

APPENDIX III.

MEAN SEA-LEVEL.

THE mean sea-level at the ports of Auckland, Wellington, Lyttelton, Port Chalmers, Nelson, and Westport has been determined from the tide-gauge records and referred to permanent bench-marks on the adjacent shores, the details of which will be found in the following pages.

Attempts were made to arrive at it at other places where gauges had been in use; but the records were found to be so intermittent and unsystematic that they were of little value for the purpose in hand.

AUCKLAND.

The automatic gauge, from the tide-sheets of which the mean sea-level has been deduced, is situated at the Devonport Ferry Wharf.

Bench-mark A, 8.86 ft. below M.S.L., is a point on the sill of the Auckland Dock, marked by a copper bolt.

Bench-mark B, 27.26 ft. above M.S.L., is the top of the stone block of the City Standard Survey, situated at the intersection of Customs and Albert Streets, at the corner against Section 18.

Bench-mark C, 41.02 ft. above M.S.L., is the top of the standard block on the west side of Albert Street, and nearly in line with the north side of Mills Lane.

Bench-mark D, 43.17 ft. above M.S.L., is the top of the standard block at the intersection of Moore and Albert Streets, at the corner against Section 15.

Mean sea-level was determined by the mean of the high- and low-water records throughout the years 1907 and 1908, which, taken independently, differed just one-third of an inch. The mean for these two years, which, as in the other cases, is adopted, differs only $\frac{4}{100}$ in. from the mean of the four years 1905 to 1908, inclusive.

WELLINGTON.

The automatic gauge is on the Jervois Quay Wharf, in the south end of N shed.

Bench-mark A, 6.64 ft. above M.S.L., is on the north side of the western pillar of the 40-ton crane, between N and O sheds, on Jervois Quay. It is $6\frac{1}{2}$ in. below the deck-level of the wharf, and is marked by a gun-metal bolt.

Bench-marks, two in number, at B, are at the Equitable Building and Investment Company's office, No. 360 Lambton Quay. One 10.56 ft. above M.S.L., is marked by a gun-metal bolt in the wall about 12 ft. south of the doorstep and $6\frac{1}{2}$ in. above the footpath; the other, 10.75 ft. above M.S.L., is marked by a hexagonal gun-metal plug on the doorstep at the east end.

Bench-marks, two in number, at C, are at the Bank of New South Wales, Nos. 320 and 322 Lambton Quay. One 9.52 ft. above M.S.L., is marked by a gun-metal bolt in the wall about 3 ft. south of the main door and about 1 ft. above the pavement. The other, 8.55 ft. above M.S.L., is in the pavement close to the former, and marked by a hexagonal gun-metal plug.

Bench-mark D, 8.63 ft. above M.S.L., is marked by a hexagonal gun-metal plug in the doorstep of the main door of the Harbour Board Office, inside the left-hand door at the east end.

"Mean sea-level" was determined by the mean of the high- and low-water records throughout the years 1907 and 1908, which, taken independently, differ $\frac{7}{100}$ in.

The results are not so nearly accordant as those of Auckland or Lyttelton, which, however, is not surprising, considering the configuration of the harbour, with its narrow entrance, facing, as it does, Cook Strait, with its erratic and strong currents.

LYTTELTON.

The automatic gauge is situated near the south end of the small wharf in line with St. David Street.

Bench-mark A, 11.98 ft. above M.S.L., is 200 ft. westerly from the landing-steps of the small wharf referred to, and is a point on the south face of the south pier supporting the foot overbridge from the railway-station to the wharves. It is 2 ft. above the ground, on a ledge 3 in. wide and 8 in. from the south-east corner of the pier, and is marked by an inch copper bolt fixed in the concrete.

Bench-mark B, 8.05 ft. above M.S.L., is at the graving-dock, and is 26 ft. south of the dock tide-gauge outside the dock gate, which latter is marked by Roman numerals cut in the concrete face. The point B is marked by an inch copper bolt fixed in the concrete.

The "mean sea-level" was determined by the mean of the high- and low-water records throughout the years 1907 and 1908, which, taken independently, differ only $\frac{8}{100}$ in.

PORT CHALMERS.

The automatic tide-gauge is situated at the breastwork between George Street Wharf and Bowen Pier.

Bench-mark A, 4.80 ft. above M.S.L., is the top of the large concrete block, the Geodetical Station at Observation Point.

Bench-mark B, 6.42 ft. above M.S.L., is the top of the concrete cone on the above, and is marked by a $1\frac{1}{2}$ in. iron tube.