

missing chain was detected, and which would have remained in the records had it not been so detected. Office correction is perfectly appropriate in a service such as the Ordnance Survey of England, where twenty years may elapse between surveying and mapping without inconvenience to the landholders; but contrary conditions exist in a colony. No sooner is land bought than the titles are wanted by the purchasers. No sooner are the survey contracts completed than payment is demanded by the contracting surveyor. Then, if field work be done and paid for, so it should be in a fit state for record. Active outdoor inspection alone will allow this. Minor triangulation or major traverse circuit gives the bases of check; and the check to any traverse survey is easily and quickly effected at random points of the actual survey by the Chief Surveyor or his confidential inspector.

It will thus be surmised that by field inspection office assistance is curtailed, and greater burden placed on the responsible heads; yet professional and economical grounds, in my opinion, support this measure. I may also add that close check points enable the detail to be executed with so little accumulated or gross error that correction in office by interpolation is unnecessary.

MAPPING.

In initiating a new system of survey which applies to the whole of the colony, it will be necessary also to introduce a method of mapping and record independent of former unproven or unconforming work, which will have to stand by themselves; but as I have entered fully into this in the new printed regulations, I need not do anything further here than allude to the matter.

COST.

The total area of the colony is estimated at about 102,000 square miles, and, as the cost of the several processes of standard and ruling survey is known from actual examples, I give an estimate of the same as follows:—

Reconnaissance	...	by 4" theodolite,	@ 2/3 per square mile	...	£11,475
Meridional circuit	...	8"	@ 3/6½ per square mile	...	18,062
Primary triangulation	...	36"	@ £1 11/9 per square mile	...	161,925
Secondary or major triangulation	...	12"	@ £1 7/9 per square mile	...	141,525
Tertiary or minor	...	5"	@ £3 12/2 per square mile	...	368,900

The cost of actual or section survey of course varies more than the superior processes, owing to difference in size of sections, surface of country, and distances to be travelled. Thus there would be no end served by naming an estimate, as it could not be even approximate. The rate in my experience has been as low as 6d. per acre, and as high as 7s., the average rate being between 10d. and 1s. 6d.

In Canada the rate is said not to exceed 3d. or 4d.; but the section surveys there are in the simplest form, generally on level country. They also do not undertake the road traverses nor mark the back lines.

CONCLUSION.

In conclusion, I may state that positions in the colony relative to Greenwich Observatory have been independently determined:—

1. Wellington Custom House, by Captain Carkeek.
2. Rockside Observatory, Caversham, Dunedin, by myself.
3. Hutt Observatory, by Mr. Henry Jackson.
4. Burnham, Transit of Venus Station, Christchurch, by Major Palmer.

Reports of which may be seen in the General Government *Gazette*.

I have, &c.,

J. T. THOMSON,
Surveyor-General.

The Hon. the Secretary for Crown Lands.