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 the following week's issue

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Wanted—Light machinery or specialties to build. P. G. Fleming's Machine Works, Elizabeth, N. J.

Pipe frame truck baskets, steel and wooden trucks, etc. L. M. Moore, Rochester, N. Y. See page 157.

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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 This is for our information and not for publication.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.

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.

(5873) F. S. M. writes: 1. I am working Smee battery two 6×10 zinc and one carbon plate in 3 gallon jar. Is the jar large enough to obtain the best results, or would a larger jar be more economical? In silver plating brass forks, all of which were treated apparently precisely the same, some of them stripped entirely upon applying the burnisher, while the rest held the deposit nicely. Why? A. You would gain nothing by a larger jar, except that your battery would run for a longer period before exhaustion, and would give naturally a more constant current, or one more lasting, owing to slower exhaustion of the acid. You should have "quicked" your goods before plating. 2. What will cause brass articles to turn black and corrode in places when in the silver bath? A. Possibly want of cleanliness or irregularities in current strength. If spots appear while in the bath remove article, rinse, scratch brush, dip in cyanide of caustic soda solution, dip in quicking bath and start again. We can supply books on the subject, such as McMillan's "Treatise on Electro Metallurgy," $8.50 by mail, which gives many details.

(5874) A. W. B. asks: 1. The glass or joint snake, as it is sometimes called, will fly into pieces on being suddenly struck. I wish to know if an instance has ever been known where these pieces have united again, forming a perfect live snake (or lizard). A. We have no absolutely reliable record of such happening. See the SCIENTIFIC AMERICAN, September 3, 1887. 2. Will the Holtz electric machine generate electricity when turned backward? If not, why? A. It is not arranged to do so. The generation depends on the proper relation of the collectors and armatures.

(5875) J. H. T. writes: My house is wired for electric bells and burglar alarm, using a Leclanche battery of four jars. I want to place two or three automatic gas burners in cellar, etc., and would like to know whether I can make use of the same battery for this new gas lighting circuit? I would also like to know how to make a small spark coil to use with it. A. You can use the battery as described. For spark coil make a core ½ inch thick and 8 inches long, of straight pieces of iron wire, and wind it with four or five pounds of No. 22 magnet wire. We can supply Badt's "Bell Hanger's Hand Book," price $1, which treats on electric gas lighting apparatus.

(5876) P. G. asks: 1. What power can I expect from a water motor of the Pelton type, diameter of wheel ten inches, twelve buckets, water pressure eighty pounds, diameter of orifice one-quarter inch. A. Five-eighths of a horse power. 2. What would be the speed with no load? A. Nearly 2,000 revolutions per minute. 3. What would be the power, if the pressure were increased to one hundred pounds and the diameter of the orifice increased to three-eighths inch? A. Two horse power.

(5877) T. R. says: I have some mercury which is impure and adheres to the glass, rendering it useless for barometric purposes, for which I wish to employ it. Kindly state how it can be purified. A. Squeeze the mercury through chamois skin, then clean the mercury by covering with dilute nitric acid, one part of acid to three of water; allow the acid to remain on the mercury overnight. Pour off the acid and wash the mercury with water and remove the superfluous water with blotting paper.

(5878) L. M. B. asks: What power has a gasoline engine, double cylinder, 4 x 5 inches, at 300 revolutions, explosion every alternate stroke? What speed will above engine drive a 25 foot launch by 7 feet beam? What size propeller or wheel should I use? A. The gas engine is equal to 2½ horse power. Will give a speed of about 4 miles per hour. Wheel should be 20 inches diameter and make 175 revolutions per minute.

(5879) J. W. T. writes: 1. My wife makes sirup (molasses) for table use. Taking four tea cups of New Orleans sugar, she puts it into a pan containing two tea cups of water, allowing it to boil to sirup. It granulates when cool. Are there ingredients to prevent granulation? If so, how many and what is the theory of each? A. We suggest that you make your sirup by the cold process, or if by heat, that you use more water. Evaporation repeated often enough produces uncrystallizable sugar. A long cooking with addition of water from time to time would tend to produce genuine molasses. 2. Will pieces of zinc thrown in the stove rid the stove and stove pipe of soot? If so, what is the theory? How often should it be used? A. This we think is a fiction. No discernible action takes place in the direction of removing soot.

(5880) W. E. H. asks (1) how the broken end of any ocean cable is found. A. The end may be found by determining the resistance. Knowing the resistance per mile, the total resistance divided by this gives the distance of the break. If the conducting wire is parted within the insulation, the capacity is determined instead of resistance, and the location found by dividing this capacity by the capacity per mile of cable. 2. What, if any, difference between rocking and swinging motion? A. In swinging motion the body moves through the arc of a circle convex downward. In rocking, cycloidal curves are followed.

(5881) S. S. H. asks: 1. The proportion by volume of gas from gasoline and air that is used in the ordinary explosion engine? A. 30 to 40 vols. 2. The pressure per square inch exerted at moment of explosion? A. About 150 pounds per square inch. 3. The reason for using but one end of piston, or exploding in only one end of cylinder, and consequently exerting power on but half of each revolution? A. To avoid overheating. See SUPPLEMENT, Nos. 715 and 716, on the gas engine.

(5882) H. B. asks: 1. What are the elements in a battery using bisulphate of mercury in solution with water as exciting fluid? A. Zinc and carbon. 2. I have a polarized Leclanche porous cup that I have refilled with black oxide of manganese and powdered carbon, but it does not work. What is the reason it fails to fix it? A. Possibly your carbon was of poor quality or your binoxide of manganese may be poor. The pores of the cup may be choked. 3. What is the granulated chemical inside of the carbon cylinder of the Samson battery? A. Sal ammoniac.

(5883) J. C. W. writes: 1. Would it be any disadvantage to have the core to the field magnet to the motor described in the SUPPLEMENT, No. 641, cast instead of built as therein directed? A. It would be a slight disadvantage, but might be counteracted by making the core thicker and shorter. 2. What fraction (approximately) of a horse power would it develop with 6 cells, plates 5 inches by 6 inches, of plunge battery connected in series? A. Two or three one-hundredths of a horse power. 3. Would that be sufficient power to run a wood-turning lathe, swing 6 inches and 3 feet bed, by belting upon a light countershaft? A. Yes; for light work. 4. In a tangent-spoked bicycle wheel are all the spokes subjected to an equal strain if the wheel is stationary and the weight, of course, being applied at the center? A. Yes; if nipples are properly set up.

(5884) C. E. asks: On holding a piece of metal of some size closely against the vibrating spring or iron armature of a large induction coil, sparks pass to the metal, although this is insulated from the circuit. Is this phenomenon due to the extra current of the primary wire? A. The phenomenon is one of discharge from the primary or from the condenser connected thereto.

(5885) P. F. M. asks: 1. Can motor in SUPPLEMENT, No. 641, be used as a dynamo? If not, what changes are necessary? A. It should have a cast iron field or else have a separate exciting current for the field. 2. Can a storage battery be charged by a dynamo deriving its power from a windmill, or would the variations of speed in the windmill cause trouble to the dynamo? A. It can be so charged, arrangements being provided to open the circuit if the windmill ran too slowly.

(5886) H. K. B. asks: Is there a difference between an electric bell that will ring only with two wires and one that will ring on a single wire, ground return? How many gravity cells will be required to ring it through 200 feet of copper wire No. 11 B. W. G.? A. There is no difference. If for occasional and not continuous ringing, use two or three Leclanche cells. Three or four gravity cells would answer, but would not do on open circuit.

TO INVENTORS.

An experience of forty-four years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

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