The hyperbola is, of course, the easiest to produce, and the parabola the most difficult. Some device for regulating the initial velocity and aim would be conducive to more uniform results.

Polarisation of the steel ball is apt to give trouble, and I have obtained some repulsion orbits where the ball turns back before reaching the centre, which are very pretty, but not desirable when one is trying to illustrate central attraction. Soft

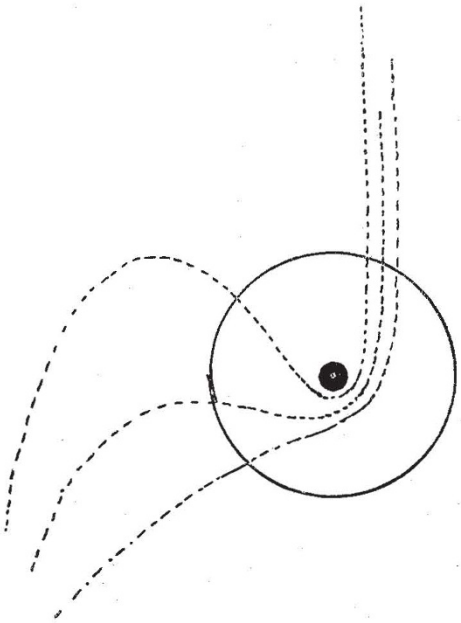

FIG. 3.

iron balls would be preferable to steel on this account; but they are not on the market, so far as I know, and the others answer the purpose well enough.

[*Supplementary Note.*—With a very powerful Rhumkorff magnet, belonging to the Massachusetts Institute of Technology, I have caused the ball to gyrate in a vertical plane about the poles, notwithstanding the perturbating influence of gravity. This elimination of the supporting plane makes the conditions

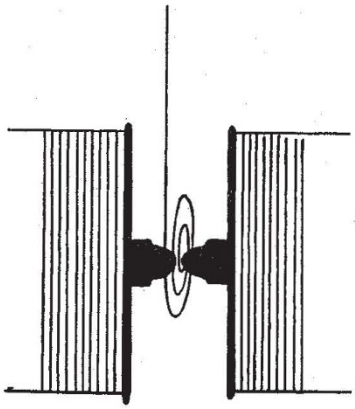

FIG. 4.

a little more like those existing in the case of plantetary bodies moving in space; but the motion is so rapid that it is difficult to see the form of the curve, and no permanent record is left: moreover, the curves are distorted by the downward pull of gravity.

The two conical pole-pieces of the magnet were brought close together, creating a very intense field, and the ball was dropped from elevations varying from six inches to a couple of feet at different distances from the vertical plane joining the poles. Usually the ball flies either directly to the poles, or moves in a path similar to some one of those shown in Fig. 3 (the pole being seen end on); but on several occasions I have succeeded in causing it to perform two or three complete revolutions, as shown roughly in Fig. 4.] R. W. WOOD.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Mr. Sidney Colvin has been appointed by the Council of the Senate a Trustee of the British Institution Scholarship Fund, in the room of the late Prof. Middleton.

The subject for the Adams Prize for 1899 is "The Theory of the Aberration of Light." The prize is open to all graduates of the University. Essays must be sent to the Vice-Chancellor by December 16, 1898. The value of the prize is about 200*l*.

Sixteen candidates have passed the examination in Sanitary Science, and will receive the University's diploma in Public Health.

The annual prize for an essay on an archæological subject offered by Newnham College has been this year awarded to Miss R. E. White (first class, Classical Tripos, 1895); the subject was "Women in Egypt under the Ptolemies."

It is understood that the syndicate on degrees for women, whose report was referred back to them for reconsideration, have agreed to adhere to their recommendations. The voting on the scheme in the Senate is expected to take place about May 20. An active canvass for and against their proposals is being conducted by Committees in Cambridge and London.

IT has been decided to transfer the administration of the grants to schools in Scotland for science and art to the Scotch Education Department. The details of the transfer will be a matter of departmental arrangement.

THE Legislature of the State of New York has passed a Bill authorising the appropriation by New York City of two and a half million dollars for the purpose of erecting the new public library to be built on the corner of Fifth Avenue and West Forty-second Street, and the Mayor has approved the Bill; so that the city is pledged to execute the work.

THE following gifts and grants to educational institutions in the United States are announced in *Science*:—The Sheffield Scientific School of Yale University receives 25,000 dollars by the will of Mrs. Sarah Van Nostrand.—The department of natural history of Vassar College will receive about 25,000 dollars through the settlement of the will of the late Jacob P. Giraud.—A Bill before the Texas Senate appropriates for the State University 35,000 dollars for 1897 and 85,000 dollars for 1898, and in addition 42,000 dollars annually for the medical department.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, April 8.—"The Production of X-Rays of Different Penetrative Values." By A. A. C. Swinton. Communicated by Lord Kelvin. Received March 24.

If the X-rays coming from a focus tube of the ordinary type be observed with a fluorescent screen during the process of exhaustion, the penetrative value of the rays is found to change as the exhaustion proceeds. At less than a certain degree of vacuum, no X-rays are produced. As the vacuum increases, X-rays commence to show themselves, but of a quality that will do little more than penetrate the backing of the screen. At higher vacua the rays become more penetrative, and show the shadow of the bones of the hand. The point is next reached when the flesh of the hand is very transparent, while the bones are still quite opaque. At higher vacua than this, the bones become more and more transparent, till at length, at the very highest vacuum at which the discharge will pass, the bones become nearly as transparent as the flesh, while the whole hand throws but a very faint shadow on the screen.

Similar effects can be produced with a constant vacuum by gradually increasing the power of the Rhumkorff coil, or by varying the resistance of the tube by means of a magnetic field, the X-rays being most penetrative with great electrical power