

INTERFERENCE FRINGES ABOUT THE PATH OF AN ELECTRIC DISCHARGE.

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Some ten years ago the senior author of this paper, while photographing interference fringes under various conditions, noticed that fringes were produced about the path of an electric discharge. Owing to the press of other work further investigation of the subject was postponed. A few weeks since the subject was revived and arrangements were made to continue the investigation.

The apparatus consists of two rectangular wood boxes about twelve feet long, the larger box about eight inches square, the smaller one about six inches square and arranged to telescope in the larger box. Thus the total length of the box can be made anything from twelve to twenty-four feet. The boxes were painted dead black on the inside. The far end of the larger box is provided with a sort of camera attachment and plate holder. The far end of the smaller box is light tight, except for a metal disc, which has several apertures bored through it, the apertures varying in diameter from .01 cm. to .5 cm. By rotating the disc any desired aperture can be brought into position at the center of the end of the box. The aperture was illuminated by the blue end of the spectrum of an electric arc. A piece of ground glass was placed against the outside of the metal disc to insure the spreading out of the light passing through the aperture.

The needle points were placed near the center of the box, which was made about twenty feet long. The points were charged by connecting them to the knobs of a ten-inch plate induction machine driven by an electric motor.

Interference fringes were produced whether the discharge was visible or invisible, continuous or intermittent, and whether between points or small spheres. On some of the plates taken with the needle points 1 cm. apart and with an invisible discharge three dark bands can be seen on either side of the dark central band connecting the two points.

Sufficient work has not been done to warrant an attempt at an explanation of the results obtained, therefore further results will be reserved until others have been obtained that may throw some light on the subject.