

rect. 3. Should the wire on dynamo be single, double, or triple wound? A. Fine double wound armature wire is the best. 4. Should joints in main circuit be made with solder? A. Not necessarily; if the wires are well twisted together and the joint is protected, there will be no appreciable resistance. It is, however, advisable to solder the joints of conductors wherever it is convenient.

(9) C. M. H. asks: What changes are necessary to convert the motor described on page 165 of SCIENTIFIC AMERICAN of March 17 into a dynamo? And how many 16 candle incandescent lights will it furnish? How should it be connected? A. Provide a cast iron field magnet as described on page 229 current volume of SCIENTIFIC AMERICAN, and wind the armature with No. 20 wire. Connect as in the motor. The number of lamps it would run could be determined only by experiment.

(10) J. S. M. asks how bromide prints are made. A. You purchase the paper, called gelatino-bromide paper, already sensitized, from dealers in photographic supplies, and expose it in contact with a negative to lamp or gas light, holding the frame about threefeet therefrom, for about two or three seconds. The exposed sheet when removed from the frame (in a room lighted by a ruby orange light) has no apparent image on it. But it is wet with water, laid in a tray, and over it is poured a developer as follows:

Saturated solution oxalate potash. 6 oz.
sulphate iron. 1 oz.
In a few minutes the positive picture comes out. When finished, it is removed from the tray, washed with water, and immersed for five or ten minutes in a fixing bath (hyposulphite soda one ounce, water six ounces). It is then washed for two hours, and dried. If dried on a sheet of hard rubber, the surface will possess a beautiful glaze or polish.

(11) E. W. J. writes: I have a zinc and carbon battery consisting of eight cells, and I use for a fluid sulphuric acid and bichromate of potash. I wish to change it to a zinc and copper battery. What I wish to know is, will I have to use a different liquid? If so, what? And how will it compare in E.M.F. to the common zinc and carbon? A. You will have to arrange your zinc copper battery as a Daniell or gravity combination, whose electromotive force will be 1.07 volts per couple, or a little over half that of the zinc carbon cell. A solution of sulphate of copper will be the proper exciting fluid.

(12) B. N. asks if the potato is a fruit or a vegetable? What is the definition of the word vegetable? What is the difference between a fruit and a vegetable? A. The potato is conventionally called a vegetable. It is a tuber, or subterranean stem. A vegetable is a plant, part or all of which is used for culinary purposes, or for feeding animals. A fruit is the edible succulent portions of certain plants generally edible by man without cooking. It is impossible to draw a sharp line between them.

(13) J. M. S. should have patience and try to improve his spelling and handwriting. If he proves able to do good work, he will advance slowly, but surely.

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