STUDY OF BATTERY RESISTANCE

Exercise 112. - Study the resistance of a battery.

APPARATUS:---Two Daniell cells, galvanometer, commutator, resistance box. The copper and zinc plates of the cells should be narrow strips, not cylinders as shown in Fig. 98.

1. Put one cell in circuit with the tangent galvanometer and commutator.

(a) Push the porous cup over against one side of the outer jar, and move the copper and zinc plates until they are as near together as possible (Fig. 111). Record

the reading of the galvanometer. Then reverse the commutator, read and record again.

(b) Keeping the copper and zinc plates the same distance apart, lift them upwards until each is immersed in the liquid to the depth of about 1 cm. Read the galvanometer; then reverse and read again.



Fig. 111.—Showing the copper and zinc plates close together.

(c) Next, keeping the porous cup in the same place, put the plates as far apart as possible (Fig. 112). Read the galvanometer; then reverse and read again.



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Fig. 112.—Showing the copper and zinc plates far apart.

2. Join the two cells in parallel (*i.e.*, zinc to zinc and copper to copper) and put them in circuit with the galvanometer, commutator and a resistance box. Then vary the resistance in the circuit, and record the reading of the galvanometer with each resistance.

3. Join the two cells in series and in circuit with the galvanometer, commutator and resistance box. Take readings with the same resistances in circuit as in 2.

Under what conditions does the parallel arrangement give the stronger current? Under what conditions does the series arrangement?