

continent. He attributed it to a great cyclic change in the continental slopes which depressed the northerly part of the continent and raised the southerly, as, for instance, the Florida Peninsula, as well as Cape Cod and other formerly submerged portions of the Atlantic Coast. This great southerly current of the vast interior basins of fresh water of the continent was hemmed in on the south by an ancient barrier, which evidently crossed the Mississippi near Grand Tower, Ill.; but the waters gradually cut their way through, and thus largely drained the great inland sea. Either by this means or by the changes in the continental slopes, the waters were drained from the land, and the conditions were slowly changed until we have the Great Lakes of to-day.

At Chicago is the lowest line in the cross-section of the trough or "thalweg" through which the waters of the lakes flowed southward. The bottom of this trough is only about 8 ft. above the present level of Lake Michigan, with a natural drainage and a steep slope down the Illinois River Valley from the immediate suburbs of the city. At this location has been built within the last half century the second city of the continent, and at this point, connecting the lake with the tributaries of the Mississippi River, there was projected in 1670 a canal to the Illinois River. It was proposed by one of the earliest pioneers—Joliet—to dig a canal across the Chicago Divide for commercial and military purposes. In 1804 Albert Gallatin, secretary of the Treasury of the United States, spoke of the national character of this proposed waterway. In the first comprehensive report on internal communication, DeWitt Clinton and Gouverneur Morris in 1808 to 1825 urged the "proposed ship canal" as an extension of the Erie Canal to the Mississippi, in order to open up water communication by the lakes from the Hudson River to the Gulf of Mexico. The Congress of the United States assisted in the project, and made a land grant of 284,000 acres in 1827 for the construction of the work. The first canal was opened for navigation in 1848. In 1865 the State of Illinois provided for its completion; it was completed by the city of Chicago for drainage purposes in July, 1871, but the flow through it proved insufficient for the purpose, and in 1881 the State required the city to erect pumping machinery of a capacity of not less than 60,000 cubic feet per minute, which was put into operation in 1884. The original canal was six feet deep, sixty feet wide at surface, thirty-six feet wide at bottom in earth, and forty-six wide in rock, with locks, one hundred and ten feet long, eighteen feet lift and six feet on the miter sills.

The rapid growth of the city requires a much more adequate drain-