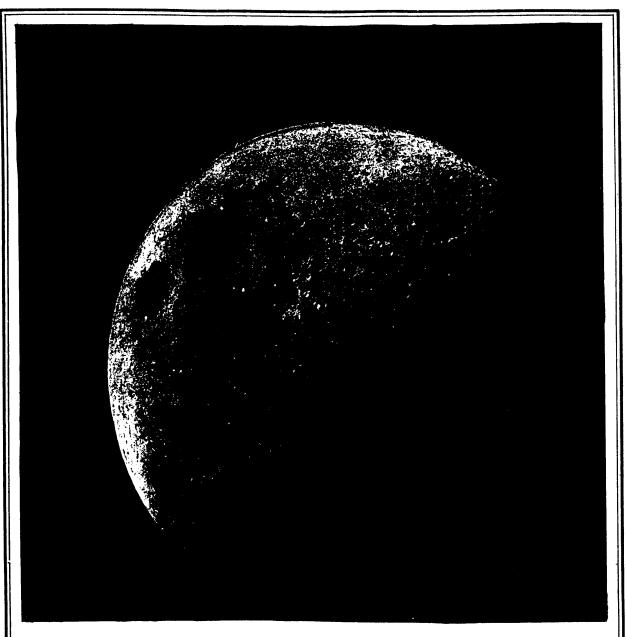PHOTOGRAPH OF THE MOON, TAKEN WITH THE 36 INCH REFRACTOR

observing ladder proportioned to the size of the instrument extremely troublesome. The pier, when finally placed exactly in position, will probably be filled with brick and sand.

The driving clock of the large telescope was provided by the makers with an electric control, for keeping its rate in exact coincidence with that of a standard astronomical clock. The vertical shaft of the governor rotates in one second, and has near the bottom a small projecting pin. A stud on the end of the armature lever of an electromagnet is struck by the pin as the governor-shaft rotates, when a current is passing through the magnet ; but when the current is broken once a second by a standard clock, the stud is withdrawn at the proper instant to allow the pin to pass. There is also an ingenious and beautifully constructed attachment for breaking the circuit in case the standard clock should, either by accident or design, omit one or more seconds in a minute. The driving clock is

adjusted to run a little fast, and is continually checked by the control, the governor being allowed to rotate by turning in a friction collar. It was found, however, that the impact of the pin on the governor shaft against the stud of the armature caused a shock which was transmitted to the telescope and produced a disturbance of the image fatal to photographic work. The control was therefore removed, and another, which I devised for the purpose of giving a perfectly smooth motion, was substituted for it. The new control answers its purpose so well, and is of such extreme simplicity, that I shall give a description of it here, as it can be applied to any clockwork having a shaft which rotates in an integral part of a second.

A soft iron sector subtending an angle of 36°, and having a radius of six inches, is clamped to the vertical axis of the governor, and rotates in a horizontal plane. The sector passes very close to the poles of an electromagnet (part of the old