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 This is for our information, and not for publication.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) Slip of Car Wheels.—Allow me to make the following remark as to your explanation in regard to the locomotive running over a curve, as question solved in your issue of 17th Dec. I claim that in every case the inner wheels will slip, for this reason: For instance, the locomotive is running over a short curve or long curve at their general speed, as whatever it may be, of course its tendency while it met with the curve was to go in a straight line. Now, the change of its direction is due to the curve of the rails in combination with the flanges on the driving wheels (that is, on the outer ones). Thereby more friction is created on them than on the inner ones, consequently the inner wheels will slip easier. The elevation of the outer rail is supposed to partially compensate for the centrifugal force tending to throw the flanges against the outer rail, and as only the flange of the forward driving wheel impinges against the outer rail, there is no reason for concluding that the inner wheels always slip. The whole weight of the locomotive is tended to go in a straight line, as before stated. Now, by meeting with the curve its tendency is being brought in a centrifugal motion, and hence the force being sustained by the outer rails and wheels, thus decreasing the weight of the locomotive on the inner ones, and adding equally as much on the outer. Consequently the inner wheels will slip easier. This is what is claimed in No. 10, Notes and Queries, for a locomotive when drawing. When running under momentum only, the tilting of the locomotive by the elevation of the outer track and the angular position of the truck tends to prevent undue friction on the flange of the forward driver. When the locomotive runs on to a curve reversed, the slip necessarily takes place on the outer rail.

(2) W. H. D. asks how to make a can- vas bag to hold hydrogen or oxyyen gas under pressure for magic lantern use. A. Rubber bags are used for this purpose, and you can most conveniently make a canvas bag air-tight by coating it with a layer of rubber cement or a solution of rubber in carbon disulphite.

(3) C. E. asks: What will be the best method to clear a waste pipe where mucus is forming or has formed from waste of beer or water, or what would be best to run through it in order to clear itself? A. Use a strong hot solution of soda.

(4) J. H. A. desires a receipt to stain white pine cherry and rosewood color. A. For cherry stain, take of rain water 3 quarts, annatto 4 ounces, boil in a copper kettle till the annatto is dissolved, then put in a piece of potash the size of a walnut; keep it on the fire for half an hour longer, and it is ready to bottle for use. For rosewood stain, take alcohol 1 gallon, camwood 2 ounces; set them in a warm place 24 hours, then add extract of logwood 3 ounces, aquafortis 1 ounce, and when dissolved it is ready for use.

(5) H. M. P. asks: 1. What battery, what size, and how many cells will it require to run Edison's incandescent 6 candle power lamp, resistance 6 to 7 ohms, requiring 9 to 15 volts E. F. and 1·40 amperes current? A. A series of twenty bichromate cells would give you voltage enough for your lamp. Taking a quart battery, you might allow ½ ohm to each cup. This would give ten ohms internal resistance and would give through a 6 ohm lamp a low lighting current, say 1·25 amperes. 24 square inches of zinc in a porous cup cell are allowed by some per ampere on short circuit. 2. Would this lamp be sufficient candle power to light a room 17 by 17 feet? A. The light would be quite insufficient for the room. 3. How should the batteries be connected? A. The batteries in above calculation are connected in tension. The more you use in parallel, so as to bring down the resistance, the less acid and zinc will be used. See SCIENTIFIC AMERICAN, vol. 57, No. 2, page 16, for article on this subject. 4. What would probably be cost of maintenance per hour? A. The cost per hour depends on so many factors that it cannot be given. It will cost probably one or two cents an hour in chemicals and zincs, irrespective of the trouble. 5. Is it possible to run the lamp with gravity battery? If so, how many cells? A. A gravity battery is not available for this work. 6. Will these lamps develop the power as given by manufacturers? A. The lamps can be run far over the rated power, but they wear out sooner. 7. If this lamp is too small for practical purposes, please give battery, etc., required for 16 candle power lamp. A. For a 16 candle lamp 40 cells in series would answer.

(6) F. M. W. writes: Describe the pro- cess of polishing horn. A. It must be rubbed first with fine glass paper and then with a piece of wet linen cloth dipped in powdered pumice stone. This will give a very fine surface, and the final polish may be produced by washed chalk or fine whiting applied by a piece of cloth wetted with soapsuds. Care must be taken in this, and in every instance where articles of different fineness are used, that, previous to applying a finer, every particle of the coarser material is removed, and that the rags are free from grit.

(7) J. G. M. writes: I have recently fitted my main building, 100 x 40 feet and 35 feet high, with lightning rods, having 4 points 8 feet high and having two connections to the ground. Will you kindly tell me the required size and thickness of copper plate for ground connection, whether it should be soldered to the rod or not and whether it should be put at lower end of rod, 6 feet down, or higher up? A. Use a copper plate having about 20 square feet area. Ordinary sheet copper, such as is used for roofing, or in the manufacture of culinary vessels, will answer. The lower end of the rod should extend across the plate and be soldered. The plate should be buried in earth that is always moist. Another way to make a good ground connection is to dig a trench 10 feet long in earth that is constantly moist. Put a layer of coke on the bottom of the trench; loop the rod and lay it on the coke. Cover the rod with a layer of coke and fill in the trench with earth. The trench should extend away from the building.

(8) H. W. K. asks for a cement which can be used to stick art tile to iron. A. Try a gutta percha cement, made by melting together in an iron pan 2 parts of common pitch and 1 part of gutta percha. Stir them well together until thoroughly incorporated and then pour the liquid into cold water. When cold it is black, solid and elastic; but it softens with heat, and at 100° Fah. is a thin fluid.

(9) C. A. F. desires a receipt for pre- paring white linen cloth so that it can be written on without blotting, at same time making it stiff and glossy and to cut without fraying. A. Varnish the cloth with Canada balsam dissolved in turpentine, to which may be added a few drops of castor oil, but do not add too much, or it will not dry. Try a little piece first with a small quantity of varnish. The kind of cloth to use is fine linen. Don't let the varnish be too thick.

(10) J. H. R. desires a receipt for a wash or any other preparation for the hair that will make it curl. A. Take borax 2 ounces, gum arabic 1 drachm, add hot water (not boiling), 1 quart; stir, and as soon as the ingredients are dissolved add 3 tablespoonfuls of strong spirits of camphor. On retiring wet the hair with the above liquid.

(11) E. H. D. desires (1) recipes for mak- ing purple, green, and black copying type writer inks. A. Take any desired shade of aniline dye ½ ounce, dissolved in 15 ounces pure alcohol, and 15 ounces glycerine, then apply to the ribbon. 2. Do strong electric or calcium lights produce sensible effect on photographic preparations? A. Calcium light has little effect, but electric light has an effect which, under sufficient exposure, is as great as sunlight.

(12) H. B. asks (1) for directions for making effervescing solution of citrate of magnesia. A. Dissolve citric acid 400 grains in water 2,000 grains, add carbonate of magnesia 200 grains; stir until dissolved. Filter into a 12 ounce bottle containing sirup of citric acid 1,200 grains. Add boiled and filtered water to fill bottle, drop in bicarbonate of potash in crystals 30 grains and immediately cork. Shake until bicarbonate of potash is dissolved. The sirup of citric acid is made from citric acid 8 parts, water 8 parts, spirit of lemon 4 parts, sirup 980 parts. 2. How much power should I get from a bichromate of potash battery with a zinc plate 3 inches long, 2 inches wide, and 4 arc light carbons 3 inches long and ½ inch in diameter, two on each side of zinc, and what is its resistance? A. Your battery would give about ⅛ ampere, with resistance of 4 ohms.

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Truck, hand, S. Rogers 376,209
Tubes, method of and means for reducing the diameter of, A. Paterson 376,106
Tug coupling, hame, D. Hill 376,305
Turning crosshead pins, machine for, B. J. Coates 376,235
Type writer cabinet, W. Horrocks 376,092
Typewriting machine, A. T. Brown 376,180
Upsetting machine, Cooke & Carlough 376,295
Valve gear, D. F. Gallagher 376,082
Valve, pressure regulating, F. Markgraf 376,101
Vehicle running gear, P. Emery 376,079
Vehicle running gear, Warmington & Bulger 376,219
Vehicle spring, H. A. Myers 376,104
Vehicle spring, S. H. Raymond 376,161
Velocipede, railway, C. L. Collier 376,073
Velocipede saddle, E. G. Latta 376,322
Ventilator, S. W. Hurlburt 376,094
Vise or clamp, hand, A. H. George 376,191
Wagon brake block, C. P. Bateman 376,404
Wagon lock, J. M. McGonigle 376,329
Wall covering, J. A. Shephard 376,350
Washing machine, S. S. Barrie 376,279
Washing maching, G. F. Dunning 376,238
Water closet flushing pipe, T. Butler 376,137
Water closet, T. Kennedy 376,311
Water gauge, Parker & Tupper 376,255
Water wheel, J. N. Weeks 376,357
Wheel. See Fifth wheel. Water wheel.
Whip core, E. K. Warren 376,273
Winding spools, machine for, G. H. Wilkins 376,124
Wire, barb, C. D. Rogers 376,418
Wire machine, barb, C. D. Rogers 376,417
Wood joint, J. Collins 376,236
Wrench. See Pipe wrench.
Yoke guard, neck, H. Kniphals 376,099

DESIGNS.

Badge, J. H. McMath 18,015
Burial casket, J. Einsfield 18,009
Carpet, H. Fawcett 18,010
Coat, lady's, H. F. Duke 18,008
Costume, lady's, J. Sheils 18,016
Handle for dishes, E. Beruil 18,006
Polonaise, lady's, M. Turner 18,017
Rug, G. B. Fox 18,011
Stove, gas, A. J. Doty 18,007
Stove, heating, J. K. McLaughlin 18,014
Stove or range, cooking, J. L. Gobeille 18,012
Type, J. Guldenstine 18,013

TRADE MARKS.

Bats for tennis, racket, cricket, and other games, R. Slazenger 15,098
Boots and shoes, oil grain leather, A. F. & J. Wm. Horner 15,089
Chiccory, prunes, and raisins, F. Seggermann 15,097
Dentifrices, A. Rowland & Sons 15,094
Flour, Barbour & Hamilton 15,081
Hair, preparation for the human, A. Rowland & Sons 15,093
Hats and caps, Friedlander & Koch 15,091
Laundry purposes, solid polishing compound for, R. F. S. Heath 15,088
Medicine for the cure of certain named diseases, Neal & Todd 15,092
Plumbers' earthenware, Colwell Lead Company ... 15,087
Skin, preparation for the, A. Rowland & Sons 15,095
Soap, Colgate & Co 15,086
Spool cotton, A. King & Co 15,090
Steam gauges, Star Brass Manufacturing Company 15,099
Tea, F. A. Caucbois 15,085
Teas, mixed, J. P. Boone 15,083
Tobacco, smoking, Marburg Brothers 15,084
Wall paper, G. K. Birge 15,082
Walls, powder to be mixed with linseed oil, etc., for coating, B. F. Ruth & Co 15,096

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