Business and Personal.

The charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

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 This is for our information and not for publication.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.

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.

(2773) F. C. C. asks: 1. Have any people been killed while riding on electric street cars, or while getting on and off the cars, simply by a "shock" from the motor current? A. No. 2. Is that current strong enough to kill persons should they receive the full force of it through their bodies? A. It is in some systems. 3. Is this system of street car service more dangerous to ride upon than the horse or "grip" systems? A. We think not.

(2774) F. A. B. asks: 1. Why does a telephone buzz when near an electric street car line or after the current is turned on the electric light wires at night? A. The "buzz" is due to an intermittent, variable, or alternating current produced in the telephone wire by induction from contiguous electric wires carrying heavy currents. 2. Is there any remedy for this, any devices to overcome it, and where could these be obtained? A. The only remedy is to work the telephone on a metallic circuit, *i. e.*, use a return wire instead of the ground. The currents induced in the two telephone lines by the light or power lines will be in the same direction in both lines, and will consequently neutralize each other in the telephone.

(2775) D. J. P., Weymouth, asks for the best solution (not paint) to use on wood for the purpose of rendering it fireproof. A. Tungstate of soda is of high value as a fireproof agent. Phosphate of soda is also efficacious. The great point is to secure good absorption by the wood. Such solutions are sometimes used for match splints to prevent them burning with a glowing end after extinction.

(2776) X. Y. Z. asks how to make whiting into a cake, so that by rubbing a cloth on it lightly it will take up enough to polish any substance with, and thereby prevent the waste and dust as when used in the form of powder. A. Use plaster of Paris or dental plaster; mix with water. Do not rub the cake directly on the metal to be polished, as this may wear it or scratch it.

(2777) H. N. M. asks: What is the difference between frictional electricity and dynamic electricity? I mean in quality, or is there any difference? A. None scientifically. Practically, what you call frictional electricity is of vastly higher tension or E. M. F. and of lower average intensity than the other. One is also considered high tension electricity in repose, the other low tension electricity in motion. But there is no real difference between them.

(2778) J. G. W. asks: How best to paste a large paper map on cloth, and have it smooth. A. Stretch the muslin on a flat table, tacking the edges if necessary, spread the paper face downward on another table, and rub it over with perfectly smooth flour paste. If necessary, the paste must be passed through a fine wire sieve. If properly made, this will not be required. Then lift the paper and place it paste side downward on the muslin. Lay another piece over it, and rub it down with the hand.

(2779) B. B. asks: How can drawings or diagrams be cheaply and easily made for lantern use without the aid of photography? A. Take thin transparent sheet zylonite or celluloid and wash thoroughly with water. When dry rub with fine whiting, to remove all grease. Drawings or writing can now be placed on the zylonite as easily as on paper. Tracings can be readily made which are better than those on gelatine. Clamp the finished work between two glasses 3¼ by 4 inches, and bind the edge with paper.

(2780) E. U. S. asks: Will you please inform me the best remedy you know of for catarrh or cold in the head. A. Where the case is an uncomplicated one and the galvano-cautery is not needed, the following prescription, used as a gargle, and for snuffing up the nose, will be found efficacious. Equal parts of salt, soda bicarbonate, and borax; mix thoroughly and use a salt spoon of the mixture to a cup of warm water. *Never use the solution cold*, and not more than three times *daily*.

(2781) L. A. C. asks: 1. Would the exact center of a perfectly revolving shaft remain stationary or revolve? A. All material parts of the shaft revolve. The axis—a purely hypothetical thing—does not revolve. 2. Is there truth in the often-heard statement that one part of a carriage wheel revolves faster than the other part? If so, explain. A. All parts of the carriage wheel revolve with the same angular velocity. The forward motion of the top of the wheel is twice that of the axle. 3. Please explain why it is necessary for the pendulum of a clock to be lengthened as the clock approaches the earth's poles, in order to make its vibrations similar to those of a like clock at the equator. A. The earth being flattened at the poles, allows the pendulum to come nearer the earth's center than it could at the equator; in consequence of this and the absence of centrifugal force at the pole, the earth has greater power over the pendulum, and accelerates its vibration, thus causing the clock to gain time. The remedy for this is to lengthen the pendulum. 4. Is it possible to speak into one telephone and hear your own words through another telephone at approximately the same time? If possible, under what conditions? I tried speaking into one telephone and holding my ear to another at the same time, but I could not hear anything. The instruments were not placed very far apart on the circuit. A. The direct effect of the voice upon the ear is so great as to drown out the sounds from the telephone.

(2782) E. M. H. asks: 1. Would two one quart cells of Bunsen battery develop enough power in the motor described in the SCIENTIFIC AMERICAN SUPPLEMENT, No. 767, to run a small fan, say 15 inches diameter, in the summer time, and if so, about how many hours would it run before becoming exhausted? A. It would probably require four or six such cells to run the fan successfully. The battery would run its motor for 24 or 30 hours. 2. Would the above named cells develop sufficient power in the motor described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 783, to do the same work, and would the battery run it as long as it would motor above named? Would like to have run all night. A. The motor described in SUPPLEMENT, No. 783, would run a very small fan with two cells of Bunsen battery. 3. What size wire should be used for the winding of the field magnet of the motor described in No. 783 of the SCIENTIFIC AMERICAN SUPPLEMENT? A. No. 24.

(2783) A. G. asks: I recently saw in a printing office a new process of making newspaper cuts. The material consisted of a dark steel plate coated with a white composition, through which the drawing was scratched with a sharp steel point, thus forming a matrix for the stereotyper. Can you give us a recipe for the white coating used? A. The composition is essentially flour paste and whiting. The surface of the plate should be slightly roughened with sandpaper and rubbed over with the white of an egg first. Other formulas are used, but are generally kept secret. Sometimes silicate of soda is used instead of paste. Also see SCIENTIFIC AMERICAN SUPPLEMENT, No. 720.

(2784) A. N. asks: What is the composition of the size used by the book binder to make his gold leaf adhere to the leather before applying his heated lettering type. A. The size used is albumen; the white of an egg beaten, allowed to settle, and diluted with water. The portion heated by the type or stamp becomes insoluble. The portion of the size not subjected to heat may be washed off with a moist cloth or sponge.

(2785) W. H. asks which is the finer gold—a ring of eighteen carat or a gold coin. A. 18 karat is ¾ gold and ¼ alloy. United States gold and silver coin is nine-tenths gold and one-tenth alloy. The gold coin is much finer than the ring in question.

(2786) W. S. C. writes: I have been making some Leyden jars according to directions given in Hopkins' "Experimental Science," and have had trouble owing to the conductivity of the glass, caused, I presume, by the metallic oxides used in their manufacture; some of them conduct so freely as to discharge the electroscope. Could you advise me what kind of glass to use and where it could be procured? A. Use jars made of soda glass. A jar can be tested by temporarily wrapping it with tinfoil, and placing tinfoil scraps or metal filings within it. If it is found to leak rapidly after charging, it must be rejected.

(2787) P. M. writes: I have a barrel of vinegar, partly made of cider and partly of whisky, which has turned into an iron-like black color. Will you be kind enough to let me know if it can be clarified to look white again? A. If it does not clarify on standing, try filtering through boneblack. Or add a little solution of pure gelatine. Experiment with a small portion first.

(2788) J. D. B. asks: Can you give me a receipt for treating oleine so as to make it suitable for paint oil? Have tried ammonia, borax, soda, alum with muriatic acid, which clarifies it nicely, but it will not dry; to be used for barn paint. A. Oleine will only dry with great slowness, if at all. Heating with litharge will bring it to the condition of lead soap, when it will dry more easily. This, however, will change its nature and appearance. We doubt if you will succeed.

(2789) J. D. asks: 1. What is the meaning of Fahrenheit? A. Degrees of the Fahrenheit thermometer; each one indicates 1-180 of the difference between the temperature of melting ice and that of condensing steam at atmospheric pressure. 2. Pounds by or to the square inch as used in the case of steam boilers. A. The pressure of the steam above that of the atmosphere, as exercised on each square inch of the boiler.

(2790) M. S. G. asks for recipes for making: 1. A tooth wash. A. Camphor ½ ounce, tincture of myrrh 2 ounces, tincture of Peru balsam 2 ounces. Rectified spirit 1 pint, oil of spearmint 10 drops. 2. A tooth soap. A. Precipitated chalk 1 pound, powdered orris ¼ pound, powdered myrrh 2 ounces, powdered white soap 3 ounces, powdered saffron 1 ounce, oil of lavender 2 drachms. Or following: Air dried Castile soap in powder and cuttle fish bone, also in powder, of each 2 ounces, honey 4 or 5 ounces, aromatics and perfumes to suit. 3. A tooth powder. A. Precipitated chalk 1½ pound, powdered white sugar ¼ pound, powdered orris root ¼ pound, powdered cuttle fish bone 2 ounces, carmine ½ ounce, oil of rose ½ drachm, oil of bergamot ½ drachm, tincture of musk ¼ drachm. There are numerous formulas for tooth preparations. We can supply books giving many receipts. Also consult query 2477.

(2791) A. W. H. asks how the bronzing of plaster casts is done. I have a natural size plaster cast of Shakespeare's face and I want to bronze it. A. The following is given as a process used in France for this purpose. Linseed oil soap is made by saponifying the oil with caustic soda and precipitating the soap with salt. It is separated, dissolved in rain water and a mixture in solution of 4 parts blue vitriol and 1 part copperas, is added as long as a precipitate forms. This is filtered out washed and dried and 8¾ ounces, are applied with 1 pound quick drying varnish, and 5¼ ounces white wax. This is applied to the surface previously heated, and is baked in if necessary. The high parts are touched up with a bronze powder. As a simpler process, shellac the bust and then gild it with bronze powder and varnish. The varnish is sold with the powder.

(2792) H. R. asks for the simplest method for preparing and moulding gutta percha and hard rubber. A. Use heat and pressure. 2. Is there anything similar that can be cast in moulds without using any great amount of pressure? A. Nothing satisfactory can be recommended. Possibly some of the manufacturers of paper pails, etc., would make up articles to suit you.

Replies to Enquiries.

The following replies relate to enquiries recently published in SCIENTIFIC AMERICAN, and to the numbers therein given:

(2655) I would say, if I were to answer Mr. E. P. H. in regard to heating burnisher, that it will burnish best at about 250° or 260°. My burnisher has a thermometer attached, and will do best work at above heat.—A. H. M.

M. E. C. says: The crusts in the tea kettle can be softened and easily rinsed out by boiling sweet fern branches and leaves in the tea kettle for awhile. Eat a few cloves for hay fever or cold in the head.

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