

Other plans were then considered, and it was finally decided to make a study of existing records of lake level, and, if necessary, supplement them by additional observations. The results of this investigation are set forth in the following pages.

#### GENERAL PLAN OF INVESTIGATION.

Variations in the height of the ocean level at any place depend chiefly on tides, winds, and atmospheric pressure. By means of long series of observations the effect of these disturbing factors can be eliminated

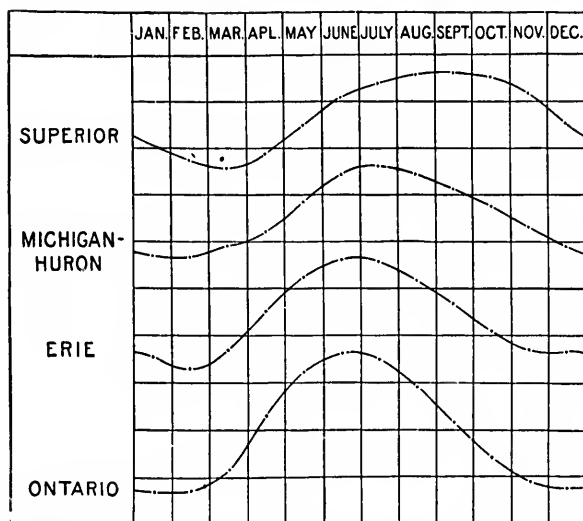


FIG. 96.—Annual oscillations of the surfaces of the Laurentian lakes. Compiled from monthly means published by the Chief of Engineers, U. S. A. Each vertical space represents six inches. The observations for Lake Superior cover the period 1862-1895; for Michigan-Huron, 1860-1895; for Erie, 1855-1895; for Ontario, 1860-1895.

and a mean level obtained which is practically uniform from year to year and decade to decade. The height of the water surface must depend also on the quantity of water in the ocean, but the actual variations of volume are so small as compared to the extent of the ocean surface that the resulting variations of level may be neglected and the mean level used as a standard for the discussion of differential movements of the earth's crust. With the Great Lakes the case is materially different. There are variations due to wind, atmospheric pressure, and tides, but when these have been eliminated by long series