

5-6 EDWARD VII., A. 1906

About a month was occupied in determining the difference of longitude, Suva-Norfolk. On September 7 I sailed on the *Aorangi* for Brisbane, where we arrived on Saturday, the 12th. On the following Monday I proceeded by rail with the astronomic outfit of many cases to Southport, the cable station, fifty miles south of Brisbane.

Mr. H. C. Russell, government astronomer at Sydney for New South Wales, hearing of my arrival, immediately wired his hearty co-operation in connecting Sydney with Southport. Similar co-operation was readily granted by Mr. A. A. Spowers, Chief Surveyor for Queensland, with the Brisbane observatory in charge of Mr. T. D. Fraser. By September 25 the pier and observatory were built and observations begun. Southport formed a unique station, for nightly clock exchanges were had in succession with Brisbane, with Norfolk and with Sydney, at each of which time observations were being taken. It was on September 29 that the first mutual observations and clock exchange were had with Sydney, and so this night may be considered as the one when for the first time longitude from the west clasped hands with longitude from the east, and the first astronomic girdle of the world was completed.

By October 16 the last link, Norfolk-Southport, of the direct Trans-pacific longitude was completed. Mr. T. D. Fraser and I observed for personal equation at Southport and at the Brisbane observatory. Magnetic observations at Southport were also taken. On November 3 I arrived at Sydney, and after observing for personal equation, with the two observers, Mr. H. A. Lenchau, acting government astronomer, and Mr. W. E. Raymond, left on November 7 for Wellington, New Zealand. Here I was met by Sir James Hector, the former director of the observatory, and by Mr. Thomas King, who now has charge of the time observations. The Premier, the Honourable R. J. Seddon, extended every facility the government could offer to further the success of the work. Observations were made for personal equation by Mr. King and myself. After making the necessary arrangements for subsequent clock exchange signals at the observatory, I left for the cable station at Doubtless Bay, at the north end of New Zealand, going by rail to New Plymouth, thence by steamer to Onchemunga, across the narrow isthmus by rail to Auckland and thence by steamer to Mangonui, the most northerly port on the east coast. From there I had to drive over an execrable road some miles to the cable station. Here a pier and observatory were built similar to the ones at Suva and Southport. Longitude observations were begun on December 3 and finished on December 19. Before leaving this station a set of pendulum observations was obtained, and the magnetic elements were also determined.

Returning to Wellington, another set of personal equation observations was taken, and similarly in Sydney in January, 1904.

This completed the work of the Transpacific longitudes.

I wish here to express thanks for the hearty co-operation of the chief electrician of the Pacific Cable and of the superintendents at all the stations; of the superintendents, Mr. Hesketh, of the government telegraphs in Queensland; Mr. Young, for New South Wales, and Mr. John Logan, for New Zealand. Mr. G. A. Buzacott, Deputy Postmaster General of Queensland; Mr. J. Dalgarno, for New South Wales, and Sir Joseph Ward, Postmaster General of New Zealand, kindly placed the use of the respective telegraph lines at my disposal for the nightly clock exchanges.

At the Wellington observatory batteries and telegraph instruments had to be installed for the clock exchanges with Doubtless Bay. This was done by Mr. Buckley, government electrician, who also kindly attended every night during the campaign at the observatory to the exchange of signals. In short, wherever and whenever any assistance was required it was readily and cheerfully extended, and the success of the work is in no small measure attributable thereto.

The number of stations between Vancouver and Australia, as well as between Vancouver and New Zealand, is odd, and as the two observers occupied alternate stations, the terminal stations, Southport and Doubtless Bay, are each free by this means from personal equation.