Please read and send in as full a discussion as possible at earliest date.

The Canadian Society of Civil Engineers.

INCORPORATED 1887.

ADVANCE PROOF *—(Subject to revision).*

SOME NOTES ON A METHOD OF OBTAINING TIME AND LATITUDE.

By G. Blanchard Dodge, A. M. Can. Soc. C. E.

(To be read before General Section, January 7, 1909.)

Some time ago the writer observed an article by W. E. Cooke, Government Astronomer of Western Australia, in the *Monthly Notices* of the Royal Astronomical Society, on a novel method of obtaining Time, Latitude, and Azimuth with an ordinary transit theodolite. The principle of the method was not original, being first advocated by Prof. Chandler, of Harvard University, but Mr. Cooke had adapted it to the ordinary field transit. He gave the results of some three or four nights' observing with an ordinary five-inch transit theodolite, and the writer was much struck by the remarkably close agreement of the different nights' results, made notes on the article, and determined to try the method when opportunity offered.

Principle of the Method.

If the telescope of any transit is clamped at an altitude equal to the observer's approximate latitude, and the instrument revolved in azimuth, the line or sight describes a small circle in the heavens, called by Prof. Chandler the Almucantur or co-latitude circle. The observation for time and latitude by this method consists in observing the time of transit of stars in crossing this circle.

Any ordinary field transit which has a level attached to the vernier arm of the vertical circle is suitable. Let this level be called the "latitude level," and the more sensitive it is the better. All instruments fitted this way have also two slow-motion screws to the telescope clamp. One, which we will call "X," moves telescope only, the other, "Y," moves telescope and bubble. A chronometer or good watch is also essential for this method.