

NOTES ON THE FOUCAULT PENDULUM

BY

K. G. LARSON

Augustana College, Rock Island, Illinois

A pendulum weighing 33.1 kg., and 661 cm. long has been hung in the tower of the Old Main, on our campus. The suspension is of the double roller and steel plate type, described by A. C. Longden (*Phys. Rev.* 13:241, April 1919).

A steel roller 1.429 cm. diameter and 9 cm. long is mounted in a V-groove, on a steel rail fixed securely in an east-west line to the floor in an upper room. A steel plate 1.2 cm. thick¹ and 9 cm. square rests on it. A second roller in a north-south line on top of the plate supports a stirrup having a V-groove in its instep. The side members of this stirrup, 45 cm. long, extend down through the floor to the room below. A soft iron wire .072 cm. diameter forms a bifilar suspension for the ball from the stirrup.

The counterpoise, which is necessary to increase the moment of inertia of the shorter north-south component of the pendulum, consists of two 3.5 kg. weights, one at either end of a steel rod 1.59 cm. diameter and 98 cm. long, clamped to the plate in a north-south direction, horizontal. This construction and the length of the legs of the stirrup are intended to avoid the top-heavy rocking of the plate, which it was feared would occur due to the action of gravity on a counterpoise supported vertically above the plate.

The reflection of an index at the bottom of the ball in a mirror below, and very close to it, makes it possible to rotate the mirror on its pivot until a straight line across it coincides very exactly with the plane of motion of the pendulum. The position is then read to one-twelfth of a degree by a vernier at the edge of the mirror, and a graduated circle of 35 cm. radius on a circular table below. We can continue taking readings for 2½ to 3 hrs. after one start of the pendulum; rotation one degree each 6 minutes, approximately.

Since various writers have described pendulums suspended with piano wire, instead of soft iron wire, and since Professor Longden thought it impossible to get consistent rotation except with wire stretched beyond its elastic limit, or annealed, I wanted to try this effect also; this has not yet been done.

¹The thickness was later reduced to 5 mm. Two weights, 1125 grams each, placed 66 cm. apart, are thus sufficient counterpoise.