

necessary for accuracy, as in some instances, in crossing railways, I found the needle deflected as much as 4° , and in one case having to carry the line of survey for some distance along the Intercolonial R. R., I found the indications of the needle quite valueless.

The elevations and depressions of the lines are all carefully noted in the Field Book, thus giving a rough approximation to the profile of the country; these lines reduced to a horizontal base have been plotted. In making the plan I first plotted the positions of the objects observed from the base line, and then proceeded with the traverse joining these points, thereby giving a crucial test of the accuracy of the work. The positions of all objects situated at any distance from the line of survey are obtained from at least three angular observations from extremities of lines in the traverse.

All the observations and measurements mentioned above I herewith transmit in the Field Book, which book forms a complete record of the entire survey and supplies a means of testing the accuracy of the whole, or any part of the traverse.

For instance, should at any future time, a doubt arise as to the correctness of the plan with regard to the relative distances, or positions of any points marked on it, nothing can be easier than to take the Field Book on to the ground, commence at the nearest bench-mark described in the notes, and test the accuracy of bearing and length of each consecutive line between the desired points, as every B. M. is fixed by a stake driven at the side of the road, in a position where it is likely to remain undisturbed. This system of conducting a survey, besides giving accuracy of detail, offers facilities for testing and confirmation, and can, at any future time, be supplemented or incorporated with any other survey, either previously or subsequently effected,

I remain,

Yours truly,

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