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INCANDESCENT GASOLINE LAMPS—LIGHTED WITH ONE MATCH

(8475) E. A. L. asks: 1. Why is it that while reading about electric currents only the voltage is spoken of so many times? I thought that the amperes was the part of the current which really hurt a man if the voltage was enough to force it through, but I haven't seen any account yet of the amperes used in electrocution, while every paper tells of the great number of volts. A. The number of amperes which a given E. M. F. will cause to flow varies with the resistance. It is certain that enough current will flow with the voltage used to end the life of the criminal. That is as far as practical interest in the matter goes. Most newspaper reporters know only the volt, so they cannot write about the ampere. 2. Is the attraction of two bodies, of unequal weight, the same for each other? That is, is not the attraction of a 5-pound weight for a 15-pound weight of the same material equal to the attraction of the 15-pound weight for the 5-pound? A. No; of course not. 15 pounds will attract three times as much as 5 pounds. See any textbook of physics under gravitation. 3. Is the acceleration of a pendulum, in the quadrant, uniformly accelerated motion? That is, from a to b and back is the acceleration uniform each way? Will you explain why? A. Yes. Gravity produces the motion of a pendulum. A pendulum is a falling body, and all falling bodies have a uniformly accelerated velocity, because gravity is a constant force. 4. Can you refer me to some reliable works on hypnotism? If possible give me the names of reasonably cheap books and where I can obtain them. A. We can furnish Moll's "Hypnotism" by mail for \$1.50. 5. Is there some substance I can use for a filling or sizing on cotton (or other cloth) which would make it tight enough for a gas bag under low pressure? A. Varnish is the most suitable. 6. What can I mix together to make a retort of? Something which will not melt. Is there any way of making plumbago stay in shape? A. Retorts are made of glass. Crucibles are made of fire clay or plumbago. They can be purchased from dealers in chemical materials.

(8476) R. D. asks: If a certain number of cells are used to operate a coil of size described in SUPPLEMENT 160, what the output will be, if I know the voltage of each cell that is used, and the number of amperes, if any? A. An induction coil raises the voltage of a current in the ratio of the number of turns in the primary and secondary windings. The length of spark is, however, a better guide to a judgment of the number of volts in the secondary discharge. To throw a spark one inch through dry air requires from 27,000 to 30,000 volts, depending upon the form and size of the terminals.

(8477) E. D. asks: I have a pound and a half of No. 30 B. & S. copper wire, and I wish to make an induction coil, using this for the secondary coil. Will you please tell me what size and how much wire I should use in the primary if I wish to get the largest possible spark? A. No. 30 wire is not adapted for the secondary of an induction coil. It is too coarse. No. 36 is the coarsest which is used for this purpose. Also tell me about how large a spark the coil ought to give if wound properly. A. Perhaps an eighth of an inch. Wind the primary with two layers of No. 12 wire.

(8478) W. H. G. asks: 1. A good battery solution for the gallon size of Aetna Bunsen battery. Please give one that will give heavy current and will not require the withdrawal of the zinc. A. A Bunsen battery uses either nitric acid or bichromate of potash solution on the carbon and dilute sulphuric acid on the zinc. The zincs are not lifted out of the solution, since the Bunsen is a closed-circuit battery. 2. Please tell how I can find the number of ohms a magnet is wound for without an ohmmeter. A. From the size and length of wire on a magnet you can find by means of a wire table the approximate resistance of the coils.

(8479) In the answer to Query 8466 a typographical error occurs. The resistance of No. 36 wire is one ohm for each 2.41 ft. The number given in our reply is one thousand times too large. A period should appear in place of the comma.

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