

In carrying out the experiment it was found that when the earth connection to the free quadrants was broken, the needle moved out in the positive direction on the scale for a distance which represented approximately $1/40$ of a volt, and came to rest in this position. This deflection was taken to represent the deviation arising from the volta effect. The chamber was then slowly evacuated, but as the exhaustion proceeded no additional deflection of the needle was observed. An attempt was then made to reduce the pressure as low as possible, but although a pressure of .3 mm. was reached no indication was obtained of any additional charge being acquired by the insulated tray which carried the uranium nitrate.

As it is known that both alpha and beta rays are emitted by the salts, this result pointed to the conclusion that these rays carried away from the salt equal amounts of positive and negative electrical charges. In order to test this matter still further a second form of exposing chamber was constructed.

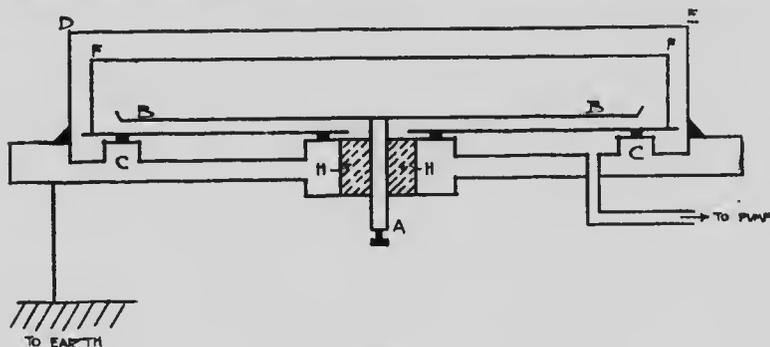


FIG III

Its design is shown in Fig. IV. The salt was spread out in thin layers some 3 or 4 mm. thick on a set of 12 brass trays AA whose diameters were about 9 cms. These were all fastened to a central brass rod C which was suspended in the outer brass cylinder by an insulating support of ebonite. This vessel carried a small tray of P_2O_5 in the bottom and it was also provided with a set of plates, DD, so arranged between the trays as to intercept the rays issuing from the salt. The apparatus was provided with a cover as shown in the figure, and all the joints were again made air-tight with solder and sealing wax.

With this form of apparatus the volta effect was again in the positive direction, but the corresponding displacement was greater in this case, and represented approximately one quarter of a volt. After the deflection resulting from the volta effect had become steady, the air was rapidly exhausted from the receiver, and although the pressure was reduced to .02 mm., no indication of any charging action was obtained.