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.

Marine Iron Works. Chicago. Catalogue free.

Inquiry No. 6566.—For the maker of a valve or cock with gauge to regulate the flow of liquor or syrup; a valve which can separately adjust the flow at ¼, ½, ¾ and full capacity with indicator.

For hoisting engines. J. S. Mundy, Newark, N. J.

Inquiry No. 6567.—For makers of tools for manufacturing cut glass.

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

Inquiry No. 6568.—For a machine for manufacturing confetti; also a magnetic separator for small mills.

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

Inquiry No. 6569.—For manufacturers of machinery for making pulp.

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

Inquiry No. 6570.—For manufacturers of swivels for fish lines.

Adding, multiplying and dividing machine, all in one. Felt & Tarrant Mfg. Co., Chicago.

Inquiry No. 6571.—For the name of the manufacturer of the "Scymetar Brand Ready Roofing."

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

Inquiry No. 6572.—For parties engaged in the grinding of glass, as fine as flour.

For catalogues or circulars to Portuguese-speaking countries write J. De La Cerda, 46 Hancock St., Boston.

Inquiry No. 6573.—For manufacturers of revolving fans driven by clockwork.

If you wish to buy patents on inventions or sell them, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.

Inquiry No. 6574.—For manufacturers of an elevating freight or store truck.

Manufacturers of Toys and Automatic Novelties please communicate with J. A. Simpson, Port Chalmers, New Zealand, catalogues and terms.

Inquiry No. 6575.—For machines for reginning refuse cotton.

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. 6576.—For the name of the manufacturer or patentee of the "Little Giant" well-drilling machine by horse power.

I have every facility for manufacturing and marketing hardware and housefurnishing specialties. Wm. McDonald, 190 East Main St., Rochester, N. Y.

Inquiry No. 6577.—For machinery for manufacturing mailing tubes.

The SCIENTIFIC AMERICAN SUPPLEMENT is publishing a practical series of illustrated articles on experimental electro-chemistry by N. Monroe Hopkins.

Inquiry No. 6578.—For parties to manufacture a combination numbering machine and ticket punch for registering the fares and passengers on railroad trains.

Any metal, sheet, band, rod, bar, wire; cut, bent crimped punched, stamped, shaped, embossed, lettered. Dies made. Metal Stamping Co., Niagara Falls, N. Y.

Inquiry No. 6579.—For manufacturers of papier maché or fiber cord used in re-seating old-fashioned flag chairs in place of flag.

WANTED.—Electrical engineer to take charge of general electric l construction, under chief engineer. Applications by writing only. La Chesnaye, 60 W. 37th St., N. Y. C.

Inquiry No. 6580.—For makers of "pulsometers," or a glass tube with a small bulb at either end, in which is placed liquid.

We manufacture gasoline motor and high-grade machinery, castings best quality gray iron. Select patterns, and let us quote prices. Frontier Iron Works, Buffalo, N. Y.

Inquiry No. 6581.—For manufacturers of cotton waist-making machines.

WANTED.—Colonial silverware. Any one wishing to sell any authentic silver made in this country during the eighteenth century, please communicate with C. A. M., Box 773, New York.

Inquiry No. 6582.—For machinery for manufacturing wood pulp.

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

Inquiry No. 6583.—For makers of a lath mill that will cut the lath and do the bolting at the same time.

WANTED.—Articles to manufacture requiring heavy iron casting, where little or no machine work is involved. Will purchase or manufacture under royalty. Eureka Foundry Company, Rochester, N. Y.

Inquiry No. 6584.—For manufacturers of hoods for chemical laboratories.

Manufacturers of Hardware Specialties Contract, Manufacturers and will market articles of merit. Larimer Manufacturing Company, 153 S. Jefferson Street, Chicago, Ill.

Inquiry No. 6585.—Wanted, an electric insulator for two-way connectors.

VALUABLE U. S. PATENT FOR SALE.—I will dispose of the American rights of my Patent Thill. A necessity for farmers and drivers. Price reasonable. Address Harry Turner, Koolunga, South Australia.

Inquiry No. 6586.—For manufacturers of the "Anti-Syphon Traps."

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

Inquiry No. 6587.—For makers of lead pencils, stamped with name and address, for advertising.

Inquiry No. 6588.—Wanted, an apparatus for making oil from limes.

Inquiry No. 6589.—Wanted, a counting machine for vehicles which indicates the number of revolutions, or miles, by attaching to the wheel, and revolving with it; the attachment being by straps and buckles, and not with a pin.

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.

(9543) A. S. L. asks: Will you kindly explain the following peculiar weather conditions? There was a fall of 2 inches of fine snow in this vicinity recently with the thermometer at 36 degrees, or 4 degrees above freezing, wind from the south, and the snow did not melt after falling. Last year we had a rain storm from the northeast, with the thermometer at 23 degrees, or 9 degrees below freezing, and the rain freezing after falling. In the latter case the thermometer rose slowly. A. The fall of snow when the temperature at the surface of the earth is above freezing is due to the fact that the temperature at the altitude of the clouds is below freezing. That the snow did not melt after falling was due to the cooling of the air so that the temperature was soon at freezing. The fall of rain when the temperature at the surface of the earth is below freezing is due to the opposite state of affairs; the temperature in the clouds is above freezing, warmer than it is below. That the temperature rose after the fall of rain took place may be explained by the heat which the rain gave off in cooling to the freezing point and freezing.

(9544) H. W. says: Kindly answer the following questions in the column of your paper entitled Notes and Queries, viz.: 1. How is the power of a gasoline engine calculated? A. It is very difficult to accurately calculate the power of a gasoline engine. The horse-power is equal to the area of the piston in square inches, multiplied by the length of the stroke in feet, multiplied by the number of working strokes per minute, multiplied by the average pressure per square inch behind the piston, divided by 33,000. All of the quantities are easily determined excepting the average pressure in the cylinder. This will vary very greatly, according to the character and design of the engine and the richness of the mixture, the degree of compression and the time of ignition. As a general average, it would vary between 50 and 150 pounds. 2. To what temperature is the air in the cylinder of a gasoline engine heated by the combustion of the gasoline? A. The temperature in the cylinder of a gasoline engine is even more difficult to determine than the average or maximum pressures. It would also depend on the richness of the mixture, the degree of compression, the size and shape of the cylinder, the efficiency of the cooling jacket, if there be any, and the time and character of the ignition. The maximum temperature probably varies between 1,500 and 2,500 degrees; but all parts of the mixture might not have these temperatures at the same time.

(9545) H. F. W. asks: In thinking of the power of gravitation and the resultant weight of objects and incidentally of the power of magnetism, electricity, etc., the query arose in my mind: "How is weight affected by distance from the earth?" I wondered if this had ever been experimented with. I queried what is the proportionate loss of weight of objects carried to the greatest height attained by balloons, say approximately 5 miles. Of course, in determining this balances or steel yards could not be used; but spring scales probably could be used so as to determine the loss of weight and the percentage thereof. A. Sir Isaac Newton, who died March 20, 1727, fully investigated the action of gravitation, and determined the law of the weight of bodies at all distances from the center of the earth. It is that the weight decreases at the same rate as the square of the distance from the center of the earth increases. If anything weighs 100 pounds at the level of the sea on the earth, at twice the distance from the center of the earth that body will weigh only one-quarter as much. Taking the surface of the earth as 4,000 miles in round numbers from the center, twice as far would be 8,000 miles; at 8,000 miles from the center of the earth, the weight which was 100 pounds at sea level will have decreased to 25 pounds. At 5 miles above the surface of the earth, the change of weight will be in the ratio of $4{,}000^2$ to $4{,}005^2$. This decrease is very slight for short distances. As you say, it cannot be detected with a steelyard. A spring balance would give the change of weight if it were delicate enough. A pendulum is, however, the instrument actually employed for the purpose, since its time of swing depends upon the force of gravitation.

(9546) G. A. D. asks: Will you kindly mail me the answer to the following question, which is a branch of electro-plating? I wish to know how the color termed "verdigreen" is produced on the surface of brass, or, in other words, how I am to produce a color which looks as though brass has been buried and verdigris has formed thickly on the same. I have a number of brass wall plates on which are set electric push buttons. The plates are 6 inches by 10 inches. A. A green coating is obtained upon brass by the use of verdigris, which is called in chemistry acetate of copper, or by carbonate of copper, or by a mixture of the two to the tint desired. This is mixed with a light-colored varnish and applied to the article with a brush, and the high parts are immediately wiped off with a rag wet with the liquid in which the varnish was dissolved. This may be alcohol. A smooth coating should be left. A coating of clear lacquer is put over the whole when the varnish is dry. There is no need of electricity in doing this. It is a process in lacquering. It is more fully described in Van Horne's "Modern Electroplating," which we send for $1.

(9547) R. M. G. says: 1. Can you inform me what coefficient of friction to use in figuring the power of multiple-disk friction clutches? Surfaces to be cast iron to cast iron, running in oil. A. We know of no published data giving the coefficience of friction on friction clutches. For a clutch running in oil, we should not consider it safe to use a coefficient larger than about 0.05. 2. Example: How many surfaces would be required to transmit, from rest, a torque equal to 1,000 pounds pull on a 3 3-16-inch radius (i. e., radius equal to the effective radius of the disks)? Clutch disks 8 inches diameter, 4-inch hole = 37.69 sq. in. effective area. R = about 3 3-16 ins. Pressure on clutch plates, 100 pounds. A. Assuming the coefficient of friction on the clutch you mention, it would require 200 surfaces. 3. What is the better way to increase the power—by increasing the area, the number of surfaces, or the pressure? A. The best way of increasing the power of a friction clutch is first by increasing its diameter, thereby increasing the lever arm through which the force acts; second, by increasing the pressure; third, by increasing the number of surfaces in contact. Increasing the area of the surfaces without increasing the pressure has no effect. 4. Can you refer me to some work that treats of this subject fully? A. We are sorry that we cannot refer you to any work that treats of this subject. We think you will find of interest an article on clutches in SUPPLEMENT 1448.

(9548) W. H. D. asks: Have you a SUPPLEMENT which fully gives the cubical difference in pipes and their capacity for delivering water under given pressure or fall, say 10 feet to 100 feet to run? I confess the most abject ignorance of a principle, and I know there is one; for instance, the difference in the carrying capacity of a ⅜ and ½ pipe, ⅞ and ¾, etc. I notice my pipe, ⅜ new lead, 35 rods, 67 feet fall, gave me (old-fashioned milk measure) 1 quart in 19 seconds; the decline continuous, but I am not helped out on the point I am after, for the ½-inch lead pipe, same fall, only favors me about 5 seconds. A. We refer you to an article on the flow of water through pipes, in SUPPLEMENT No. 791, price ten cents mailed. The question of determining a quantity of water which will flow under a given head from a long pipe is a very complicated one, because the coefficient of friction is not constant, but varies with the size of the pipe and the velocity of flow. The formula which is usually used to determine the velocity at the further end of the pipe is as follows:

$$h = \frac{v^2}{2g} \times \left(l + 4f \times \frac{l}{d}\right).$$

Where h = the head in feet.
v = the velocity in feet per second.
g = 32.2.
l = the length of the pipe in feet.
d = the diameter of the pipe in feet.
f = the coefficient of friction.

The value of f varies from 0.008 to 0.006 for a 3-inch pipe, as the velocity of flow in the pipe increases from 1-10 of a foot per second to 20 feet per second; while with a half-inch pipe it varies from 0.0150 to 0.006 under the same circumstances. From the above you can roughly estimate the proper coefficient of friction for a given pipe and a given velocity. Substitute this coefficient of friction in the formula given above, and determine the velocity with which the water will issue from your pipe at the further end by solving the equation for v. When the velocity is known, the quantity may be determined by the formula:

$$Q = 0.78d^2v.$$

Where Q = the flow of water in cubic feet per second, and d = the diameter of the pipe in feet.

(9549) M. E. asks: I want a book that will explain to me how the megaphone works. You sent me your catalogue of scientific books, and I fail to find such a thing in it. It is an instrument that will magnify sound, somewhat resembles an opera-glass. A. A megaphone is simply a very much enlarged horn, with a mouthpiece into which one may talk or shout. The horn directs the sound out in a narrow lane in the direction in which it is pointed. It is simply a speaking trumpet of olden time employed to direct the sound of a phonograph. From this it has passed into quite general use by people who need to be heard a longer distance than the voice can be heard if it spread out from the mouth into a sphere, as it will do if not prevented from doing so. A megaphone may be made of cardboard or stiff paper or metal.

NEW BOOKS, ETC.

A HISTORY OF COLUMBIA UNIVERSITY. 1754-1904. New York: Columbia University Press, The Macmillan Company agents, 1904. 8vo.; pp. 493. Price, $2.50.

The present volume was published in commemoration of the one hundred and fiftieth anniversay of the founding of King's College. A complete history of any university is of value, not only to its alumni, but to the general reader as well. The dignified position held by Columbia is exemplified in the work before us. The foundation of King's College, the various presidents, the development of the university, and the graduate and other courses come in for proper attention.

POULTRY FEEDING AND FATTENING. Compiled by George B. Fiske. New York: Orange Judd Company, 1904. 16mo.; pp. 160. Price, 50 cents.

This work includes the preparation for market, special finishing methods as practised by American and foreign experts, handling broilers, capons, water fowl, etc. The book is adequately illustrated, and will prove useful to all who are engaged in the raising of poultry for profit.

PRIVATE HOUSE ELECTRIC LIGHTING. By Frederic H. Taylor. London: Percival Marshall & Co., N. D. 16mo.; pp. 128. Price, 40 cents.

A popular handbook of modern methods in wiring and fitting, as applied to private houses, including a chapter on small generating plants. The practice is of course English.

ELEMENTS OF YACHT DESIGN. By Norman L. Skene, S.C. New York: The Rudder Publishing Company, 1904; 8vo.; pp. 86. Price, $1.

This work is a compact and practical presentation of the processes involved in designing the modern yacht. We have long felt that there was a place for a work of this character, in which modern methods of design and modern materials of construction are explained and illustrated. The work is not overburdened with mathematical and theoretical presentations, and the methods shown may be readily understood by men who are not favored with technical training. The various operations involved in designing a sailing yacht are illustrated by giving the work necessary in the design of a 30-foot waterline sloop, whose working plans are given in full in several full-page plates. The complete data for the design are given in the appendix.

LAIRD & LEE'S VEST POCKET WEBSTER PRONOUNCING DICTIONARY. 27,500 Words. Chicago: Laird & Lee. 24mo.; pp. 199. Price, cloth, 25 cents; leather, 50 cents.

SUBJECT LIST OF WORKS ON THE FINE AND GRAPHIC ARTS (INCLUDING PHOTOGRAPHY) AND ART INDUSTRIES IN THE LIBRARY OF THE ENGLISH PATENT OFFICE. London: Published at the Patent Office, 1904. 32mo.; pp. 374. Price, 25 cents.

This list comprises 2,916 works and (189 serials, 2,727 text books, etc.), representing some 5,373 volumes. The catalogue entries relating to these works number 3,645 and are distributed under 518 headings and sub-headings.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending February 21, 1905

AND EACH BEARING THAT DATE

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

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