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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 This is for our information and not for publication.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.

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Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(5832) T. H. De S. writes: Given a pump in a position where the water pressure, due to the elevation to which the water has to be put, is 92 pounds per square inch, and with such size discharge pipe that when the pump is delivering 200 gallons of water per minute the pressure runs up to 180 pounds, now if a larger size discharge main is used, of such diameter that, when 200 gallons is still delivered, the pressure is only 120 pounds, what is the saving expressed in horse power? Please give the formula. A. The formula is the hydrostatic height in feet saved, multiplied by the weight of water pumped, and product divided by 33,000 equals the horse power saved. As in the case stated, 180 pounds−120 pounds=60 pounds×2·3=138 feet hydrostatic height saved. Then 138 feet×200 gallons×8⅓ pounds = 229,938 foot pounds, and $\frac{229938}{33000} = 7{\cdot}27$ horse power saved by the change.

(5833) H. C. P. says: Will you kindly tell me what the compound is made of that is used for coating the inside of wooden battery cells to make them acid-proof? A. Have boxes perfectly dry, smear them inside with a hot mixture of 4 parts resin, 1 part gutta percha, and a little boiled oil. The mixture must be thoroughly melted and stirred before use. A hot rod of iron may be used to melt it into the crevices. They can be used for any ordinary type of battery.

(5834) A. O. writes: I have a sink in which the waste water from the kitchen is poured and carried through four inch sewer pipe to a hole sixteen feet deep and 2½ feet in diameter, 350 feet distant from the house. The top of the ground at this hole is four feet lower than where the waste pipe leaves the house. The hole is walled up loosely with boards to keep the earth from caving. A very disagreeable odor emanates from the sink, worse in the winter. The hole is covered and I have a ventilator shaft 6 inches square and 4 feet high over it, but it makes no difference as to the odor emanating from the sink whether the ventilator is open or closed. Can you suggest a remedy? A. If you have no trap in the waste pipe, the warmth of the house in winter will increase the draught through the open sewer pipe, and thus increase a nuisance and danger that should not be tolerated under any plea. Put in a good deep trap as close under the sink as possible and as large as the sink pipe. Give it an occasional flush with hot water, and you will have no further trouble with sewer gas.

(5835) Beta asks: 1. How long a line can the magneto telephone, used both as transmitter and receiver, be worked upon with good results, and what size iron wire should be used? A. It can be used over very long lines if of copper with metallic circuit. Up to 10 miles No. 12 iron wire will answer. 2. Can a single wire with ground connections be used on a line two miles in length, or is a complete metallic circuit very much better? A. Yes; but the full circuit is preferable if there is any induction. 3. Would there be any advantage in volume of sound and workable distance in making the magneto transmitter larger than the standard Bell receiver? A. As far as experiments have gone, there would not. 4. How many cells of Leclanche battery would be required to ring a call bell on a line two miles long, single wire with ground connections, or double, if, according to your answer above, a metallic circuit is to be preferred? A. Two to four.

(5836) P. R. asks: Will liquid mercury attack tin or galvanized sheet iron? Will ammonia pure, or its vapors, attack the same? Which would be the best things besides glass to hold both liquids? A. An iron vessel is excellent for mercury. It will attack tin and zinc and become injured. Ammonia attacks zinc and attacks iron even if tin plated. Gutta percha or stone ware may be used for ammonia. Glass is generally employed for it.

(5837) G. R. L. asks: 1. Are there any substances that are not magnetically transparent? If so, what? A. Iron and steel absorb most of the lines of force. There is no substance such as you refer to. 2. Will you please explain the principles of the duplex telegraph and the quadruplex telegraph? A. For duplex telegraphy we refer you to our SUPPLEMENT, Nos. 694, 702, 796; for multiplex telegraphy to the same, Nos. 457, 461.

(5838) W. C. V. asks: 1. Is the use of glucose as a food injurious? A. Not if pure. 2. Are there other sweets than glucose, which are produced by chemical processes, in the markets for table use? A. Saccharin. 3. How can one plant a cocoa nut in this country and succeed in having it grow? A. Success would be very doubtful except in southern latitudes. Address the Department of Agriculture.

(5839) W. L. B. asks: I have a dynamo 30 volts 8 amperes when wound with 8 pounds No. 14 wire on fields and 1½ pounds No. 18 on armature. What sizes of wire should be used to obtain a potential of 50 volts, using shunt field? A. Wind armature with 1¾ pounds No. 22 wire. Call its resistance 4 ohms. Then the field must have a resistance of 9¾ ohms. This would be given pretty closely by 8 pounds No. 18 wire.

(5840) G. E. B. asks why it is that some tower clocks have such very heavy pendulum bobs, as heavy as 500 pounds. A. Heavy pendulums are made to counteract the effect of vibration in towers by wind or other causes, which produces an irregular beat in light pendulums. The heavy pendulum also lessens the pendulum rod vibration due to the beat of the pallets.

(5841) H. G. A. asks if fifteen convolutions of wire on a spark coil would make a larger spark than 8 convolutions. A. Yes.

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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