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## THE DEVELOPMENT OF BUFFALO

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**T**HE industrial development of the section known as the Niagara Frontier is due directly to its favorable physiographic environment.

The stream of immigration which flowed westward through the Mohawk valley expanded over the fertile lowlands and the plains which lie beyond the water-gap at Little Falls; it overflowed the low divide near the present city of Rome and reached Lake Ontario by way of Oneida Lake and the Oswego River; the rapids and the great cataract at Niagara and the bold escarpment near the present village of Lewiston checked the westward movement of the population. Gravity is an important determining factor in the location of centers of civilization.

The Lewiston escarpment, more than 200 feet high, separates the plain along Lake Ontario from the cuesta-like plain which extends to the south, along the shores of Lake Erie. An ancient Indian trail up the cliff was later developed into a wagon-road, which made a tedious and expensive climb for the early pioneer. The fertile fruit lands along the shores of Ontario were soon settled and a check was given to westward immigration until the rich valleys of Central New York were taken up. Soon the Albany Turnpike was extended to the shores of Lake Erie, the tiresome stagecoach gave way to the fast packet-boats on the Erie Canal, which were later followed by the steam railroad. The stream of immigration increased, rapidly becoming a flood rushing down the gently sloping plain to the shores of Lake Erie, forming a great human delta at the junction of Buffalo Creek and Lake Erie. The equable climate, tempered by the waters of the lake, was milder in winter and cooler in summer than adjacent sections, and along the Niagara Frontier arose the fruit-and grape-belt for which western New York is famous.

The original harbor of the port of Buffalo was Buffalo Creek, a sluggish stream but a few rods wide, swinging in wide meanders across a low, alluvial plain but slightly above the level of Lake Erie. In its original condition the entrance channel from the lake was shallow and frequently closed by a gravel bar through which the Federal Government has dredged a channel 23 feet deep and more than 200 feet wide, extending 2,200 feet into the lake. A breakwall in four sections having an aggregate length of 22,603 feet extends parallel to the shore, making an outer harbor more than a half mile wide and four and one half miles long, where the largest vessels may ride at anchor safely. "Glasgow made the Clyde, and the Clyde made Glasgow." So it may be said of Buffalo.

Thirteen steamship lines have terminals at this port. "In a single year there were 7000 arrivals and clearances of lake vessels, having a tonnage

of 14,500,000 tons, exceeding that of Liverpool and making Buffalo one of the ten great ports of the world," despite the fact that navigation is closed by ice for four months every year. "No other inland navigation in the world" says Brigham, "compares with that of the Laurentian Lakes, and what it may become in the century just begun, it would be rash to foretell."

"Buffalo is the great doorway of the Inland Seas. Some day she will reach out to the ocean, and when that time comes, she will become one of the greatest cities in the world." These prophetic words were spoken by President McKinley a short time before his death. Today the Empire State is enlarging the Erie Canal into a waterway capable of carrying barges of 1,000 tons capacity. An additional appropriation of \$20,000,000 for the development of terminal facilities was authorized by the voters of the state at the last election, making a total appropriation for canal improvement of \$121,000,000. This figure does not include the appropriations made by the Federal government for breakwater, locks and dredging at Buffalo.

The present Erie Canal has a depth of from seven to nine feet and is 52½ feet wide at the bottom. The New Barge Canal will have a uniform depth of twelve feet with a minimum bottom width of 75 feet, making the new canal capable of carrying boats 150 feet long, 25 feet beam, and a draught of 10 feet, giving a capacity of more than four times that of the boats now in use.

It is claimed that grain will be carried from Buffalo to New York for one cent a bushel—two and one-half cents less than the current price. In 1911, the total grain receipts at this port were 115,686,692 bushels. It is stated that freight of all kinds, including iron, steel and manufactured products will be carried from Buffalo to New York at 26c the ton, less than ½ the present price. The importance of this fact has great significance, for at the present time Buffalo is producing iron and steel 65c a ton cheaper than Pittsburg. A single steel-making plant located here has from six thousand to ten thousand persons on the pay-roll of the corporation. Limestone is found within a few miles of the plant and a constantly increasing amount of iron-ore is entering the port to be converted into steel or pig iron. Buffalo has become a great distributing point for coal, which can be purchased for \$1.60 to \$2.00 a ton. Ninety per cent of the coal which passes through the Detroit river is shipped from Buffalo.

The iron-ore docks and copper mines of the Lake Superior region, and the important grain and lumber centers of the Great Lakes are within one thousand miles of Buffalo. "Seventy-five per cent of the flour and ninety-five per cent of the wheat came to Buffalo; also seventy-five per cent of the corn, ninety per cent of the flaxseed, and ninety-five per cent of the barley. In other words, Buffalo may be regarded as almost the only receiving port on the lakes for western grain."

The lake trade has become an enormous business. The old type of vessels of wood construction have become obsolete, the whalebacks are gone, and the small iron ships are being displaced by steel freighters from five hundred to six hundred feet long. As this is being written, January, 1912, a steel vessel has been launched which is 627 feet long, capable of carrying possibly a half million bushels of grain in a single cargo. The grain elevators at Buffalo have a capacity of some 25,000,000 bushels, sufficient to store the surplus grain which cannot be unloaded directly into railroad cars or canal boats. The elevators of wood construction have been replaced by great steel cylinders set on end into which the grain is transferred by electrically operated buckets on endless belts. Here the grain is kept dry, clean, vermin-free and relatively free from danger of damage by fire. More than four million barrels of flour were milled in the Buffalo district in 1910. The total grain receipts in the same year were 102,071,175 bushels.

Seventeen railroads including the great trunk lines, enter the city. There are no difficult engineering problems to be overcome for the region is a plain but slightly dissected by streams. The total tracks within the city are some 500 miles in length, including the tracks which carry the live-stock. In a single year 26,000 cars of cattle, hogs and sheep were received either for slaughter locally or for reshipment. More than 1,000 carloads of horses were received in the same period. In 1910 the railroads brought to the Buffalo lumber market 284,653,976 feet of lumber, thus maintaining the supremacy of Buffalo as the lumber center of the world. (The facility of railroad service is shown by the following:)

“Sixty acres of floor space now comprises the area of the Larkin soap plant. Fourteen and a half acres have just been added by the completion of a new terminal warehouse. This is connected by steel bridges with the main plant. By means of conveying systems products will be carried directly from producing room to packing room, thus reducing hand-trucking to a minimum. This new terminal building is one of the largest structures devoted exclusively to packing, shipping and storage. The cars will be loaded in the warehouse where, on the first floor, four railroad tracks enter and run the entire length of the building. These tracks have a capacity of sixty cars. Here the consignments will be shipped out on the seventeen railroads. The new building is 580 feet long, ten stories high and is built of steel reinforced concrete.”

Today more than a half million persons have their homes along the Niagara River between Lake Erie and the cataract at Niagara. The great waterfall has been harnessed, and more than 300,000 electrical horsepower has created a new industrial electro-chemical wonderland along the shores of the Niagara, where are made aluminum, carborundum, graphite, acids and calcium carbide. Nitrogen is stolen from the air to be used as a fer-

tilizer, and cereal foods, flour, silverware, soda ash, and paper are manufactured.

Great dynamos capable of generating 5,000 or more horsepower transform the energy of the falling water into power which is transmitted as far east as Syracuse, New York. Buffalo is using a large quantity of Niagara power. But before it reaches the long-distance transmission wires, it must go through what is known as a "stepping-up" process. This is made necessary by the fact that the current is generated at only 2,200 volts. At that voltage it would be impracticable to transmit it to Buffalo, twenty-five miles away, so the transforming devices increase, or step-up, the voltage to 22,000. Line losses aggregate twelve per cent in the journey to Buffalo. The voltage however remains the same, 22,000 until the current reaches this city when it is stepped-down, first to 11,000 and then to commercial pressure. Some of the current is transformed to 350 volts and the rest to 2,200.

To these commercial advantages must be added a delightful climate and the beautiful scenery along the Niagara River, which combined make Buffalo the Queen City of the Great Lakes.

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