

had been adopted for each new purpose as it arose. The datum for city works had been altered more than once. The Royal Engineers and the Public Works department had independent levels of their own. Another datum was used for the harbour chart, and so on. When the tidal observations were begun, much trouble was taken by the writer to correlate these various levels and to select a satisfactory plane of reference for the future. For this purpose, instrumental levels were carried to Esquimalt, as some datum planes were better defined there than at Victoria. The relation between all existing planes of reference was eventually determined and brought into relation with the tidal observations.

The results for Victoria, Vancouver and other cities and towns of British Columbia, are given in a Paper, prepared by the writer, which was published by the Marine department, entitled "Tide Levels and Datum Planes on the Pacific Coast" (21). This paper contains a complete list of the Bench Marks which define datum planes in the cities, and also those which define the low water datum of the charts at all points along the coast where Admiralty surveys have been made.

*Importance of Bench Marks.*—The importance of establishing Bench Marks in connection with tidal observations is very evident, as it is only from these observations that data for many purposes can be obtained. The extreme levels of high and low water are important for wharf construction and docks, and also for sewerage and other city works. They are also essential for dredging operations in the deepening of harbours and channels. The value of mean sea level is very accurately determined by the continuous observations required for harmonic analysis; and where there is a Bench Mark for reference, the level is permanently fixed. This determination in our principal harbours affords a basis for geodetic levelling; and it is also utilized by the Public Works department, the Interior department and the Geological Survey, as well as for our principal canals. Such determinations of mean sea level afford the only means by which an alteration in the level of the continents relatively to the ocean can be detected. In several regions such gradual changes are taking place, and they have a practical bearing on the depth of harbours and channels. In such ways as these, the levels as determined by the Tidal Survey have an extended value; and they will become increasingly useful for reference in the future as the country develops and a wider accuracy is required.