derrick and a power hoist, can be lowered on the end of a piece of flexible wire from a large reel and thus several observations per day may be taken by two men.

The writer has not had an opportunity to use the instrument in actual surveying, but has taken a number of observations with it on the surface and has found its records interesting and apparently exact. He therefore feels justified in submitting the following brief description of the instrument taken from the original paper by its inventor.

GENERAL DESCRIPTION.

Briefly described, this instrument is one in which both dip and deviation are recorded by means of photographs of the positions of both a plumb-bob and a magnetic needle at any desired point in a borehole. The photographs are taken by means of two small electric lamps lit by a "time contact."

DETAILED DESCRIPTION.

The instrument comprises a brass cylinder 20 to 30 inches long; both length and diameter are varied to suit the particular requirements. The cylinder is made in two portions, which screw together quite flush shoulder to shoulder. The top and bottom are closed by means of tightly-fitting screwed plugs. To the top plug is attached a brass swivel with an eye piece, by which the instrument is suspended. The swivel is fitted to the plug with ball bearings. The object of this swivel is to prevent the wire, which is used in lowering the instrument, from twisting; also, to minimise risk of the instrument kicking against the sides of the borehole when being lowered or raised. Inside the cylinder, immediately beneath the top plug, is a spring resting on a pad, which keeps firmly in position a small watch or timepiece. Below the watch is a dry battery. Below this again is arranged a tiny electric lamp, and below the lamp is a glass plate, from the centre of which hangs a small plumb-bob. Below the plumb-bob is a circular brass plate supported on gimbal bearings, so that it always remains in a horizontal position. On this plate is placed a small disc of sensitised paper. Below this is another electric lamp, and below this again is a compass, which is also supported on gimbal bearings. On the dial plate of the compass is placed another disc of sensitised paper; each disc is pierced by a pin-prick in the centre, and another on one side, and both discs are fixed in exactly the same relative position, one above the other, when in the instrument. The whole is kept firmly in position from below by another spring placed under the little cup holding the magnetic needle, and resting on the bottom screwed plug. When the hand of the watch is passing the 12 o'clock point on the dial, it makes contact for about 15 seconds with a small projecting spring made of copper foil, which is connected with one line from the battery. The hand of the watch is connected with the other line; and so, when in contact with the spring, the circuit is completed; both electric lamps are lighted; and photographs are taken of the positions of the plumb-bob and the magnetic needle. It is only necessary to set the watch so that the hand will only pass the 12 o'clock point after sufficient time has elapsed to allow for the instrument being lowered to the required depth, and also to allow for the plumb-bob and magnetic needle having come to rest. In practice, it is usual to take readings at, say, every 200 feet to 300 feet, and two readings should invariably be taken in each instance. When once the photographs have been obtained, the rest of the work is easy; for, the height of the point of