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 This is for our information, and not for publication.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.

(1) J. P. W., Jr., asks the cheapest mode of obtaining a solution with which to charge an electric battery calculated to operate a 6 candlepower Edison light. A. There are many solutions used, the particular kind depending on the battery. For zinc carbon battery (Grenet), mix 5 fluid ounces of sulphuric acid (oil of vitriol) with three pints of cold water; after it has cooled, add 6 ounces or as much as it will take up of powdered bichromate of potash. Follow above proportions for any desired amount.

(2) F. G. Z. asks why one can't use covered wire instead of naked for a certain part of the induction coil mentioned in SUPPLEMENT, No. 160. A. You can do so. Economy of construction prompts the use of uncovered wire.

(3) F. P. L. asks how to remove the copper from the electric light carbon. A. The copper can be dissolved in nitric acid. 2. If I should use coppered ones, and the solution be weakened, could I charge it again and get as good current? A. The copper ones would answer. It is a simple matter to add a little more sal ammoniac to strengthen the solution as it becomes exhausted. 3. Which plate does the current come from—the carbon or the zinc? A. The current is assumed to pass from carbon to zinc on the outer circuit of a battery. The electric current is a conventional term only; we know nothing of the actual action.

(4) G. E. C. asks the best kind of soft iron and size of copper wire to make electro-magnets. A. Norway iron is very good. After it has been forged and finished, heat it to a red heat and bury it in forge cinders or in powdered quicklime. The size of wire depends on the available current and other circumstances of the case. No general rule can be given.

(5) H. B. P. asks for a method of drilling holes in glass, and if they can be drilled as large as ¼ inch without enlarging or running out. A. A hard drill or a file with end broken off may be used in a brace. Apply spirits of turpentine with camphor in solution to the glass, and keep the cavity supplied. A copper tube held in a lathe chuck and supplied with emery and oil cuts a very neat hole. The glass may be held steady by a core cemented to it to fit inside of the tube. Hold a cork pressed against the glass opposite the tube end while drilling

(6) J. B. McG. writes: Two engines are as near alike as can be made, except size of driving wheels—fired alike, steam pressure alike. Why is it that the one with 3 ft. 2 in. driving wheels will start and haul a heavier train of cars than the one with 4 ft. 2 in. wheels? A. The piston of the engine with 3 ft. 2 in. drivers will act with more advantageous leverage than will the other, as far as hauling power is concerned, but it loses the exact equivalent in rate of running at equal piston speed.

(7) J. T. S. W. writes: I have read that if you make a piece of steel red hot, and touch it with a stick of brimstone, the steel will melt and run like water. Is this a fact? I have tried the experiment, but with no success. A. Your heat may have been insufficient, and you may not have held the brimstone long enough in contact with it. A chemical reaction takes place; the sulphur combines with the iron, forming a sulphide of iron, fusible at a red heat. This it is that melts, not the steel as such. Use a stick of sulphur, and keep it in contact with the steel until the result is obtained. The sulphur will probably catch fire, so be careful when you try the experiment, and have water at hand with which to extinguish the sulphur if necessary. The odor of the burning sulphur will be very disagreeable.

(8) A. F. M. asks how to make a cement for carbon to make a box for a battery. A. Try Burgundy pitch or melted shellac. We would not advise you to trust to cement alone. Fasten your plates by metal straps or screws, and make water tight by either of above cements.

(9) C. H. M. asks: 1. How much cold will the fire extinguishing liquid stand, a recipe of which you have given? A. It is supposed to stand the coldest temperature of this region. It is possible that the extreme cold of Dakota might affect it. 2. Is it equal to that used in the hand grenades? A. It is used in them. 3. Is there any objection to running a lightning rod through a barn, following a post, instead of carrying it down on outside? A. It is considered better practice to carry it outside of the building. 4. I have a geared windwheel on one end of my barn; its upright shaft (1½ inches) extends about 8 feet above the roof, and comes within about 8 feet of the floor. The horizontal shaft runs 24 feet toward the center of barn, the two shafts connecting with pinions. Can I keep the electric current from following the horizontal shaft, in case it was struck, and run it direct to the ground? A. Connect lower end of vertical shaft by a lightning rod or other conductor to a plate of iron buried in charcoal, damp earth, or immersed in a cistern or well. The electricity will not follow the shaft. 5. In rodding the barn, would you connect a point to upright shaft? The barn is 62 feet long, and should have three rods or points. There is a cupola in center of roof, 9 or 10 feet higher than peak of barn. A. If above connection is made, it will be well to have several points connected to shaft. If the shaft is in contact with the wooden frame only, and has no metallic connection with the ground, no points are needed. The connection described in No. 4 under latter conditions is unnecessary also.

(10) W. A. P. writes: In making my dynamo, described in SUPPLEMENT, No. 161, I have wound the magnet with No. 16 wire, cotton-covered, and covered each layer with shellac and red lead; and when I connect one of the terminals with a battery, and touch the other battery wire to either pole of the magnet, I get a spark; what is the trouble? A. Your wire is in direct communication with the core of the magnet. The coating is broken, or the binding screw or terminal may not be insulated.

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AND EACH BEARING THAT DATE.

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