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 This is for our information and not for publication.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

(7996) R. S. A. asks: Which will run the "simple electric motor" the most number of (clock) hours—a battery of 16 volts and 4 amperes, or a battery of the same voltage and 40 amperes? Also, how does an ampere-hour correspond with the clock-hour? A. The battery with 40 amperes of current will last ten times as long as one of 4 amperes, if the current is drawn out of each at the rate of 4 amperes per hour. An hour is the same for clock or battery. An ampere-hour is a current of 1 ampere of electricity flowing for one hour. The idea is just the same as when we speak of water flowing through a 1-inch pipe for an hour; a fixed quantity will flow through in one hour. The quantity of water which can flow through a pipe is controlled both by the size and the length of the pipe; so the amperes are controlled by both the size and length of the wire which carries the current.

(7997) C. C. writes: Could you state about what would be the total cost of the "Simple Steam Engine" shown on page 314 of your issue of November 17? How much ower has it? I am interested in this little machine and would be pleased if you could furnish me with the information. A. This simple engine to which you refer has only a fraction of a horse power, but of course one of almost any power could be made on the same plan. The materials for the small one including boiler would cost three or four dollars. The cost of materials for a larger one would depend of course upon the size.

(7998) H. C. C. writes: In the article on "The Electric Chime," I do not quite catch the portion relating to the cam and lever. And will you describe a little more fully how made, what made of, and how connected to the wire. A. The cam is made of two plates of brass, one sawed out to form the double groove and soldered to the other. The lever simply makes a connection between the two springs when the cam pushes it between them.

(7999) W. & Co. ask: Would the mandrel-drawn steel tubing mentioned in a recent article in your paper be suitable, without boring, for steam cylinders up to a diameter of, say, two inches? A. The cold-drawn steel tubing is true and suitable for small steam cylinders.

(8000) G. G. P. asks: Has there ever been a relay or repeater for the telephone invented by any one? If so, will you please give a general description of it, so that the principle upon which it works may be understood by your readers. A. Yes, there have been several invented. The idea is to connect the receiver of one line to the transmitting microphone of another, so that the message as it is received shall be immediately transmitted along the second line. Miller, "American Telephone Practice," price $3 by mail, has a chapter on this topic, giving the various methods by which it has been attempted to accomplish this very desirable object. Of the relay Miller says: "It has not shown its ability to transmit speech between two distant points any better than or quite as well as could be done by direct transmission without the use of the relay at all." That is the condition of the problem to-day.

(8001) J. C. H. asks: What fluid is used in Edison-Lalande battery? A. The fluid is caustic soda or caustic potash, 30 or 40 parts in 100 of water.

(8002) E. H. asks how to make a dry battery to run a small motor? A. The plates of a dry cell are zinc and carbon as in all Leclanche cells. The dry cell is a Leclanche cell with some porous material in which the liquid is held absorbed so that it will not run out. The liquid may be only a solution of sal ammoniac. The absorbent may be plaster of Paris, mixed with something to make it more porous. In some cells this is oxide of zinc. Most of the dry cells are made by secret formulas. The cell itself is made of zinc. The carbon usually occupies at least half of the space in the cell. One formula is said to be: oxide of zinc, 1 part; sal ammoniac, 1 part; plaster, 3 parts; chloride of zinc, 1part; water, 2 parts; all by weight.

(8003) L. F. asks: What is the candle power of ordinary coal oil lamps having wicks ¾, 1, 1¼ and 1½ inches wide, and a student lamp, having a wick 2¾ inches in circumference? A. The candle power of these wicks varies greatly in different burners. The only way to proceed is to measure each lamp when it is in its best condition. The results will be from 5 to 50 or perhaps more candles. Nearly every text book of physics describes the method of measuring candle power. Avery's "School Physics," price $1.40 by mail, is a good guide in the experiment.

(8004) P. S. asks: I would like to make a dynamo ont of the "Simple Electric Motor" described in Experimental Science (page 497). How many volts and amperes can I expect from it? How many incandescent lamps, and what candle power? When wound as a dynamo, can I use it as a motor? Have you a SCIENTIFIC AMERICAN SUPPLEMENT describing a dynamo and motor that will light some incandescent lamps and is very simple and easy to make, as I have not very many tools? A. 1. The simple electric motor is a dynamo if it be driven by an engine. Every dynamo is a motor when electric current is sent through it, and every direct current motor is a dynamo when driven by power. It will give nearly the same current as is used to drive it, and will light a few small incandescent lamps. 2. The simple electric motor is the easiest to build without a machine shop. The dynamo described in SUPPLEMENT, No. 600, is able to light eight 16 candle power lamps of 50 volts.

(8005) P. D. B. asks: Will you please publish a recipe for making batteries to be used upon a gasoline motor bicycle? A. A good dry battery is best adapted to igniting the vapor in a gasoline engine. These can be purchased much cheaper than they can be made. Their construction can be learned from Carhart's Primary Batteries, price $1.50 by mail. A storage cell is described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 792, and the Electric Ignition of Gas Engines is the subject of a valuable article in SUPPLEMENT 1281.

(8006) H. G. V. L. asks: 1. Which is the best for X-ray screens—barium platinocyanide or tungstate of calcium? A. Barium platinocyanide is better for fluorescent screens than calcium tungstate; by some it is pronounced to be 75 per cent better. Its chief point of superiority is that it does not retain its glow so long after the rays have ceased to strike it as calcium tungstate does. 2. Where can barium platinocyanide be had, and what quantity would be needed to make a screen say 8 by 10 inches? A. Either of these substances can be had from dealers in X-ray apparatus. See our advertising colums. The dealer will tell you what quantity to use per square inch. 3. Have an actinometer with scale from 0° to 80°. Do not know how to get the specific gravity, say sulphuric acid 1·82, or sulphuric and water, for electrolytic breakers or batteries? A. Put your actinometer in sulphuric acid of known density, or in a mixture of the proper proportions, and observe the reading. Afterward it will only be necessary to bring the fluid to the density which will support the actinometer at the same mark.

(8007) McK. asks: Why are our prevailing winds westerly? The earth's revolution would naturally cause the winds to blow in the opposite direction. A. The prevailing winds of your part of the world are westerly because you live in the zone of the anti-trade winds, which prevail from 30° to 60° north and south latitude. Winds are not caused by the earth's rotation on its axis. They are modified in their direction by that rotation. They are caused by the heat of the sun. The subject is too extensive for treatment in a note. The reader is referred to Waldo's "Elementary Meteorology," price $1.75 by mail; and for a complete presentation of the subject to Ferrell's "Treatise on the Winds," price $4 by mail.

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Picture trimming guide, P. E. Stevens 662,982
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Pipe or bar dipping apparatus, H. B. Lynch 663,034
Planter, automatic corn, C. I. Burt 662,912
Planter, corn, G. L. Buckley 663,008
Plow, A. H. Laughlin 663,032
Plow, W. R. Oyler 663,358
Plow, N. Sanders 662,974
Plumber's tag or clamp stay, H. H. & G. V. Hibberd 662,935

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