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Notes & Queries

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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 This is for our information and not for publication.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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(7994) P. B. J. asks: 1. What amount of wire is required, what size, and how is it to be wound to make a permanent magnet? Can I get sufficient power from batteries and induction coil, ½ inch spark, or from a uni-direction machine with 8 inch magnet? A. To magnetize a permanent magnet with a battery, wind a coil of covered wire of any convenient size, No. 14 or No. 16 will do. The inside diameter of the coil must be such that the magnet will slip easily through the coil. If of the horse-shoe form, it is well to make the coil so that the magnet may slide around through the coil for its whole length; otherwise, you can use the coil on each end separately, by breaking the circuit before removing the coil from the magnet. To use the coil, put it upon the magnet to the middle of the magnet and turn on the current. Move the coil along the magnet to one end and then to the other end several times, stopping at last at the middle. Break the circuit, and the magnet will be found magnetized. 2. Is a compound magnet simply several ordinary magnets put one on the other, or must they be insulated? Is the power of said compound magnets the power of all combined, or is it increased as in the induction coil? 2. A compound magnet is made from thin magnets of steel. Each one is carefully magnetized separately as strongly as possible. They are then assembled into one magnet by placing the same poles of all together. Thus the strength is made much greater than that of a single magnet of the same weight. 3. Will a dynamo with a permanent magnet do the same work as one using an electromagnet? I have an eight-foot windmill which pumps water from a well two hundred feet deep; there is plenty of power to spare while pumping, which is not over one-third of the time. Could I connect my mill with a small dynamo which is in turn connected with storage batteries for light? If so, how large must my dynamo be? I would like to burn four 16 candle power lamps. How many cells of battery must I have, their size, etc.? Could I use the unidirection dynamo for this? A. A machine with a permanent magnet will generate a current of electricity as well as one with an electro-magnet. It is not as serviceable. Such machines are not built except in small sizes. A dynamo can be run by a windmill, if a heavy balance wheel is used to equalize the velocity. A countershaft is necessary to give sufficient speed. A small dynamo is usually run at about 1,600 turns per minute. You will probably get eight to ten 16 candle lamps from a horse power. A storage battery will be needed to furnish light when the wind is not blowing. Your little dynamo with permanent magnet will not furnish the current for any number of lamps. Its voltage may not be right for lights. To light your lamps you will require as many cells of storage battery as one-half the voltage of your lamps. Their size will be determined by the number of hours they are to run on one charge. Consult our advertising columns for storage battery. 4. Situated as I am over a hundred miles from a foundry and machine shop, I have been forced to rig up a shop for repairing of all kinds of farm tools; instead of a forge I have two blast or brazing lamps. One of these lamps is rated at 2,600 and the other at 2,000 degrees. I feel positive if I can get the heat boxed up I can melt iron, brass, etc., for casting small pieces for experimental work; can you give me any idea of a furnace in which I can put my crucibles for this purpose? A. The lamps will melt a small crucible of metal. You can inclose the crucible in fire brick with an opening for the blast.

(7995) S. J. P. writes: I want instructions how to make a magic lantern; also a work on concave mirror reflection tricks. Some years since I had a lantern with a mirror in one corner, so that we could remove the lamp and throw a scene on to smoke, but I have forgotten the detail. We could apparently throw a scene through a wall and many curious things do that I have forgotten. Have you a work on anything of the kind? A. We know no book better adapted to your needs than Experimental Science, by G. M. Hopkins, price $4 by mail. It contains all that you ask and much more.

NEW BOOKS, ETC.

ENCYCLOPEDIA BRITANNICA. Thirty Volume Edition. The American Newspaper Association, 148 Fifth Avenue, New York city.

The Encyclopedia Britannica is one of the most imposing sets of books ever produced, and the solidity of the scholarship of its authors is only equaled by the massiveness of the volumes. Fifteen hundred of the greatest scholars in the world contributed to the production of this monumental work. The firm of publishers mentioned above, not satisfied with the parent work, have compiled a new American Supplement in five volumes, edited under the personal supervision of Dr. Day Otis Kellogg, assisted by a corps of such experienced writers and specialists as Dr. R. H. Thurston, Dr. Simon Newcomb, Gen. D. W. Flagler, Hon. Carroll D. Wright, Hon. John Sherman and many others. Many subjects not fully treated in the work proper have adequate representation here, such as for instance the biographies of living persons, which find no place in the original work. Such topics as the Philippines will be found here, and the information is exactly what the ordinary reader wishes to know. On the whole, the work is one which can be confidently recommended to a discriminating public.

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