

in January, 1891. He accepted the level of nine feet on the Public Works standard tide scale as high water at ordinary spring tides; and he took this as elevation 100.00 feet for the City Sewer datum. His levels make direct connection from the tide scale which was on the old Customs House wharf, to the bench-mark at the corner of Wharf and Fort streets; but the connection depends ultimately on a single reading on the water surface. The resulting elevation of this bench-mark above the zero of the Public Works tide scale, is 35.76; and conversely, the elevation of its zero above the City datum is 91.00. The above explanations and figures are taken from Mr. Wilmot's original level notes, as the present Engineering staff at the City Hall was unaware of the relation of their datum to tide levels, or the way in which the datum was originally established.

The value of this connection can scarcely be overestimated, as it fixes the long lost Public Works datum, and the Low Water tidal datum, with reference to every reliable city bench-mark in Victoria. The importance of this will be better appreciated when the Chart datum is next considered. This connection has also made the City datum the most desirable one to use for the comparison of the relative elevations of all the other planes of reference.

*Chart Datum.*—The Admiralty chart of Victoria harbour is made from two sources; the outer harbour, outside the line joining Work Point and Shoal Point, is from a survey made in 1895, by Lieut. B. M. Chambers, R.N. This is stated on the chart of March, 1896; but there is no reference on that chart to the information on which the inner harbour is based, nor is there mention of any plane of reference for the soundings.

It is now clear that the inner harbour is taken from the surveys of the Public Works Department. Such plans in that department as have survived the fire are partial and fragmentary; but a complete plan of the harbour was known to have been made in 1895, by Mr. P. Summerfield, who was employed by Mr. Gamble to do so. A copy of this plan was eventually found in a surveyor's office in Victoria. It is without title, or date, but was identified by Mr. C. Worsfold, Assistant Engineer in the Public Works Department, as undoubtedly a copy of Mr. Summerfield's plan; and accordingly it is to the Public Works datum that the complete soundings given upon it are referred. It is also to be noted that this plan existed when the chart, issued in 1896, was compiled. A comparison with the Admiralty chart, made by Mr. Worsfold and myself, with care to avoid places where dredging has since been done, shows that the soundings are identical. The plane of reference for the soundings in the inner harbour, as given on the Admiralty chart, is thus proved to be the Public Works datum, for which the ele-