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. 3772.—For manufacturers of single-trees for tramwork.

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

Inquiry No. 3773.—For manufacturers of carbon cylinders.

Coin-operated machines. Willard, 284 Clarkson St., Brooklyn.

Inquiry No. 3774.—For makers of rolled zinc for battery purposes.

Dies, stampings, specialties. L. B. Baker Mfg. Co., Racine, Wis.

Inquiry No. 3775.—For dealers of salammoniac and commercial sulphuric acid in large quantities.

Blowers and exhausters. Exeter Machine Works, Exeter, N. H.

Inquiry No. 3776.—For manufacturers of dies and punches for working sheet iron.

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

Inquiry No. 3777.—For makers of small motor castings.

Manufacturers agricultural implements for export. Hobson & Co., 17 State Street, New York.

Inquiry No. 3778.—For pressed brick machinery.

Let me sell your patent. I have buyers waiting. Charles A. Scott, Granite Building, Rochester, N. Y.

Inquiry No. 3779.—For roofing for a gas plant which is fireproof and acidproof.

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

Inquiry No. 3780.—For makers of springy rubber cushions for billard and pool tables.

We make anything in sheet metal, any shape. Estimates free. Metal Stamping Co., Niagara Falls, N. Y.

Inquiry No. 3781.—For a machine or device to take a person's measurements from head to foot.

WANTED.—Parties to manufacture patented specialties. The Annetta Manufacturing Co., Pittsburg, Pa.

Inquiry No. 3782.—For manufacturers of leather-board.

FOR SALE.—Broaching or drawing press at a bargain. Pratt & Whitney make. Samuel Hall's Sons, 229 West 10th Street, New York.

Inquiry No. 3783.—For an attachment for boiler cleaners, consisting of an incandescent lamp cord socket with a permanent magnet attached to the back of the socket, adapted to be attached to any part of the boiler.

Automobiles built to drawings and special work done promptly. The Garvin Machine Co., 149 Varick, cor. Spring Streets, New York.

Inquiry No. 3784.—For a device for the rapid manufacture of artificial ice.

Manufacturers of patent articles, dies, stamping tools, light machinery. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.

Inquiry No. 3785.—For a second-hand, foot power, screw-cutting lathe.

Crude oil burners for heating and cooking. Simple, efficient and cheap. Fully guaranteed. C. F. Jenkins Co., 1103 Harvard Street, Washington, D. C.

Inquiry No. 3786.—For adjustable show-case brackets and standards.

The largest manufacturer in the world of merry-go-rounds, shooting galleries and hand organs. For prices and terms write to C. W. Parker, Abilene, Kan.

Inquiry No. 3787.—For the gasoline valve called the "A. P. Brush Mixing Valve."

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. 3788.—For a 4½ or 5 Barnes lathe, second-hand in good order.

WATER POWER FOR SALE.—Reliable 1,500 horse power located in State of New York. Owner would equip and rent power. Davidson, Box 773, New York.

Inquiry No. 3789.—For makers of rough and finished castings for small dynamos and gas or oil engines of ½ to 3 horse power and turbines for the same power.

We manufacture anything in metal. Patented articles, metal stamping, dies, screw mach. work, etc. Metal Novelty Works, 43 Canal Street, Chicago.

Inquiry No. 3790.—For the manufacturer of the Magic Barber.

Wishing to add a few desirable lines to a well-established manufacturing business, I should like to hear from inventors having good patents to sell.
J. C. Christen,
Main and Dock Sts., St. Louis, Mo.

Inquiry No. 3791.—For dealers in heading for barrels and kegs.

FOREMAN WANTED.—Must be thoroughly competent and up-to-date. Familiar with die-making and the manufacture of a large variety of small metal goods, and must be capable of independently running a plant employing thirty men. Located in Chicago. State experience and give references. Address F. O., care of Scientific American.

Inquiry No. 3792.—For a brick machine for light power to work on cheap scale.

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.

Inquiry No. 3793.—For makers of paper bag making machinery.

☞ 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. 3794.—For a spiral spring for opening water closet traps.

WANTED.—List of companies that manufacture railway devices for $1.00. M. Wicks, Box 493, Babylon, Long Island, N. Y.

Inquiry No. 3795.—For a gas burner that works by expansion and contraction.

TIMBER SEASONING AND CREOSOTING.—Representative from England with most valuable patent rights to dispose of, will be in New York about middle of February. Seasons timber perfectly in 48 hours and adopted for largest British government contracts. Reply "Timber," c. o. P. O. Box 1816, New York City.

Inquiry No. 3796.—For manufacturers of ice machines.

Inquiry No. 3797.—For makers of and dealers in small engine castings.

Inquiry No. 3798.—For a ¼ horse power, high-grade steam engine.

Inquiry No. 3799.—For makers of canvas trunks.

Inquiry No. 3800.—For machinery for the manufacture of spoons.

Inquiry No. 3801.—For machinery for a carpet and rug factory.

Inquiry No. 3802.—For a small air motor or engine with suitable compressor for same, not to exceed ½ h. p.

Inquiry No. 3803.—For a small electric novelty fan.

Inquiry No. 3804.—For parties handling small special shaped pieces of hard fiber.

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.

(8824) B. E. Co. asks: What kind of solder can be used to solder iron to iron that will in no way be affected by contact with quicksilver? Are there any other cheap metals besides iron that quicksilver will not affect? A. We know of no kind of solder which would not be more or less affected by mercury. Zinc and lead, which are the only other cheap metals, are both affected by mercury. Copper likewise.

(8825) A. M. says: In the wireless telegraphy transmitter illustrated in your paper of September 14, 1901, you illustrate a coil with a ½-inch spark. How much larger one would be necessary to telegraph 20 miles or so? How many more batteries would you need? Could you use five or six type S Edison-Lalande batteries instead of Bunsen or Grenet? Does increasing the height of the air wire, or putting a copper reflector on the opposite side of the aerial plate from which you wish to send your message, enable you to send a message much further? In your paper of July 5, 1902, you illustrate a receiver. How many more batteries would you need to receive a message from 20 miles or so? To what resistance should the receiver be wound? Is the coherer large enough for that distance? The distance is over land. A. The apparatus for use in wireless telegraphy depends much upon the surface over which the messages are to be sent. It can be said however that a coil giving a 10-inch spark should be able to transmit to a distance of 20 miles over land. Probably six to eight Edison-Lalande cells will work such a coil to full length of spark. If they should not do so, more cells must be added. As the cells run down more will be required than when they are freshly charged. The aerial wire for a distance of 20 miles should be 90 feet high. We are not able to give any data respecting copper plates as reflectors for the waves. The receiver does not need any more battery to receive from one distance than from another. If the signals are strong enough to affect the coherer, they will be received. The receiving apparatus described in our issue of July 5, 1902, does not contain any coil at all. It receives by the ordinary telephone, and the action of the coherer does not depend upon its size, but upon the strength of the signals at the transmitting station. These depend upon the spark of the induction coil and the height of the wires at both stations.

(8826) T. J. writes: Will you please inform me how to bleach yellow feathers white on a live bird? A. Peroxide of hydrogen is the only chemical that can be used on a *live* bird without danger to the animal. This chemical is the one that is extensively used for bleaching hair.

(8827) J. E. R. inquires whether or not a current water-wheel under a 3-foot hydraulic pressure, with paddles 10, 12 or 16 feet long by 3 or 4 feet wide, will run a 12-inch centrifugal pump, elevating water all told 12 feet (total lift 12 feet). The average fall of the stream is 10 feet per mile and it has a velocity of 6 feet per second. The diameter of waterwheel any size you may suggest. What would be the horse power of a current water-wheel, length of paddle 14 feet long by 4 feet wide, and 16 feet in diameter? A. The 14-foot wide current wheel as described should give you 36 horse power, and with a good centrifugal pump should raise 6,000 gallons of water 12 feet high per minute.

(8828) T. W. L. writes: We have a machine in operation used for hulling oats, consisting of metal plates covered with a composition consisting of emery powder, another powder and a liquid. This composition requires constant renewal at considerable expense, and we would be very much obliged indeed if you could give us a formula or put us in the way of securing it. A. One of the best cements for fixing emery to wheels, and much in use, is a thick glue—the best light-colored glue that can be obtained—and a strong solution of bichromate of potassa. While the glue is hot and ready to be used, pour in and stir one tablespoonful of the bichromate to a quart of the glue. Quickly apply to the surface and sprinkle the emery over the surface.

(8829) H. B. asks: At how many revolutions a minute could a solid cast-iron disk be run with safety—the disk having the following dimensions: Diameter, 5 feet 6 inches; thickness at hub, 4 inches; and tapering to ¼ inch thickness at the rim. We mean, of course, if this were running free, and were not acted on by any other forces except centrifugal force. A. The disk may be run at a speed of 550 revolutions per minute with a safe factor of from 5 to 6, depending upon the quality of the iron. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 891, on centrifugal force as applied to revolving machinery; 10c. mailed.

(8830) S. R. D. writes: Some time ago you published a formula for softening steel. A. To make steel very soft, heat to a full red for a few minutes, let it gradually cool until it turns black, then quench in warm water.

(8831) W. L. L. writes: In connection with my planing and lumber mill I have hundreds of tons of sawdust and shavings from the planers that I would like to utilize, but lack the necessary knowledge as to how to do it. I have been informed that you can give me the desired information as to what kinds or forms of petroleum or other material, and what kinds of machines, and where obtained, that it would be necessary to use in working this refuse up into marketable fuel. A. Mill shavings and sawdust have been compressed with coal tar, resin, or anything that will make the material stick together, but have been found too expensive unless other fuel was at very high price. In woodworking factories in the Eastern and Middle States, the whole product of the mill is burned under the boilers by enlarging the fire chamber by lowering the grate. Sawdust drawn to a bin by a fan blower, and wet by a water spray just enough to fix the dust, is shoveled directly into the fire chamber. Clean shavings are much utilized by baling and selling to stables for horse bedding.

(8832) H. N. B. writes: Will you kindly answer the following questions: 1. Would a wooden box, coated thickly with paraffin on the inside, do for a very small storage battery cell in place of hard rubber, or guttapercha, and if not, what could be used to coat the box? A. The wooden box will make a good storage battery cell. The box should be well saturated with the paraffin by a hot iron run over the surface. 2. Could a small 3-foot windmill be used to compress air into a small galvanized iron tank, to supply a blowpipe which is used very rarely, and only for short intervals; if so, what size pump and tank could be used? A. A 3-foot windmill will operate a bicycle pump with sufficient pressure for a blow-pipe. A tank of 3 cubic feet should answer the purpose. 3. How many cells of gravity battery would it take to charge a small two-cell pocket accumulator? A. The number of battery cells should correspond with the number of volts with an excess that you require in the accumulator.

(8833) M. J. L. asks how to ascertain the area and square inches and pounds upon the seat of an inch and one-half safety valve, that blows at 80 pounds, and how the decimal 0.7854 is got, and what kind of measurement for getting same. A. The area of the safety valve is the square of the diameter multiplied by 0.7854, which is the proportion of the area of a square to a circle of the same diameter. The area multiplied by 80 pounds is the total pressure. See Le Van's book on the safety valve, $2 by mail, which gives full details and computations for pressure, weight, and its place on the beam.

(8834) W. N. P. asks: What metals will expand and contract the most with heat, and at what temperature and to what extent? A. Of the commercial metals, lead, magnesium, and zinc expand most for a given change of temperature. Lead and zinc expand 29 millionths for a change of 1.8 degrees Fahr., while magnesium expands 27 millionths. This is at about 100 degrees temperature. Of course the contraction upon cooling is the same as the expansion on heating.

(8835) F. B. H. writes: 1. If a 16 candle power electric lamp, made to consume 56 watts, is operated on a line where there is a wattmeter connected to measure consumption, will the meter show 56 watts after lamp has been in use an hour? A. A lamp using 56 watts when connected through a wattmeter would cause it to register 56 watts at the end of an hour, and so on for any proportionate time. 2. In the two and three phase alternating systems, where there are three conductors composing the transmission line, it is said that all three wires are active, the pressure being the same between any two. Now, what I want to know is: how does the current return, and which one of the three is the negative conductor. A. In an alternating circuit there is no positive and negative as in the direct current. The current flows alternately through the wire. Each wire is plus and minus as many times per second as there are cycles. If 60 cycles, then 60 times a second each wire is plus and 60 times it is negative. There is no neutral wire in the three-phase circuit. The three wires are to be thought of as at the three corners of a triangle and the phases passing from one to the other. The circuit is completed through the lamps or motors as in any other circuit. In a direct current the ends of the line wires are not joined to each other to complete the circuit.

(8836) L. B. asks how red printing ink may be removed from paper. A. Soak pieces of blotting paper in benzine, turpentine, or ether and apply successively, using each time a fresh clean piece of the blotting paper; this is preferable to rubbing with these solvents, as rubbing tends to spread the ink and also to loosen the fibers of the paper.

(8837) J. J. K. writes: Some plates for flat feet are made of spring steel covered with leather. The sweat of the feet soon rusts the plate. I have used paint and shellac, but they do not do much good. Please let me know what I can use to prevent rusting. A. Try a good copal coach varnish. If it can be done, an enamel baked on the plates will give the best satisfaction.

(8838) L. A. H. writes: I have some fine copper gas fixtures which have been finished with a bright thin coating called antique finish. This coating or polish has been destroyed to some extent by flies and other agencies. I would like to know of a process for restoring this polish to its original condition. A. Thoroughly clean the fixtures with benzine if necessary, and polish with any one of the usual polishes in the market. Then lacquer with the best quality of lacquer to be had, applying it in a thin coat with a soft brush.

(8839) G. L. writes: Can acetylene gas and oxygen be burned together in a calcium jet for lime light, the same as hydrogen and oxygen lime light? And if not, why so? And if so, is it any more dangerous or explosive? A. Acetylene and oxygen can be used for the lime light. Hydrogen is now rarely used; ordinary illuminating gas is used, being sufficiently efficient and much cheaper. There is no more danger when using acetylene, provided the apparatus is in proper order, than with either illuminating gas or hydrogen.

(8840) G. C. asks for a formula for the making of a powder which extinguishes fire. A. Bicarbonate of soda, mixed with 5 per cent to 10 per cent of mineral matter to prevent caking by absorption of moisture from the air, is useful. A mixture of dry bicarbonate of soda and dry sal ammoniac, if kept in a dry place, is still more effective. In confined spaces, as closed rooms, a different type of extinguisher is effective. It is based on the principle of fighting fire with fire. The following formula is good: Niter 60 parts, sulphur 36 parts, and charcoal 4 parts.

(8841) F. V. N. wishes a formula for producing a rich, red color on copper, for umbrella mountings. A. A gradually increasing temperature in a hot-air bath will give a series of colors as follows: Light-burnish orange, red-burnish orange, *rose red,* violet, steely white, light yellow, dark yellow. Both duration of heating and temperature affect the color obtained. As soon as the desired tint is produced, cool rapidly in air or by plunging into cold water. Colored varnishes are also used, but their effect is not permanent. There are various chemical ways of producing red browns, but none for a "rich red."

(8842) G. A. W. writes: I have two dynamos which I wish to make over. No. 1 is an 8-light 110-volt machine with speed at 2,880. It is compound wound. Field winding is of No. 28 and 14 magnet wire; the armature is of No. 20 wire, 18 coils and 30 turns to the coil. Size of armature 3¾ inches diameter by 3¼ inches length. I wish to make the speed 1,500 and get the 8-light 110-volt out of it. Can I use a grooved armature core? And what size wire shall I use? How many coils? Can I leave the field windings the same as now? No. 2 is a 20-light 75-volt, speed 2,400. I wish to make this 110-volt, speed 1,200. The winding of this machine is compound; the fields are wound with No. 21 and No. 10 magnet wire. The armature is wound with No. 14 wire; size of armature 4¼ by 6 inches. I wish to use a grooved armature core; what size wire shall I use for the armature, and how many coils? I want to leave the field winding as it is now. A. Since you wish to run your dynamos at one-half the speed and still retain the same voltage, it will be necessary to double the number of coils in the armature and put the same number of turns in each as at present; also to rewind the field, using twice the present number of turns, with wire of one-half the cross section of the present winding. In the shunt coil No. 31 B. & S. will answer the purpose. The machine will not then give the same output in amperes. The proper mode of reducing speed is to increase the number of poles in the field. A four-pole machine may run at half the speed of a two-pole machine for same voltage. You will find plans for one, two, and three horse power machines, four-pole, direct current, drum armature, slotted core, as you wish, in the new book of designs, called "Electrical Designs."