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. 814.—For manufacturers of type foundry machines.

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

Inquiry No. 815.—For latest machine for making spring mattresses; also for all-cotton-and-husk mattresses with cotton top.

TURBINES.—Leffel & Co. Springfield, Ohio, U. S. A.

Inquiry No. 816.—For typewriter ribbons before they are inked.

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

Inquiry No. 817.—For hair cloth to be used in absorbing oil on machinery.

WATER WHEELS. Alcott & Co., Mt. Holly, N. J.

Inquiry No. 818.—For a motor about 1-6 horse power wound for 110 volt alternating current.

Yankee Notions. Waterbury Button Co., Waterb'y, Ct.

Inquiry No. 819.—For first class machine to apply, with two wires, solid rubber tires to vehicle wheels.

Machine chain of all kinds. A. H. Bliss & Co. North Attleboro, Mass.

Inquiry No. 820.—For a knitting machine with four or six needles.

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

Inquiry No. 821.—For plaiting machines for plaiting silk braid.

Sheet Metal Stamping: difficult forms a specialty. The Crosby Company, Buffalo, N. Y.

Inquiry No. 822.—For a firm engaged in cutting tinfoil letters from metal letter dies.

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

Inquiry No. 823.—For telephones suitable for operating an exchange.

For Sheet Brass Stamping and small Castings, write Badger Brass Mfg. Co., Kenosha, Wis.

Inquiry No. 824.—For manufacturers of pressed wrought steel baskets (one-half bushel).

Rigs that Run. Hydrocarbon system. Write St. Louis Motor Carriage Co., St. Louis, Mo.

Inquiry No. 825.—For manufacturers of fans for cooling purposes run by a spring.

Ten days' trial given on Daus' Tip Top Duplicator. Felix Daus Duplicator Co., 5 Hanover St., N. Y. city.

Inquiry No. 826.—For the present address of the manufacturers or dealers in "The De Muth Dough Kneader and Beaten Biscuit Machine."

SAWMILLS.—With variable friction feed. Send for Catalogue B. Geo. S. Comstock, Mechanicsburg, Pa.

Inquiry No. 827.—For a list of manufacturers of oil filters.

Wanted—Punch and Die Work, Press Work and light Manuf'g. Daugherty Novelty Works, Kittanning, Pa.

Inquiry No. 828.—For a machine to sew with linen thread an article made of fine tempered tinned wire.

Machine Work of every description. Jobbing and repairing. The Garvin Machine Co., 149 Varick, cor. Spring Sts., N. Y.

Inquiry No. 829.—For a soldering-flux for soldering aluminium.

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

Inquiry No. 830.—For manufacturers of fire apparatus for a village.

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.

Inquiry No. 831.—For machines for making seamless tin boxes.

WANTED—Partner to furnish money for patenting a useful invention. For particulars address A. Paul, 650 Third Ave., Brooklyn.

Inquiry No. 832.—For parties to make a special steel gauge.

Wanted an expert Asphalt Mining Engineer to accompany me to Mexico at once. Address C. & Y., 31 Nassau Street, N. Y.

Inquiry No. 833.—For manufacturers of small aluminium castings.

Position as Supt. by a practical Mechanical Engineer capable of handling men to a good advantage and reducing costs by labor-saving devices. Will purchase an interest in a reliable concern. C., Box 773, N. Y.

Inquiry No. 834.—For manufacturers of acetylene gas plants for lighting cities.

WANTED—Salesmen, also Engineers, to use and handle a fine specialty required by steam plants. Good pay and satisfaction guaranteed. Outfit free. Write for full particulars. Give home address. H. C. Myers & Co., 100 River Street, Cleveland, O.

Inquiry No. 835.—For manufacturers of pure Banca tin and genuine hardening.

Valuable Patents For Sale—The following patents, to wit: (1) Cork-screw, (2) Combination Lock, and (3) Locking Stop Cocks for trains using the Air Brake System. Must be sold at once, in order to settle estate of patentee, who is now dead. Excellent patents. Apply to undersigned for information.

L. J. LAWRENCE, Administrator,
Murfreesboro, N. C.

Inquiry No. 836.—For miscellaneous tools and supplies for beet sugar factories.

☞ 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. 837.—For a 100 horse Corliss engine of special dimensions.

Inquiry No. 838.—For small belt-driven power hammer with blow of 75 pounds and stroke of 10 inches.

Inquiry No. 839.—For manufacturers of pneumatic springs for railway coaches and other vehicles.

Inquiry No. 840.—For novelties for the mail order business.

Inquiry No. 841.—For a "Gill" plant for extracting sulphur.

Inquiry No. 842.—For appliances for refining sulphur and for grinding "virgin rock" sulphur, also for sifting and producing ground sulphur (flour sulphur).

Inquiry No. 843.—For telegraph operators.

Inquiry No. 844.—For parties to manufacture a gas lamp made of sheet brass and galvanized iron.

Inquiry No. 845.—For dealers in an attachment to be applied to gas pipe to cause the gas to flow through a tank of gasoline.

Inquiry No. 846.—For cider-making machinery.

Inquiry No. 847.—For machinery for manipulating coffee, maize, sugar, etc.

Inquiry No. 848.—For apparatus to compress sulphurous acid gas commercially.

Inquiry No. 849.—For makers of hard gray felt.

Inquiry No. 850.—For punching machinery for punching out mittens by means of dies.

Inquiry No. 851.—For manufacturers of patent ladies' glove fasteners.

Inquiry No. 852.—For manufacturers of fancy leather.

Inquiry No. 853.—For manufacturers of refrigerating plants.

Inquiry No. 854.—For manufacturers of apparatus for burning petroleum in furnaces.

Inquiry No. 855.—For improved woodworking machinery.

Inquiry No. 856.—For manufacturers of small stationary boilers and engines.

Inquiry No. 857.—For manufacturers of tracing wheels.

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.

(8206) The K. Pub. Co. ask: How can copper be mixed in Babbitt, if it can be done? A. Good Babbitt metal contains copper. If you wish to add more, use copper filings, put in the bottom of the crucible, Babbitt on top, and cover with common soda; melt and stir.

(8207) F. R. M. asks: Can ice on a pond have a temperature below 0° C.? Why or why not? A. Ice is a very poor conductor of heat. The water under the ice in contact with it is at a temperature of 0° C. at all times. Below that the water rises from 0° C. to 4° C. If the ice is sufficiently thick we see no reason to doubt that its upper surface may be even below 0° C. when the lower surface is at 0° C. 2. If the pond is frozen clear to the bottom, can the temperature of the ice go below 0° C.? A. Ice has a specific heat about one-half that of water; that is, it will cool twice as readily. After ice is formed it behaves like any other solid; it may be cooled far below its point of freezing, just as iron or lead can. A piece of ice lying in the air at 40° below zero comes to be itself 40° below zero, of course. We very often meet the idea that ice must remain at the freezing point. Why should it? 3. In the lower illustration on page 49, SCIENTIFIC AMERICAN, January 26, 1901, why is the load on the forward large driving wheel placed on the same side as the coupling rod? Should it not be at the other end of the diameter? A. The counterbalance shown on the forward driving wheel is opposite to the driving crank on the inside, not shown. It is very light, and with the outside connecting rod counterbalances the inside driving crank and rod.

(8208) H. C. A. writes: In query 8068 F. L. asks concerning Avogadro's law and water. Is your reply correct, considered in the light of modern chemistry? No allowance has been made for the degree of electrolytic dissociation of the H_2O molecules—$HLIIO + H_2O$ is not apparently considered, and you are probably aware that Avogadro's law never quite answered until the electrolytic dissociation factor corrected the error. A. The authority for the answer to which exception is taken was Remsen's "Chemistry," latest edition. Is there any better? We might cite also Lupke's "Elements of Electro-Chemistry," Walker's "Introduction to Physical Chemistry," Speyer's "Text-Book of Physical Chemistry" to the same purport. Nor does it seem that the discovery of electrolytic dissociation can have any bearing on the truth or falsity of Avogadro's hypothesis, since electrolytic dissociation was active and a fact when Avogadro discovered the statement which bears his name. Avogadro's law was inclusive of all the facts of the case, known or unknown.

(8209) A. D. asks: Can I convert a spark coil into an induction coil, and how? A. It is not advisable to try to convert a spark coil into an induction coil. You would better start new and make an induction coil. Our SUPPLEMENT No. 1124, price ten cents, describes one which gives a spark 6 inches long. Bonney's "Induction Coils," price $1, by mail, contains plans for coils of a variety of sizes.

(8210) L. L. C. asks for a solder for aluminium. A. A good solder for aluminium is an alloy of 50 parts cadmium, 20 parts zinc, 30 parts tin. Another: 45 parts tin, 10 parts aluminium. In alloys of cadmium and aluminium 15 to 30 per cent of cadmium has been used for solder.

(8211) J. H. L. writes: A friend and myself are interested in the telephone and we would like to know what the Ader receiver and relay are, or are there any other apparatus by Ader? On these points we would like to have more information. Where can we get it? A. The Ader transmitter is a multiple transmitter, and the Ader receiver is a bipolar receiver. They are described in Miller's "American Telephone Practice," price $3 by mail, a book which should be in the hands of every student of the telephone.

(8212) M. F. K. asks: 1. Can you give a rule for figuring the way to build transformers, i.e., the number of turns, size of wire, etc., for any current? A. The designing of a transformer for any current cannot be covered by a single rule. There are other factors to be taken into account besides the ordinary resistance. We can recommend Kapp's "Transformers for Single and Polyphase Currents," price $1.75 by mail. 2. When resistance is put in a circuit does it reduce the amperage proportionately as the voltage? A. Resistance added to the circuit of a direct current reduces the amperes, but not proportionately to the added resistance. The current follows Ohm's Law, $C = E/R$. R is the sum of all the resistances of any sort in a circuit. The added resistance is only a part of the total resistance, and the amperes should be figured from the resistances and the volts. The total voltage has no dependence upon the resistance. The rate of drop of voltage between two points on a circuit does vary as the resistance between those points. In alternating current circuits another factor is added to the problem, namely, the self-induction of the circuit. So that the apparent resistance of an alternating circuit is greater than its ohmic resistance. See chapter on alternating currents in Thompson's "Elementary Lessons," price $1.40 by mail. 3. Is a Daniell battery the best for general purposes and what are its faults for general uses? A. The Daniell's cell is not much in use at the present time. It has been superseded by the gravity cell, which has exactly the same elements and materials, except that no porous cup is used. For this reason the internal resistance of the gravity cell is less than that of the Daniell's cell. Its great value lies in the steadiness of the current it gives, because of its complete depolarization, so that it may remain in circuit throughout its life; its fault, if that term is admissible, is the small amount of current given. 4. How can I make a voltmeter with a fine compass and some No. 36 double-covered copper wire? A. A voltmeter is a galvanometer whose scale is marked in volts by comparison with a standard. Make your galvanometer and graduate it by some one's voltmeter. We should not advise a voltmeter made with a compass as an index. A coil of wire to swing in a magnetic field is the usual form employed. See SUPPLEMENT No. 1215, price ten cents.

(8213) I. S. W. asks: 1. Why will the earth act as return on a long circuit and will not do so on a short one? A. The earth will act as a return for a short circuit as well as for a long one, provided the ground is as good in one as in the other. 2. What is the voltage of the smallest shunt-wound dynamo used for lighting purposes, under the same conditions as enumerated on page 134, SCIENTIFIC AMERICAN, May 2, 1901? What size wind-mill would be required to run the above dynamo? 2. The ordinary voltage of incandescent lamps is from 52 to 115, and the dynamo must furnish the voltage of the lamps plus the drop in the line. The windmill in the account referred to had a wheel 35 feet in diameter and a sail area of 90 square yards. 3. Have thermo-electric piles been built giving 1 to 2 volts? A. Yes.

(8214) C. R. H. asks: Would ebonite be suitable for the plates of a Wimshurst machine? A. Yes.

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