

with ours practised in the southern part of this colony for twenty-one years. And I would suggest that the difference of choice as to system on the part of New South Wales and Victoria lies in the configuration of the country; Victoria, like New Zealand, being more hilly than New South Wales or America, and more devoid of extensive flat plains; the former making use of the natural prominent objects everywhere met with; the latter having recourse to artificial marks on an unmarked wilderness.

But America also has its mountainous regions, as rugged and more extensive than the whole of this colony—what about their meridian and parallel system there?—this difficulty has not escaped the attention of American geographers, nor has the subject been without ventilation in the leading journals, as I have already quoted in my report of 7th December last, one writer, while he admits the national principle to be appropriate for the flat-forest lands and prairies, now that the cordilleras are reached, the system is at fault, inapplicable, and unavailable.*

But the question may yet be asked, as it has already been proposed, Why cannot the Ordnance system of survey as applied to Great Britain be carried out here? One reason of its inapplicability has already been given in this report—viz., that Great Britain being already possessed and divided, the public wants are dissimilar. The other reasons are, that the time required to complete a primary triangulation (the geodetic basis of the Ordnance system) is too prolonged,† so the interest and comfort of the settlers forbid the delay. But the introduction of the Ordnance system is less advisable on another ground—viz., in its not attaining the accuracy in detail which is more essential here, its admitted error in chainages being two links in the thousand, or sixteen links per mile,‡ while ours is only eight links, or half that quantity.||

The Commission that reported on the Surveys of New South Wales, constituted as it was of scientific officers,§ is invaluable as indicating their line of concession in the standard operations, between the pure geodetic and the practical; in other words, between globe-form survey and settlement survey—the one immediately interesting to “savans,” the other of all importance to settlers. The Commission says, that “Having alluded very frequently to more perfect methods of surveying than have ever yet been adopted in this colony, it became their duty to consider whether it is expedient to undertake a trigonometrical survey of New South Wales in the true meaning of the term. To carry out a complete system of triangulation founded on correctly measured bases, and to fill in the details with that scrupulous regard to accuracy which has been observed in more settled countries, would be an undertaking, whatever its ultimate advantages, entirely beyond the requirements and resources of the colony. At the same time we are of opinion that steps should be taken to initiate a general system of survey in connection with the detailed measurements which are of necessity carried on for immediate and particular purposes, which would, we are convinced, be attended by no very great expense, at the same time that it would lead to very important prospective advantages. The steps that we would recommend to be taken are the following:—Points to serve as future trigonometrical stations should be selected, and permanently as well as conspicuously marked. This duty might in a great measure be performed by the district surveyors and their assistants; and all surveys within such districts should be conducted with reference to the points thus marked, with a view to their final combination when the actual positions of the stations are determined. A base line should be measured, every practicable precaution being taken to ensure correctness, without, of course, pretending to imitate those most accurate and most expensive measurements which in other countries, and under more favorable circumstances, have been carried out with such wonderful results. From this base a system of triangulation might be gradually extended at an annual expense quite inconsiderable compared with the total cost of the Survey Department. The observations should be reduced, and the necessary corrections should be applied according to the most approved methods, and with every possible care. Other base lines also being so measured to test the accuracy of the triangulation as it extends.”

With these remarks I entirely concur, and it has been my practice to adhere to them, though the wants of settlers have many times and for long interfered with the processes. These considerations may then be allowed to settle the propriety of not attempting highly-refined geodetic observations as a basis of the first settlement, although a great deal of evidence might be adduced from other directions to a similar effect; nor would I have gone to any length on the question, had not the proposal been made in quarters demanding our attention and respect.

At this time I must remark, that of the actual sectional survey, the New South Wales Commission says nothing; so it gives no help in meeting the real problem of the Government in its responsibilities towards an immigrant people. But we would be wrong to dismiss the consideration of pure geodetic operations so cursorily. A process that can solve so many subtle problems connected with the physical condition of the earth, and which can measure one hundred feet in length with an exactness equal to one-half the breadth of the sharp point of a steel-pen—approaches so near infinity that in all advanced communities its functions, being useful in solving abstruse physical questions, have great weight in the sentiments of the learned; and its proper place and period in a colony will be best indicated by referring to what has been done in this direction, not in the old countries of Europe, but in similar though older communities than ours, that, like us, have gone from them. The pre-eminent example we find in the United States, for the Dominion of Canada, large and populous as it is, has no triangulation of any kind.¶

These States which were commenced to be occupied by English emigrants since 1620, afforded an arena for geodetic enquiry only twenty-six years ago, and this in connection with the Coast survey. This kind of survey evidently did not demand the haste required by the emigrant settler. The harbours for the most part were already mapped and sounded. The service instituted was for the most part to

* J. D. Whitney, *North American Review*, July, 1875.

† See Colonial Standard Survey, “*Trans. N.Z. Inst.*,” Vol. IX.

‡ See “*Methods and Processes Ordnance Survey*,” by James, 1875, p. 43.

|| See Survey Instructions, Otago, 1861, p. 10.

§ Mr. E. Pell, Chairman; Sir A. Clarke (now Minister of Works for India); J. S. Hawkins, Captain, R.E.

¶ Excepting only one connecting Peace River with the 1st Meridian. Letter from J. S. Dennis, Surveyor-General, to C. J. Hanning, Esq., 6th July, 1876.