

the disk to the wire from the battery and the inside terminal to the wire from the meter, that the needle would deflect one way, and by connecting them just the opposite the needle was deflected just the opposite as to what it did before, just the same as it would had I changed the direction of the current through the meter, which I did not do. I made several tests, with the same result each time. I have never heard of anything like it before, and do not know whether I am in the wrong or not about the matter, but can see no reason for the needle to change. Will you kindly explain, if it is worth an explanation? A. In the second mode of connecting the coil to the battery and galvanometer the current flows through the coil in the opposite direction from which it flowed the first time. The poles of the coil are therefore reversed. It may be that the coil is so near to the galvanometer that its needle is deflected by the coil. We do not see any other way in which the deflection of the needle should be reversed.

(8117) G. G. A. E. asks: 1. How can you determine the size of wire to be used in different circuits? Is it according to the capacity of the wire and the requirements of the instruments or to some other rules? If so, give the principal rules. A. The wiring of a circuit is determined by the current it is to carry, the drop to be allowed in it, etc. The tables of the Underwriters are the general guide for size of wire. You will find Cushing's "Wiring Handbook," price \$1, by mail, a good book on the subject. The edition for 1901 is just out. 2. How many candle power can a 75 watt dynamo, capable at 1,400 revolutions of producing 15 to 20 volts, and at 2,000 revolutions 40 to 50 volts, furnish? Also, how the candle power could be divided up into seven different lamps in order to get best results? A. Two and a half to four watts are to be allowed per candle with small lamps. With 75 watts you can have 20 to 30 candle power. If you have 7 lamps on 20 volts, you will have about 3 volts for a lamp, and you will need 1 candle power lamps, 7 in a series. At 50 volts you can use 7-volt lamps, and can have 2 candle power lamps, in series. 3. Which do you think is the better for both general and accumulator use—the series or the shunt-wound dynamo? A. A series dynamo is not adapted to the work of charging storage cells. Use a shunt-wound machine. 4. Can dry batteries, when exhausted, be used for accumulators; and, if so, how many would be required for the above dynamo? A. We know of no way to use dry cells as accumulators.

(8118) J. K. asks: 1. How can I make a core for an induction coil, for medical use or igniting use? A. The core of an induction coil for any purpose consists of a bundle of iron wires, covered with paraffined paper or other insulation. Upon this the primary coil is wound. Full instructions for winding a medical coil are given in Bottone's "Electrical Instrument-Making," price 50 cents, by mail. 2. Can an incandescent light be produced without a dynamo; and, if so, how? A. Yes; a small lamp may be lighted by a primary battery. 3. How can I construct a small electric motor for running small machinery? A. Follow the directions given in the SCIENTIFIC AMERICAN SUPPLEMENT, 641, 750, or 1210, price 10 cents each.

(8119) A. McD. asks: Is there a water motor used to run a dynamo? Is it a success? A. A dynamo can be run by water power as well as by steam. It is necessary to secure steady motion by a steady pressure of the water. For water motors see our advertising columns.

(8120) B. G. J. asks: 1. To change an alternating current that now has a pressure of 50 volts to one of 115 volts, what effect would the increased pressure have on conductor and the rubber insulation, the present conductor having the capacity of 10 amperes? A. No appreciable effect. The difference between the voltages is too small to make any difference. 2. Would it be necessary to increase the size of the conductor? A. No; the conductor could be diminished if any change were to be made in it for the same current. The higher the voltage the smaller the conductor needed to carry a given amount of electricity. 3. Are transformers made to step down 5,500 volts to 115 volts? A. Yes; such transformers would be supplied by any company furnishing current at this pressure.

(8121) A. W. P. asks: 1. What is the object in having a vacuum in coherer tubes? A. It is not necessary to have a vacuum in the coherer tube for wireless telegraphy. 2. What kind of burner should be used with acetylene gas to obtain a hot blue flame for laboratory work? A. A party claims to have a jet which will produce a colorless flame with acetylene and burn safely so long as it is properly used. It is unnecessary to say that mixtures of air and acetylene are explosive, and unsafe. We are not informed how the burner in question is constructed. 3. How do the following rank as insulators: Frasch, Amalgamator, O. Maris, Back pedaling brake, W. S. Culberson, Bale tie, cotton, F. B. Shuster, Baling press, W. S. Livengood, Baling press, J. M. Sanders, Ballot box, registering and canceling, E. K. Tolman, Band cutter and feeder, J. N. Wilson, Bath tub, portable, E. Breide, Batteries and regenerating elements thereof, operating two liquid primary, H. K. Hess et al (reissue), Battery, See Secondary battery.

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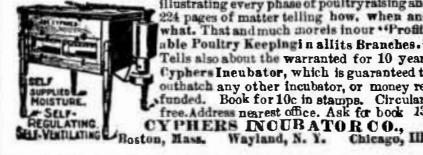
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