

## 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 &amp; CO.

Marine Iron Works. Chicago. Catalogue free.

**Inquiry No. 8480.**—Wanted, address of a manufacturer of a machine for making wooden meat skewers.

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

**Inquiry No. 8481.**—Wanted, manufacturers of elastic bands for hose supporters.

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

**Inquiry No. 8482.**—Wanted, manufacturers of portable fire-wood saws.

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

**Inquiry No. 8483.**—Wanted, the addresses of the Birkeland E. Y. de Process, also the apparatus for the artificial production of nitrates.

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

**Inquiry No. 8484.**—Wanted, machinery for carding, spinning and making twine, rope and plaited cord, from cotton, mohair and Angora goat hair.

I sell patents. To buy, or having one to sell, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.

**Inquiry No. 8485.**—Wanted, rotary engine for oil or alcohol.

Headquarters for new and slightly used machinery, Liberty Machinery Mart, 138 Liberty Street, New York.

**Inquiry No. 8486.**—Wanted, makers of typewriter ribbons.

Metal Novelty Works Co., manufacturers of all kinds of light Metal Goods, Dies and Metal Stampings our Specialty. 43-47 S. Canal Street, Chicago.

**Inquiry No. 8487.**—Wanted, manufacturers of devices controlling valves by electricity.

The celebrated "Hornsby-Akroyd" safety oil engine. Koerting gas engine and producer. Ice machines. Built by De La Vergne Mch. Co., Ft. E. 138th St. N. Y. C.

**Inquiry No. 8488.**—Wanted, machines for grinding graphite and pulverizing minerals.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machine work and special size washers. Quadriga Manufacturing Company, 18 South Canal St., Chicago.

**Inquiry No. 8489.**—Wanted, second-hand drop hammer heads.

**Inquiry No. 8490.**—Wanted, manufacturers of electrical heating appliances.

**Inquiry No. 8491.**—Wanted, a power punch about 20 inches to 24 inches throat and punch a 1/2 inch hole in 1/2 inch iron, new or second hand.

**Inquiry No. 8492.**—Wanted, manufacturers of croquet supplies.

**Inquiry No. 8493.**—Wanted, a mill for shredding and grinding alfalfa hay into ground feed.



## 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.

(10221) A. H. asks: Please describe how salammioniac is obtained or produced. A. Salammioniac is prepared from the ammonia water of the gas works, by the addition of hydrochloric acid.

(10222) E. B. S. writes: I have a dynamo that gives 25 volts and will light two 16-candle-power lights. Must the light be rated at 25 or will it light two 110-volt lamps and how many one-candle-power lamps of 100 volts will it light? A. Your dynamo, rated at 25 volts, will do anything which a pressure of 25 volts will do, but it cannot do work requiring 100 volts. It cannot light any 110-volt lamps. The lamps for this dynamo must be 25-volt lamps.

(10223) E. L. S. asks: What is the voltage of the hand-power dynamo in "Experimental Science" when wound as directed with No. 16 wire on fields and No. 18 armature? What sizes of wire should be used to give an E.M.F. of 25 volts? About how much wire will be required in each case? A. The hand-power dynamo gives about 3 amperes at 12 volts. The voltage would be doubled by doubling the number of turns on the field. For the field as designed, about 5 1/2 pounds of No. 16 B. & S. wire are required, and for the armature about 1/2 pound No. 18 is required.

(10224) J. W. J. asks: Have you plans in any of your SUPPLEMENTS of a dynamo that will charge storage battery described in SUPPLEMENT No. 1195? If so, state what number or numbers? A. The dynamo described in SUPPLEMENT No. 600, price ten cents, will charge the storage battery of SUPPLEMENT No. 1195.

(10225) A. W. P. asks: 1. I am building a 10-inch spark coil, and wish to insulate it with some kind of oil. I have allowed an inch space between primary and secondary, in addition to a thin fiber tube enveloping the primary. I have tested linseed oil (boiled) and kerosene, finding the latter a somewhat better insulator; but the odor is more objectionable. Can you advise me on the subject? A. Any heavy petroleum oil is a good insulator for a coil immersed in it. We do not know how to get rid of the odor of any oil. If inclosed in a tight box the odor will not be perceived very much in the room. 2. I have seen several accounts of Roentgen rays producing acute dermatitis and causing the hair to fall out. Will you please explain to what extent this danger exists, and what means, if any, may be taken to prevent its occurrence? A. The danger of producing X-ray burns is very imminent if the operator is inexperienced or the tube is not properly shielded. The best mode of avoiding these burns is to have an apparatus which will do its work so quickly as to not produce them. It is, however, prudent to cover the patient in the parts exposed to the rays with a piece of aluminium foil which is grounded to a gas or water pipe or has a wire carried to earth. 3. In an interrupter where the circuit is quickly broken under water, is it necessary that the contacts be made of platinum? A. The same heat is produced in breaking a certain current under any circumstances. If water is interposed the heat is carried away more readily, but the spark and heat of the break is able to burn the wire, and platinum should be used for the terminals.

(10226) J. E. P. asks: 1. In substituting a button to throw the drop at the central telephone station, how many Mesco dry cells will be required instead of the magneto-electric machine usually used in small towns? A. This depends upon the distance from the central, and the number of telephones in series if the line is a party line. It may be that a small number will do the work. Experiment is the solution probably in this case. 2. What cells would you consider preferable for this charge? A. There are a number of dry cells differing but little from each other. We have no recommendation to give to one of these over another.

(10227) G. S. T. writes: Will you kindly give me your opinion of the following statement made here to-day: That a cube of iron one inch square, being dropped overboard at the greatest known depth of the ocean, would not sink to the bottom, but that there is a depth where it would be held in suspense. A. The cube will drop to the bottom of the ocean at the greatest depths. Anything that is heavier or has a greater specific gravity than salt water sinks to the bottom at all depths. The compressibility of sea water is only about 0.00044 of its bulk per atmosphere of pressure and not materially denser at great depths; thus at a depth of a mile its density would be only about 1-130 greater than at the surface. Sand and mud sink to the bottom of the ocean at great depths, and shells are dredged from the deepest seas.

(10228) C. R. M. asks: I want to get the table for carrying capacity of copper wire and German silver wire. I have seen tables run as fine as 26 B. & S. gage, but not any finer. I would like to get a table or a way to figure for finer wire if possible. I also would like something on the size of wire to use on motors and dynamos. A. A finer wire than No. 18 has no carrying capacity, since its use is not allowed by the fire underwriters for wiring buildings. The wires in dynamos and motors are selected on the basis of 2,000 to 3,000 amperes per square inch of cross section in ring armatures, and even 4,000 amperes in drum armatures. In magnet coils only about 2,000 amperes per square inch is allowed.

(10229) A. L. S. asks: 1. In the engineering notes of your paper for September 28, 1901, there is a paragraph on obtaining oxygen from the air, stating that it can be mixed with water gas for lighting. Is not this an explosive mixture? A. A mixture of oxygen from the air and street gas is explosive in certain proportions; but in the burning of these in a jet the fire cannot get at the mixed gases till they are ready to be burned, as in the calcium light jet. 2. Also, will you kindly give the principle of the Nernst lamp? A. The Nernst lamp employs a thread of a substance like that used in the Welsbach mantle. This, heated to a white heat, gives out light.

(10230) J. N. P. asks: Kindly furnish me with explicit definition of the term "equivalent focus," as applied to a compound photographic lens. Give one or more rules, as free from mathematics as may be, for accurately determining the equivalent focus of such a lens. Is the relation of diaphragm aperture to focal length of a lens based upon the actual or equivalent focus? How can we determine the diameter of the circle of illumination of a lens upon which its covering power is dependent, since this dimension varies with the distance between lens and ground glass? A. The equivalent focus of a photographic combination is "the focal length of the single lens which will produce the same sized image." This focus is measured from the optical center of the lens. It is not the "back" focus. Several methods are given for measuring the equivalent focus in Taylor's "Optics of Photography," price \$1 by mail.

(10231) C. E. D. writes: It seems to me that you have not yet gotten at the gist of my query. I did not assert that the ice would not freeze to the cold spoon, but that it froze to the hot spoon in less time, as has been observed, not only by myself, but by many others under the conditions described by me. My two objects in writing were to bring before your readers a pleasant and simple cooling confection, very cheap, and also to find out why less time was required in connection with the hot piece of metal than if a cold piece was used. It is my belief that a hot spoon shapes the ice and thus gives a better contact and when lifted brings with it more ice than the cold one. This would seem to me to be the proper solution, but it does not alter the fact that of the two spoons introduced at the same moment, the hot one will have the more ice clinging to it when withdrawn. If you did not find this phenomenon, then you have not carried out the experiment as I have regularly done. A. In the question under consideration, the action of chipped ice and sugar mixed upon a hot and a cold spoon, we did not intend to misrepresent your position in the former letter. We quote: "The ice ought to be just as cold and just as liable to attach to the cold spoon as to the hot one—in fact, more so; but it does not do it." This certainly seems to us to say that the ice does not freeze to the cold spoon. As you now say you did not intend it so, we do not insist on the point. It is clear that nothing can freeze to ice till that thing is cooled to the freezing point. It is also clear to us that the ice which is attached to the hot spoon is not frozen to the spoon but simply sticks to it. We note that you now do not say "freeze" to the hot spoon, as you did in former letters, but "the hot one will have the more ice clinging to it when withdrawn." This is quite true, as we observed, but since this clinging ice was not frozen to the spoon at all we paid no attention to it. It simply clung to the spoon by surface tension and capillarity. That was all there was to that. We froze pieces of ice to the cold spoon and to the hot one after it had cooled. The hot spoon, as you say, melts the pieces of ice into better contact and so they adhere to it more closely when it cools. We must confess we do not see any mystery or puzzle in the action. There are many instances in which ice freezes to the object with which it is in contact, if only a thin film, or pellicle of water can come between them. If no film of water can be formed between the two surfaces no freezing will take place. Lumps of dry ice in a place below freezing will not freeze together, unless pressure is exerted to bring them together.

(10232) A. O. asks: Can you furnish drawings and directions for building a small generator for charging storage battery cells, such as are used on automobiles? Have you a revised edition of "Experimental Science"? I have a copy of the 1890 edition. Would like to know where I can buy storage battery plates, etc.—something up to date. A. Our SUPPLEMENT No. 600, price ten cents, gives plans for a dynamo giving 50 volts and about 10 amperes. This would charge twenty cells in series. If you have any such number of cells to be charged this would answer very well for the work. With a smaller number a rheostat may be used to take up the excess of voltage, and so any number of cells in reality may be charged up to twenty, the capacity of the machine. We have not the plans for a machine especially designed for charging batteries.

## NEW BOOKS, ETC.

THREE MEN IN A MOTOR CAR. By Winthrop E. Scarritt. New York: E. P. Dutton & Co., 1906. 8vo.; 267 pp.; 16 ill.

This is an interesting and instructive little volume by the foremost apostle of the automobile in America. Mr. Scarritt has owned and operated more than twenty different makes of cars in the past six years, and his description of his first machine, contrasted with the auto of to-day, shows vividly what progress has been made. The book deals mainly with a trip around Europe in a modern motor car. Not only is it full of descriptions of scenery and the writer's impressions, but it gives much practical advice upon touring and the transport of a car to Europe and back. When en route and stopping at the best hotels, the three men found that it cost them \$12 per capita per day, all expenses included. A good chauffeur can be hired for \$5 a day, for which he will board himself. The book concludes with chapters on early American automobiles and automobile races, and a prophecy of what is to be the future of the automobile in this country.

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Watch it Carefully

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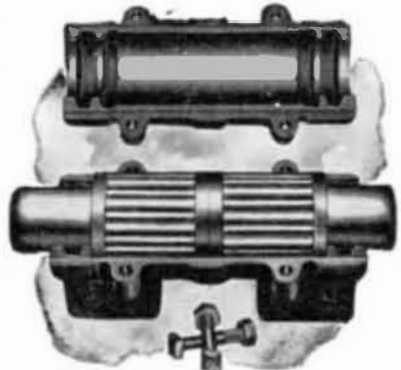
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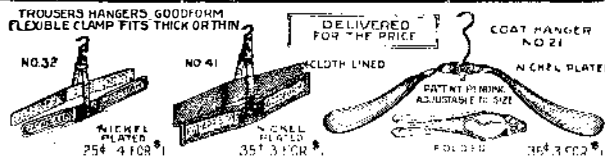
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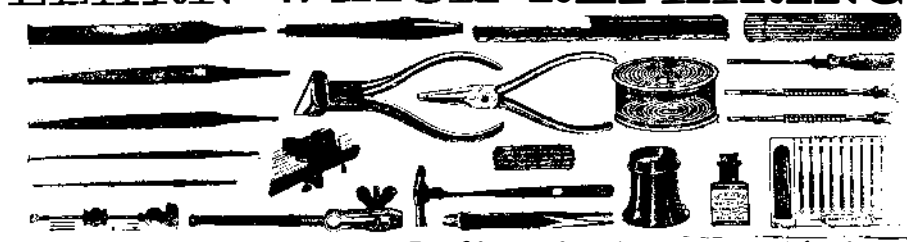
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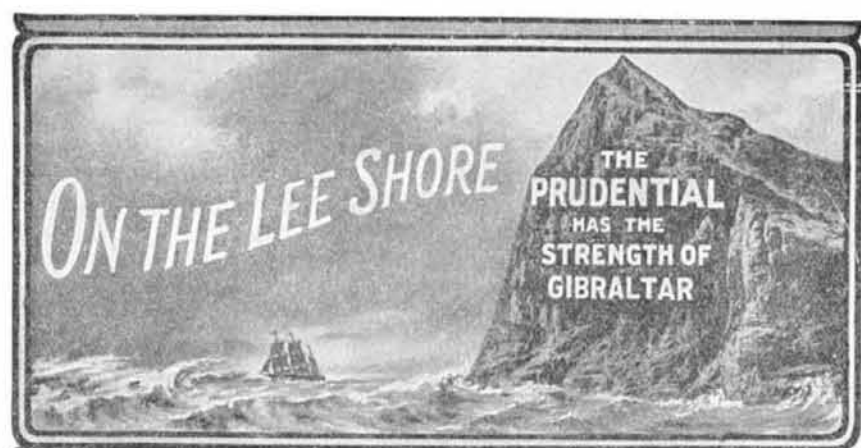
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