## MISCELLANEOUS TFSTS.

**245.** When no Firing resistance coils are available, a rough measurement of the power of the battery can be obtained by finding the *length* of standard iridio-platinum wire, which it can just fuse. The resistance through which the wire is fused, or in other words the resistance through which the battery is capable of firing the fuzes can then be found from the following equations :-

and

## $R_x = \rho + 10.4 l$ ; for the 0.0014" wire

 $R_x = \rho + 2.96 l$ ; for the 0.003" wire,

where l is the length of wire fused, in inches.

**246.** A fair idea of the condition of each cell of a firing battery can be obtained, by connecting a wire to one pole and then applying it to the other pole of each cell in succession, commencing with the cell to which the wire is attached. The spark should gradually increase in brightness, and any sudden diminution in passing from one cell to the next indicates that the last cell touched is defective.

CONTINUITY TEST FOR AN INSULATED ELECTRICAL CABLE.

**247.** An electrical conductor can have no solution of continuity, if a current can be passed through it. A test for continuity is, therefore, to connect in simple circuit the cable, a test cell, and a galvanometer. If no deflection be obtained there must be at least one solution of continuity.

PRICKER TEST TO LOCATE A SOLUTION OF CONTINUITY.

**248.** If the above test indicates a solution of continuity, the fault, or faults, can be located in the following manner:

One pole of a test-cell is connected to one end of the cable, and the other pole is connected to "earth." The cable is then punctured at intervals with a strong needle attached to an earth-plate, the needle touching each time the core of the cable. So long as there is no fault in the cable between the needle and the test-cell, the galvanometer will be deflected, but it will cease to deflect directly the fault is passed. The punctured places should be repaired with indiarubber tape and solution.

## EXAMPLES.

1. The resistance of an electrical cable, having a copper core, is 2.56 ohms at  $60^{\circ}$  Fahr. What will be its resistance at  $0^{\circ}$  Fahr?

2. The resistance of an iron wire at  $5^{\circ}$  (' is found to be 2.654 ohms. The resistance coils, with which the measurement was taken, are made of German silver, and are true at 15.2° C. Find the resistance of the wire at 100° C.

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