Auckland, Wellington, Lyttelton, Port Chalmers, Nelson, and Westport, is published in the annual report on the survey operations, 1908-9, by T. Humphries, Surveyor-General.

PRACTICAL DETERMINATION OF MEAN HIGH-WATER MARK.

Where a standard tidal station has been in operation so long that the reading of the mean high tide on the tide-gauge is accurately known, the height of the mean high tide at other places in the vicinity can be deduced sufficiently accurately for the practical determination of high-water mark by reference to the standard station.

On any day if high water of a particular tide agrees with the mean high tide at the standard station, then high water of that tide indicates mean high-water mark along the foreshore at all other localities in the vicinity.

As, however, the above agreement is a rare occurrence the high water of a tide at the standard station falls above or below the gauge reading of mean high tide by an amount which can be ascertained by observation. At any other place of observation the difference between high water of the above tide and mean high-water mark can be obtained by the following rule : As the range of the tide at the standard station is to the range of the same tide at place of observation, so is the difference between high water and mean high tide at the standard station to the local difference between observed and mean high tide.

Let R and D represent the range of the tide and the difference between high water and mean high tide respectively at the standard station on certain day ; R^1 and D^1 the corresponding quantities of the same tide at the place of observation ; then by the above-stated rule

$$R : R^1 = D : D^1$$

$$\text{therefore } D^1 = D \ \frac{R^1}{R}$$

The quantity thus found applied to the local reading of high tide gives the height of mean high-water mark. The signs of D and D^1 will be positive or negative according as the observations are taken about the time of spring or neap tide, respectively.

Having thus ascertained mean high-water mark, an easy mode of defining it on the foreshore of the area to be surveyed is to wait until the level of the water reaches the reading of mean high tide on the tide pole, and then have assistants placed to insert stakes along the contour of the water-line on the edge of the foreshore, which may afterwards be connected to the traverse.

The above method of defining mean high-water mark is only applicable to sheltered harbours and inlets during favourable weather conditions when there is no swell bearing along the coast-line.

In most cases, after determining the height of mean high tide at a station, it will be necessary to use the theodolite or level to run the line of mean high-water mark along the edge of the foreshore. When the survey is extensive the line of mean high tide is not on a horizontal surface ; then several suitably placed stations may be required at which the tidal observations to determine the mean high tide are made and the work done in sections.

At the following standard tidal stations the mean high tide has been determined from tide-gauge records and connected to bench-marks; Auckland 9·73 ft. ; Wellington, 4·64 ft. ; Bluff, 8·27 ft. ; Westport, 8·60 ft. The above figures are the readings on the tide-pole corresponding to mean high-water mark.

And the Surveyors' Board doth hereby declare that such amendments shall come into force as from the date of gazetting hereof.

Made at Wellington this 8th day of April, 1925, at a meeting of the Surveyors' Board at which the Surveyor-General was present.

W. T. NEILL,
Surveyor-General and Chairman of Surveyors' Board.

M. CROMPTON-SMITH,
Secretary of Surveyors' Board.

Approved in Council, this 1st day of June, 1925.

CHARLES FERGUSSON, Governor-General.

F. D. THOMSON,
Clerk of the Executive Council.