

TRIANGULATION IN THE NORTHERN TERRITORY.

Consequent on Mr. Goyder's survey of Palmerston and country southward in 1868-9, a trigonometrical survey of country east and south-east of Hundred of Waterhouse was carefully carried out by Mr. George McKay, by direction of Mr. Gilbert McMinn, in about 1870-1 on behalf of the Government, for mapping positions of gold and tin claims. The survey comprised 1,000 square miles, and a base line was measured from which the surrounding distances were calculated, from Minza in the surveyed sections to Mount Saunders and to Gandy's Hill near Pine Creek.

By direction of the South Australian Government, a trigonometrical survey of the MacDonnell Ranges, Northern Territory, was commenced at Alice Springs in 1880. Piles were erected on suitable hills for trigonometrical stations situated 20 miles west of the telegraph line, and 100 miles east, but detailed observations never reached the head office. The officer in charge, Mr. H. V. Barclay, had to leave owing to an accident, and his second officer, Mr. C. Winnecke, after preparing a valuable topographical map showing 9,000 square miles of country, was ordered to proceed to Tennant's Creek to make a reconnaissance survey from that place eastward to Herbert River Junction and to Rocklands station in Queensland. The topographical map of the MacDonnell Ranges, showing natural features, with names of hills piled, proved to be of great value during the rush for ruby claims that occurred during 1888, and for fixing starting points of pastoral and mineral leases up to the present time.

About the year 1884, Mr. David Lindsay was employed by the Government Resident to fix certain starting points for leases by means of a trigonometrical survey from All Saints Well on the Overland telegraph line to Todd's Bluff, on the Roper River. Mr. Lindsay chained a base line for calculation of the triangles comprising an area of 500 square miles.

During the years 1906-7-8 a triangulation was made in the neighbourhood of the Victoria River, from the overland telegraph line to the eastern boundary of Western Australia, for the purpose of locating certain starting points of pastoral leases. This was carried out by the South Australian Government, under the supervision of Mr. L. A. Wells, Government surveyor and explorer, with a 7-in. Y theodolite. The survey, including country sketched, embraces about 20,000 square miles, and cost 5s. 8d. per square mile. The closing error of the triangles rarely exceeds 1 second.

Good observations of latitude were obtained with the sextant; and several good sets of azimuth were observed with a 7-in. Y theodolite. A base line was measured very carefully near the centre of the work, from which the surrounding distances were calculated.

Note.—All through the triangulation of South Australia and the Northern Territory, reciprocal angles of elevation and depression have been observed morning and evening, and recorded to enable the relative heights of hills to be calculated in the office.

The maximum length of sides of triangles used for calculation is about 40 miles. The average is 20 miles in open undulating country, and 7 miles in sandhill or wooded country. Many determinations of latitude and true meridian have been made, and the leading points fixed by co-ordinates from the meridian of the Adelaide Observatory.

The triangulation of the State was, as already pointed out, undertaken for settlement purposes, and has answered admirably. Many disputes as to the boundaries of pastoral leases would have occurred but for the triangulation being carried out in advance of settlement, both pastoral and agricultural. The necessity for this "settlement" triangulation was clearly shown in recent work effected in the Northern Territory, where in one case a lessee was found to have 20,000 cattle depasturing on country belonging to an adjoining holder, and, but for the triangulation or a very expensive and almost impracticable survey, the dispute between these lessees could not have been settled.

(Sgd.)

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