shunt pegs, which must either be both in, or both out; but a directing magnet is more convenient, and its use generally enables r_b to be made zero, when

$$\rho_x = r'_b - r_c$$

Accurate results cannot be expected by this method, if the cell be inconstant, for the method is based on the assumption that P has the same value for both readings.

BY KEMPE'S METHOD.

223. In Kempe's method, the negative pole of the cell or battery, of which the liquid resistance is required, is connected to a reflecting galvanometer. The galvanometer is connected to one plate of a condenser, the other plate is connected, through a key, to the positive pole of the battery, and also to "earth." A box of resistance coils is placed between the negative pole and the key. The arrangement is shown in Fig. 22.

Fig. 22.

The first reading is taken when the resistance in the box of coils is infinite, and the *corrected** deflection D measures the potential P, at the positive pole of the cell. For the second reading, a resistance r_b is unplugged in the box of resistance coils; the corrected deflection D' will in the case measure the potential p at the negative pole of the cell or battery, which is less than P by the fall of potential due to the liquid resistance. From Fig. 23, which exhibits graphically† the fall of potential

Fig. 23.

*See § 180.

†See § 146.