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(8503) An old subscriber says: I have several old daguerreotypes which until recently were in a good state of preservation. Now I find that the surface of the plate has apparently oxidized and the portrait has disappeared from view. Can you give me instructions for restoring the pictures and preserving them? A. The removal of the deposit from the surface of the daguerreotypes is such a delicate operation that, if possible, it should be intrusted to one who has had experience in that process. If, however, you wish to try it yourself, you may proceed as follows: Carefully separate the cover glass from the silver-coated plate, being especially careful that the surface of the latter is not touched even by anything so light as a feather. Soak the daguerreotype first in water, and then in a solution of potassium cyanide, from five to ten grains to the ounce; rocking the dish till the deposit is removed. A 20-grain solution of sodium hyposulphite may be used instead of the cyanide, although it is not always so successful. When the deposit has been removed, the plate should be well washed under a gentle stream from the tap, or in several changes of water, finishing with distilled water. The method of drying is important. The plate, after slight draining, should be taken by a corner by a pair of pliers and held over the flame of a spirit lamp or gas jet, allowing just sufficient heat to evaporate the remaining film of water, the evaporating of which may be assisted by gently blowing across the surface. The restored daguerreotype and cover glass, the latter after thorough cleaning, should then be bound together as before, and the more completely this is done so as to exclude the atmosphere, the longer will the image retain its pristine beauty. Potassium cyanide is a deadly poison. It should be used with care.

(8504) C. S. asks: About how much current does a 1/4-inch spark coil take to give full length of spark? A. A good authority gives about 10,000 volts as the pressure required for a spark of 1/4 inch. The current, or amperes, is insignificant. 2. Is a relay necessary in wireless telegraphy? A. Yes. 3. Is it necessary to have oscillators on the coil in wireless telegraphy? A. Yes. 4. With good usage how long should an induction coil last? A. Forever. There is no deterioration by use in an induction coil. 5. Can you explain why a Geissler tube still glows when connected with only one wire of the secondary of the coil? A. Because of electrical induction. The waves go through space from one pole of a coil to the other. The Geissler tube held between the two poles of the secondary will glow when it is connected with neither wire. The same experiment can be performed with the bulb of an incandescent lamp. Hold it in the hand by the metal base between the terminals of the coil.

(8505) R. W. W. asks: 1. The object-glass of my telescope consists of two lenses, one being convex and the other concave-convex. When they are together they are the same as an ordinary convex lens. Why is a single one not used? A. The two glasses are used to prevent the objects seen from being bordered with a colored fringe. Remove the concave glass and you will see the difference. Then study in some textbook of physics about achromatic lenses. 2. Why is it that copper wire is used for electric lighting and power currents and iron or steel for telegraph and telephone wires? A. There is a very small flow of current in the telegraph and telephone wires, and a large flow over the lighting and power circuits. Copper is a much better conductor than iron, and though it costs much more in the first place, it is far cheaper in the end. 3. What is the difference between a continuous and an alternating electric current? A. A continuous current flows like a stream of water steadily in one direction. An alternating current flows by rising to its full voltage and then falling to its least. There are alternations of the electromotive force, which has all possible values in a series.

(8506) D. P. asks: Does electricity occupy space? A. No. Electricity is not ordinary matter, as, for example, lead is. Whatever it may be, it is not a material substance.

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