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 This is for our information and not for publication.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

(8643) H. S. L. asks: 1. About an ink which can be used with a drawing pen upon zinc and which when dry or burned in will be acid-proof. A. Ink for Zinc Labels: Take 1 drachm verdigris, 1 drachm sal-ammoniac powder and ½ drachm lamp black, and mix them with 10 drachms water. This will form an indelible ink for writing on zinc. 2. A means for an amateur to impart a polish (high) to chestnut boards. A. Fill the wood with any good filler, let it dry, then apply a good varnish, two or three successive coats. Rub it down with powdered pumice stone, then with rotten stone, and finally finish with whiting, all in water. Apply with a felt or flannel rubber.

(8644) A. P. F. asks: 1. What would be the effect on a corrugated iron roof if lightning should strike it? Is it dangerous to the inmates of a house to use such material for a roof? A. If your corrugated iron roof is connected with water or moist earth at several points by heavy telegraph wire or small iron rods, it will serve very well as a lightning rod to protect the premises from being struck. If not connected to the earth, we think it is a source of peril. 2. Of what cheap material can we make a belt about 8 feet in length for light service, width 1½ inches? 2. Belts are either made of leather or webbing. They must be inelastic, so as not to stretch in service. We do not know of any cheap substitute for regular belting.

(8645) A. B. D. asks: In applying gold leaf to sign work, what would be the sizing used? A. In wood signs use gold size. For glass signs use a thin solution of gelatin.

(8646) H. S. asks for a remedy for dandruff, also a preparation for cleaning soiled spots from clothing. A. The treatment of the hair consists in daily washing of the head or other parts affected with warm water, 1 pint; glycerine, ½ ounce. This should be thoroughly rubbed over the skin; the dilute citrine ointment (sold by all chemists) may be used at night. A good preventive, and in mild cases, a curative wash is water, 1 pint; borax, 1 ounce. As a preventive, it should be used once weekly; as a curative, twice daily. Use true benzol for taking grease from clothing. Keep it away from a light or fire.

(8647) E. A. B. writes: I would be pleased to know by what chemicals or solutions blue prints may be changed from their original color (blue) to colors heretofore discovered? A. Blue Prints, to Change to Brown: Borax, 2½ ounces; hot water, 38 ounces. When cool add sulphuric acid in small quantities until blue litmus paper turns slightly red, then add a few drops of ammonia until the alkaline reaction appears and red litmus paper turns blue. Then add to the solution 154 grains of red crude gum catechu. Allow it to dissolve with occasional stirring. The solution will keep indefinitely. After the print has been washed out in the usual way, immerse it in the above bath a minute or so longer than it appears when the desired tone is reached. An olive brown or a blackish brown is the result. To Make Blue Prints Green: Make four solutions as follows: Solution A. Water 8 ounces and a crystal of nitrate of silver as big as a pea. Solution B. Hydrochloric acid 1 ounce and water 8 ounces. Solution C. Pour a solution of iodide of potassium (iodide of potassium 1 ounce and water 8 ounces) into a saturated solution of bichloride of mercury until the red precipitate is just dissolved, and then add four times as much water as the resulting solution. Solution D. Water 16 ounces and iodide of potassium 1 drachm. Then take the blue print and bleach it with solution A, when the image will become pale slate color or sometimes a pale yellow. Then wash thoroughly and immerse the print in solution B, when the image will again become blue. Then, without washing, immerse the print in solution C, when the image will become green but the "whites" will be of a yellow tint. Then put the print in solution B again, without washing. Then wash and pour solution D over the print to purify the whites and to give the green image a bluer tint; but do not leave print in this solution too long, as it has a tendency to make the print blue again.

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K. OF P. MEETING, SAN FRANCISCO.
The Nickel Plate Road will sell August 1 to 10 inclusive, special excursion tickers. Buffalo to San Francisco and return, at rate $62.00, good returning to September 30th, account above meeting. Best accommodations, fast time. See nearest agent or write A. W. Ecclestone, D. P. A., 385 Broadway, New York City.

(8648) F. W. H. asks: I wish to make an electro-magnet with the greatest lifting power possible to be furnished current from a 10-volt 75-ampere plating dynamo. What size and how much wire should I use, and what size and length of core? Do you think such a magnet could be so insulated as to be used under solution for raising iron articles from bottom of tanks? A. A magnet can be made which will lift any weight from nothing up to several tons with the current named above, provided the armature were in contact with the poles of the magnet; but to draw articles from the bottom of a tank through an open space, that is, a space not filled with iron, is a different matter. It would require an enormous power to lift a very small weight from the bottom of even a shallow tank. The method proposed is not economical or practical. Better fish them up in the old-fashioned way.

(8649) O. W. W. writes: On Christmas day in 1900 the sun was shining very warmly in the south door. On a table near the door we had a fish globe. As we were eating dinner, smoke was seen rising from the table on which the fish globe was placed. A close examination showed that the table cloth had be set on fire by the sun's rays being magnified by the fish globe. A. A fish globe is a frequent source of fires. The action is the same as that of a lens or burning glass. The rays of the sun are brought to a focus, and their heat is sufficient to ignite combustible material. When a fish globe is hung in a window so that the sun's rays strike it, a curtain behind the globe is easily set on fire, and people wonder how the fire started. There is no mystery about it.

(8650) G. M. T. asks: In still air will two spheres of the same size, one of aluminium and one of lead, fall from a given height in the same time? A. Since the velocity of a freely falling body is dependent only upon the mass of the earth, it follows that all bodies will fall in a vacuum with the same velocity, viz., 32.16 feet at the end of the first second of fall; and since the air will resist two spheres of the same size equally, because they displace the same weight of air, it follows that the two spheres of the same size will fall with the same velocity under the action of gravity in the air, and therefore will fall through a given height in the same time.

(8651) C. C. N. asks: Where can I find instructions to make appliances and use "Electro Culture" for gardening? A. We regret to say that we do not know where appliances for "electro-culture" for gardening can be found. We have never heard of any such apparatus on the market. We have read of experiments upon plants, but doubt if these have led as yet to practical results, so that apparatus has been devised for such use.

(8652) J. H. R. writes: I desire to purchase books which would thoroughly inform me upon the following case: A building is lighted with 23 incandescent lamps arranged in parallel. The current is supplied through a transformer which reduces the voltage from 2200 to 110. A man takes hold of the socket of one of the lamps and is killed. I want to be able to inform myself on the following questions: First, the precautions necessary in handling high-tension currents and where the danger points are. 2. The liability of transformers to leak, break down, etc., thus delivering the full voltage to the wire leading from it, etc. 3. What is the cause of death? Is is wattage, voltage, amperage, and what is the usual amount necessary to kill a person? Would the current coming from a tansformer cutting it down to 110 volts and necessary to supply 24 incandescent lamps be sufficient? Would that supplied to one of these lamps be sufficient? A. Thompson's "Elementary Lessons in Electricity," price $1.40 by mail, contains as much as is given in any one book upon the topics concerning which you inquire. Rubber gloves and tools with insulated handles are necessary for handling wires carrying current above 110 volts. This pressure may have inflicted severe injury or even death in extreme cases, but we do not recollect any instance of death from it. In the case cited it would seem as if there must have been a connection with the primary of the transformer. Death is caused either by the shock of the current or by the disintegration of the vital tissues from its continued action on them. The amperes are the agent of electrolysis; the volts determine the amount of amperes which can flow through a circuit in proportion to its resistance, as expressed in ohms. The resistance of the human body is a variable quantity, from a few hundred to perhaps five thousand ohms. What current a man can get is not a question of the supply of one lamp or any number of lamps. It is a matter of the voltage of the current and the resistance of the body.

(8653) J. H. L., Jr., asks: 1. How many sal-ammoniac batteries should one pound of sal-ammoniac charge, divided equally among them? A. That depends upon the size of the cells of the battery. The sal-ammoniac solution is saturated. In the cell with a porous cup about a quarter of a pound of the salt is required; in the forms with larger carbons, or the prism, in which more liquid is used, a larger quantity would be needed. 2. The cause of crystals forming on the carbon element of a

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(8654) W. A. P. asks: 1. How many 16 candle power 110-volt lamps are required to cut a 110-volt circuit down to about 5 volts and two amperes? It is to be used to light a very small "pea" incandescent lamp. Is there any better substance to accomplish the decrease? Lamps I prefer. A. Connect four 16 candle power lamps in parallel, and complete the circuit with the pea lamp. The four lamps will give the two amperes, and the combined resistance in parallel will very nearly adjust the drop in potential. 2. I should like to know the formula for resistance carbon. I wish to make rods of ¼ inch diameter, from 6 to 12 inches long. A. For ten cents we can send you a paper giving the details for making carbons.

(8655) L. A. P. asks: 1. I have a small dynamo used for plating. Can I use it for a sparker on my gasoline engine? I have taken hold of the wires when running and have not felt any perceptible current. Should I feel any? A. You can find whether your plating dynamo will answer for sparking a gas engine by breaking the circuit suddenly when it is running at full speed. You cannot tell by taking hold of the wires. The voltage used in plating is not sufficient to give a shock. 2. Would it make any difference if I had a coil connected with it? A. The dynamo would probably run an induction coil. 3. If so, will you please instruct me how to make one. A. A coil giving a spark of a half-inch will ignite the charge in a gas engine. Instructions for making a coil may be had in Norrie's "Induction Coils," price $1 by mail. 4. Which are the best for batteries for motors? A. Four to eight dry cells are commonly used for sparking a gas engine, though any form of sal-ammoniac cell will do the work well.

(8656) D. H. asks for a reliable recipe for preserving eggs. A. Lime, 1 bushel (slaked with water); common salt, 2 or 3 pounds; cream of tartar; ½ pound; water q. s. to form a mixture strong enough to float an egg. Used to preserve eggs, which it is said it will do for two years, by simply keeping them in it.

(8657) J. K. L. asks: 1. How the plates are obtained which are used in printing pictures in papers? A. There are many ways of making the plates from which pictures are printed in papers, both electrical and photographic. If you wish to learn any particular process, we could refer you to the sources of information upon that process. 2. Are there any non-metallic substances, such as carbon, selenium, etc., which can be electroplated? A. Any substance not a conductor can be electroplated by coating it with graphite, which is a conductor, before putting it into the plating bath. 3. If two bodies were revolved at the same speed or rate, and one of them was larger than the other, in which would the centrifugal force be the greatest? A. The centrifugal force varies directly as the weight of the rotating body, and as the square of the velocity of its motion. It also varies inversely as the radius of its orbit. 4. At about how many revolutions per second do you think a shaft of iron would fly to pieces? A. There is no definite answer to this question. It is entirely indefinite. 5. Would a bar of iron 4 inches long be attracted to a pole of a bar magnet with as much force as if it were 8 inches long? A. The length of a bar of soft iron has nothing to do with the attraction of a magnet for it. The force of the magnetism is in the magnet, and not in the bar of iron.

(8658) N. S. writes: In your issue of June 21 is an interesting communication relative to the Sault Ste. Marie Canal. Will you please reply to several questions relative to this subject through your Notes and Queries column, as doubtless others are interested in everything that relates to canals? What is the origin of the words Sault Ste. Marie? Then we read, in your article, as follows: "Ground was broken on the canal June 4, 1853, by one Charles T. Harry, under whose supervision was continued the original Soo canal." Then in the last paragraph we read: "The Soo Canal has more than four times the traffic of the Suez Canal. Vessels passing through the Soo canal average one for every 15 minutes during the 24 hours." The query is, Why the Soo Canal? Is that word synonymous with the Sault Ste. Marie Canal? A. Sault Ste. Marie is archaic French for the "Falls of St. Mary." "Sault" is pronounced in modern French "So," and "Soo" is probably a corruption of "So." The canal is popularly referred to as the "Soo" Canal.