

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. 8448.—Wanted, addresses of manufacturers of small articles which sell retail at from 1 to 5 cents.

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

Inquiry No. 8449.—Wanted, a sharpener for mowing machines.

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

Inquiry No. 8450.—Wanted, rivets for use on deformity braces.

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

Inquiry No. 8451.—For manufacturers of gas engine indicators.

Make Alcohol from Farm Products.—New book, \$1.00. Spon & Chamberlain, 123 S. A. Liberty Street, N. Y.

Inquiry No. 8452.—Wanted, manufacturers of frost-proof shipping cases for shipping vegetables such as celery, etc.

I sell patents. To buy, or having one to sell, write Chas. A. Scott, 715 Mutual Life Building, Buffalo, N. Y.

Inquiry No. 8453.—Wanted, the name of the manufacturer of a bolt clipper called the "Champion."

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. 8454.—Wanted, a brush for cleaning soiled or stained oranges.

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. 8455.—Wanted, an apparatus using denatured alcohol for heating and lighting.

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

Inquiry No. 8456.—Wanted, a small battery and motor outfit adapted to run a sewing machine.

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

Inquiry No. 8457.—Wanted, name and address of the manufacturer of the Thomas Arithmetic Machine.

Inquiry No. 8458.—Wanted, manufacturers of selenium cells.

Inquiry No. 8459.—For manufacturers of a machine for making wooden meat skewers.



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.

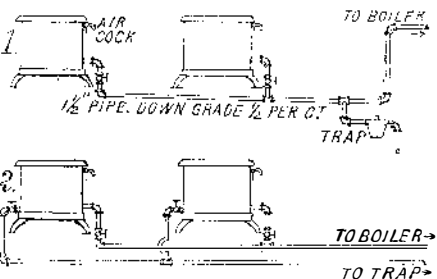
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

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.

(10192) H. W. L. says: Is it possible to heat radiators as here shown (Fig. 1)? Use only one pipe, which drops 8 inches in 150 feet to a trap. Attach live steam at 80 pounds pressure between trap and radiators and have air cocks on top of each radiator.



A. We think that it would be possible to heat radiators in the manner in which you describe, provided the proper apparatus is installed. A much better system, however, is shown in accompanying sketch (Fig. 2).

(10193) C. E. D. writes: Your conclusion about the spoon in the freezing mixture sounds rational. If the facts had been as you assume, I would never have written in the first place. Unfortunately for your view of the matter, the facts are as I stated and not as you assume. You ought to be able to get chipped ice at any soda fountain, which, liberally flavored with sugar and fruit juice, is pleasant eating on hot days. You can therefore both experiment and refresh yourself at the same time. I again repeat that if the spoon is cold (as it can be readily made by stirring the mixture), ice will scarcely freeze to it if allowed to stand still in the mixture for a while; but if the spoon, warm from the mouth, gas jet, or other source of heat, is inserted in the mixture, and allowed to stand

motionless for a second or two, the ice will freeze to it firmly and in large amount. Try it yourself. The reason for this behavior, which I have observed so often, is what I am seeking for. A. Silver is by far the best conductor among the metals. Its specific heat is small. From these two facts it may be inferred that a hot spoon will soon cool to the temperature of ice, and will melt a little but not much ice in cooling through a wide change of temperature. A cold spoon on the other hand will not melt any ice. Now the thin film of water melted by the hot spoon is quickly frozen again in the mass of ice, and in freezing attaches the spoon to the ice, since the film of water is in contact with the spoon which melted it from the ice when the spoon was thrust hot into the ice. The ice is thus frozen to the spoon. Now the cold spoon thrust into the ice comes to the temperature of the ice, and melts no ice. There is no reason why it should have ice attached to it. There is no water on the spoon to be frozen, and no way for the ice to freeze to the cold spoon. Chipped ice and fruit juice is not a freezing mixture as you imply. Its temperature cannot be in the open air below the freezing point of water. It cannot of itself freeze the spoon to the ice, nor would the spoon freeze to the ice unless the ice was quite dry.

(10194) B. B. calls our attention to an error in the comparison of the sensitivity of ordinary lantern-slide plates with that of carbon velox, appearing in Query No. 10775 of the October 13 issue. It is stated in the answer to this query that lantern-slide plates are no more sensitive to light than the ordinary carbon velox. Our correspondent considers this reply incorrect, and states that a lantern-slide plate is about twenty times faster than ordinary carbon velox paper. He finds that with a negative of ordinary density placed twelve inches from a lamp, only about one second or even a fraction of a second is required to secure a good impression, using the ordinary standard developer, while for a velox carbon print something like twenty seconds, with a negative at the same distance from the lamp, would be needed.

(10195) V. B. A. asks: 1. How many volts does a 500-ohm induction coil give with two dry batteries in the primary? A. The output of an induction coil is not rated in volts, but in the length of spark which it will give. You say "a 500-ohm induction coil." We do not know what that means. The voltage in the secondary of a transformer is obtained by multiplying the voltage of the primary current by the ratio of the windings in the secondary to those of the primary. You may get an idea of the effect you can obtain with two dry cells. These have about 1.5 volts each. You have 3 volts at your disposal. If you have 100 turns in your primary and 10,000 in the secondary, you will have 100 times 3 volts in the secondary, or 300 volts. So of any other numbers. 2. How can the number of volts be regulated when used as a medical coil? A. The volts may be regulated by increasing or diminishing the number of cells in the battery. In a medical coil the volts are not changed. The magnetizing effect of the primary on the secondary is controlled by either slipping a metal tube between the primary and the secondary, or by withdrawing the primary from the secondary, till the discharge can be borne. 3. How large a coil would it require for wireless communication for 3 miles, and what SUPPLEMENT describes it? A. SUPPLEMENT 1527 describes a coil giving a 4-inch spark, which will probably communicate over 3 miles of water.

(10196) A. H. asks: Having tie rods of 3/4 iron running through storage battery rooms, tried to overcome the action of acid fumes by covering them with asphaltum, but find it is not invulnerable. A. There is nothing better than asphaltum to withstand the corrosive action of acids. When it gives out, put on another coat.

(10197) F. W. L. asks: Will you please explain where we get the right or authority for the use of the cross in place of the word number. Have never seen in any publication, either book or otherwise, any explanation of its use. A. We are not able to trace the origin of this very useful sign. Perhaps some one of our numerous readers may have some information upon this matter.

(10198) A. H. A. asks: I am fond of mathematics, but have to work daytime, and only at nights I can study. I have tried hard to solve the following problem by calculus, but have been unable to get the correct answer. Will some of your able readers kindly explain in your Notes and Queries and oblige? The problem is as follows: In a given rectangle 20 feet long and 10 feet wide, to lay another rectangle diagonally, the inner rectangle to be 2 feet wide; what will be the maximum length?

(10199) E. R. asks: Can you give an explanation for the following phenomenon? While out hunting last week at half-past five in the morning a severe snow storm came up. We were on a small lake about a quarter of a mile from shore. It was still quite dark. My companion called my attention to a "light" on the end of his gun. I did not see it from my end of the boat. A few moments later I reached in my pocket to get my watch, and I saw that on each of my fingers there was a

small luminous spot, as if the finger had been touched with a phosphorus match. Thinking that I had matches in my pocket I reached in again, took the watch out, and saw that the watch was covered with small spots. There were no matches in the pocket. I dropped the matter, thinking there must have been some there on the previous day, but when I put on my woolen gloves the same light appeared on the tips of the fingers of the gloves. On some fingers it was about an inch in the air, apparently suspended from a loose hair. Looking down into the boat I saw that there was no such light on my feet, but when I raised my foot higher than my head it appeared there. I have never seen anything like it before and could not believe that my observation was correct. I verified it, however, by holding my hand out to my companion and having him point to the lights where he saw them, which was exactly in the same places where I saw them. When he raised his gun in the air vertically the light at the tip became larger, and on moving nearer I could see it distinctly. Once I thought that I smelled ozone, or the characteristic odor of the static machine, on drawing my hand nearer my face. Of this I am not quite certain. I have never seen or heard of anything similar to this and would be obliged to you if you could inform me what it was. A. Your observations concerning the electricity in the air during the storm when you were in a boat are interesting. Sailors call the light seen in this way St. Elmo's Fire. It may be seen in storms at night on the tips of the spars of ships. You will find it described in books. The air was so highly charged with electricity that it charged your person by induction, and fire streamed from the tips of all articles about you. While your feet were below the gunwale of the boat no discharge could take place from them, since electricity does not readily enter the interior of hollow things, but when you raised your foot above the edge of the boat the fire of the discharge appeared upon the tip of your boot.

(10200) C. L. M. asks: 1. In "Home Mechanics for Amateurs," a description is given for making an electric furnace to be used with a 110-volt lighting system current with 20 feet of German-silver wire used for resistance. With a 250-volt circuit how many feet would be required? A. The furnace in "Home Mechanics" uses three arcs. With 250 volts a proportionate number of arcs are required. We should, however, use only 5 arcs with 250 volts and 50 feet of wire. 2. It also states that six or eight 32-candle-power lamps might be used for resistance. If these were used on the 250-volt circuit, how many would be required? A. If your 32-candle-power lamps are for 250 volts, no more will be needed than for 110 volts. You cannot use 110-volt lamps single on a 250-volt circuit. They will burn out. Two can be put in series with a resistance added to take up 30 volts. 3. Could an arc be run with a storage battery? A. An arc light can be run with storage battery by having half as many cells in series as the voltage used by the arc, namely, 25 cells.

(10201) H. B. M. asks: 1. Would it be possible to revolve a glass plate 20 inches in diameter at 50,000 revolutions per second? A. It is very safe to say that no glass disk could hold together to be revolved at anything like the speed you name—50,000 revolutions per second. We do not think any known material can stand it; nor do we know any machine which produces this velocity. 2. A transformer having 400 turns in its primary of No. 14 B. & S. with a core 15 inches long and 2 1/4 inches in diameter, and 800 turns of No. 28 B. & S. in its secondary; the primary is excited with an A. C. of 100 volts, 60 cycles. What ought the secondary voltage be? It is used as a step-up transformer. A. A transformer with 400 turns in primary and 3,000 in secondary will raise the voltage of the primary twenty times. Thus 100 volts primary will become 2,000 volts in the secondary. 3. I have an induction coil which gives a spark of 2 inches when operated on D. C., but when the vibrator is screwed down and a suitable A. C. is passed through, it gives little or no spark at all. What is the trouble? A. We are not able to tell you what the trouble is in the action of the alternating current on your induction coil. The current may not be as "suitable" as you think it is.

(10202) J. B. asks: Please be so kind as to give an explanation of the following phenomenon: The moon appears larger when near the horizon than at the zenith. A. The moon appears larger when near the horizon than all other heavenly bodies and measurements on the surface of the sky. From the horizon ten degrees up toward the zenith it appears much farther than from the zenith ten degrees toward the horizon. A sextant destroys the illusion, for to it a degree measures the same in any part of the sky. It is agreed by scientists that the apparent increase in apparent distances is merely an optical illusion. All distances seem longer if there are many intervening objects. Distances on the surface of the ocean or on a treeless plain are thought to be less than if there are objects scattered along the way. This idea is well worked out in Todd's "New Astronomy," which we can send for \$1.50. To an astronomical instrument the moon measures a trifle larger when in the zenith, since then it is nearly 4,000 miles nearer to us, than when it is on the horizon.

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