get these latest instructions and follow them. The directions for compounding the formulas are much more in detail than can be given in a note. 2. Also, have you a later issue of "Wrinkles and Receipts" than 1876? If so, send price, and I will get one. A. There has been no new edition of "Wrinkles and Receipts" since 1876. We recommend you to purchase "The Scientific American Cyclopedia of Receipts," last (1901) edition, containing 15,000 receipts, 734 pages, cloth bound, price $5 by mail or express prepaid.

NEW BOOKS, ETC.

GEFECHTSWERTE VON KRIEGSSCHIFFEN. Von Otto Kretschmer. Sonderabdruck aus der Zeitschrift Schiffbau. V. Jahrgang. No. 18-20. Emil Grottke's Verlag, Berlin SW. 12, Wilhelmstrasse 105. Price, 50 cents.

The readers of the SCIENTIFIC AMERICAN are doubtless familiar with Mr. Kretschmer's formula for calculating the fighting value of ships. In this pamphlet he has given a very thorough explanation of the underlying mathematical principles upon which he places his conception of fighting values. His computations, of course, are based upon those factors which can be determined with certainty, namely, such factors as guns, armament, armor, engine power.

PRACTICAL MEASUREMENTS IN MAGNETISM AND ELECTRICITY. By George A. Hoadley, A.M., C.E. New York, Cincinnati, and Chicago: American Book Company, 1904. 12mo.; pp. 111. Price, 75 cents.

This small volume has been prepared for the purpose of enabling students in scientific courses in preparatory schools to prepare for the more advanced instruction in college. It consists of numerous experiments in electricity and magnetism, which show the various principles and laws governing these forces. The book is very completely illustrated with diagrams and cuts, and treats of such subjects as magnetic induction, galvanometers, batteries of various types, resistances and the measurement of the resistance of batteries, wires, etc. It will be found to very completely answer the purpose for which it was written.

THE TELESCOPE. By Thomas Nolan, M.S., A.M. New York: D. Van Nostrand Company, 1904. 32mo.; pp. 128. Price, 50 cents.

This volume forms the second edition, revised and enlarged, of this practical and useful little handbook. Besides the chapter on the optical principles involved in the construction of refracting and reflecting telescopes, the second edition contains a new chapter on the evolution of the modern telescope to date—an evolution which has made possible the wonderful progress in celestial photography, which has revealed so many new stars and satellites. The book also contains a list of all recent books, scientific papers, and periodical literature relating to telescopes, observatories, celestial photography, spectroscopy and spectroscopes, telescopic accessories, and the making of observations.

THE CENTRIFUGAL PUMP, TURBINES, AND WATER MOTORS: Including the Theory and Practice of Hydraulics. By Charles H. Innes, M.A. Manchester, England: The Technical Publishing Company, Ltd., 1904. New York: D. Van Nostrand Company. 12mo.; pp. 340. Price, $1.75.

The present, or fourth, edition of this valuable work has been enlarged by the addition of a chapter on centrifugal pumps for high lifts, and fans or blowers capable of creating considerable pressures. Following the opening chapters on hydraulics, the measurement of the power of streams, friction of piping, etc., hydraulic engines and both axial and radial flow turbines are discussed theoretically and described practically. The Pelton or tangential water wheel is also dealt with, and there are several chapters on centrifugal pumps. One chapter deals with the great hydraulic plant at Niagara. The book is both theoretical and practical in character, and will be of great advantage to all who have to do with hydraulic machinery.

SPANGENBERG'S STEAM AND ELECTRICAL ENGINEERING. In Questions and Answers. By E. Spangenberg, M.E.; Albert Uhl, A.I.E.E.; and E. W. Pratt, Master Mechanic. St. Louis: George A. Zeller, 1904. 8vo.; pp. 672; 648 engravings. Price $3.50.

This is a carefully-prepared textbook covering the field of steam and electrical engineering by means of more than a thousand questions and answers. The three experts who are responsible for the work have not only the necessary knowledge, but also the rarer gift of ability to impart it, Mr. Spangenberg having been formerly superintendent of the St. Louis School of Engineering, and Mr. Uhl an instructor in the same school. Mr. Pratt has made the locomotive a life study, and his contributions, simple and direct in style, go to the heart of the subject in few words, and are thus in harmony with the spirit of the whole. Among the themes treated are compressed air, mechanical refrigeration, gas and gasoline engines, and hydraulic elevators. The diagrams and illustrations are not reproductions from photographs of old cuts, but were all drawn by hand for the particular purpose in view. Evidently neither time nor expense has been spared to make the manual a success as a teacher and guide, and the result seems to have fully justified the expenditure.

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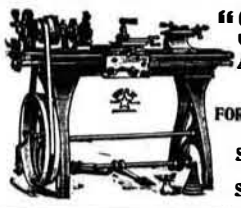
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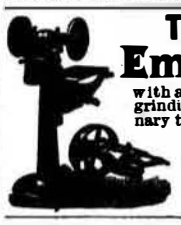
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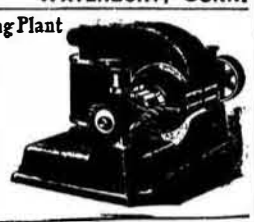

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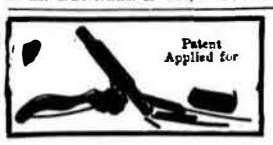

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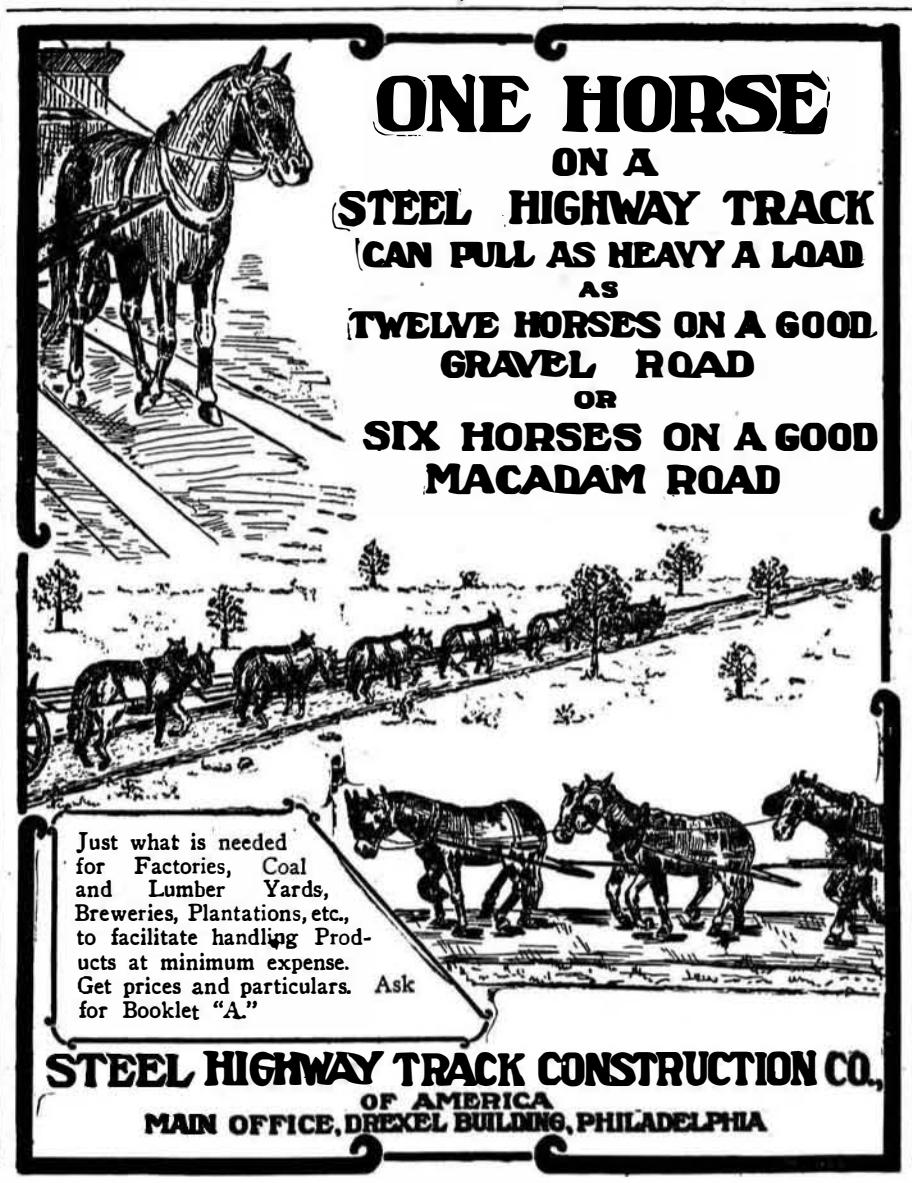

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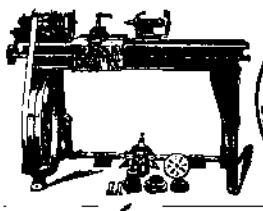

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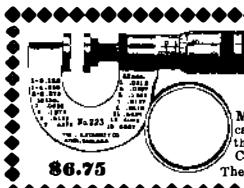

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