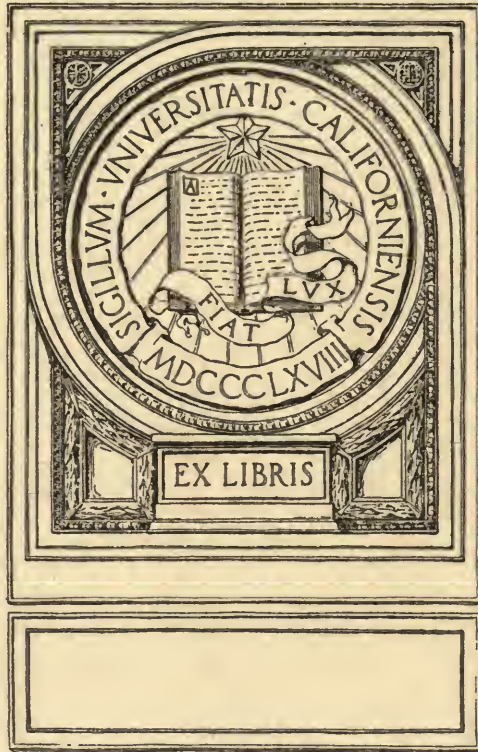


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PARTICIPATION OF THE
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IN THE
ERIE CANAL CENTENARY

CELEBRATED AT ROME, N. Y., JULY 4, 1917

THE ERIE CANAL CENTENARY

OBSERVED AT ROME, N. Y., JULY 4, 1917

At the City of Rome, N. Y., on July 4, 1917, was celebrated the centennial of the Erie canal. That date marked the completion of the first hundred years since the first construction work was done on this great waterway from the Hudson to Lake Erie.

The exercises were held under the auspices of the New York State Waterways Association and the Rome Chamber of Commerce. The Buffalo Historical Society was conspicuously identified with the occasion through its president, Hon. Henry W. Hill, who, as president of the State Waterways Association, presided at the celebration; and also through the Hon. George Clinton, a special delegate from the Buffalo Society for this occasion, who made the principal historical address.

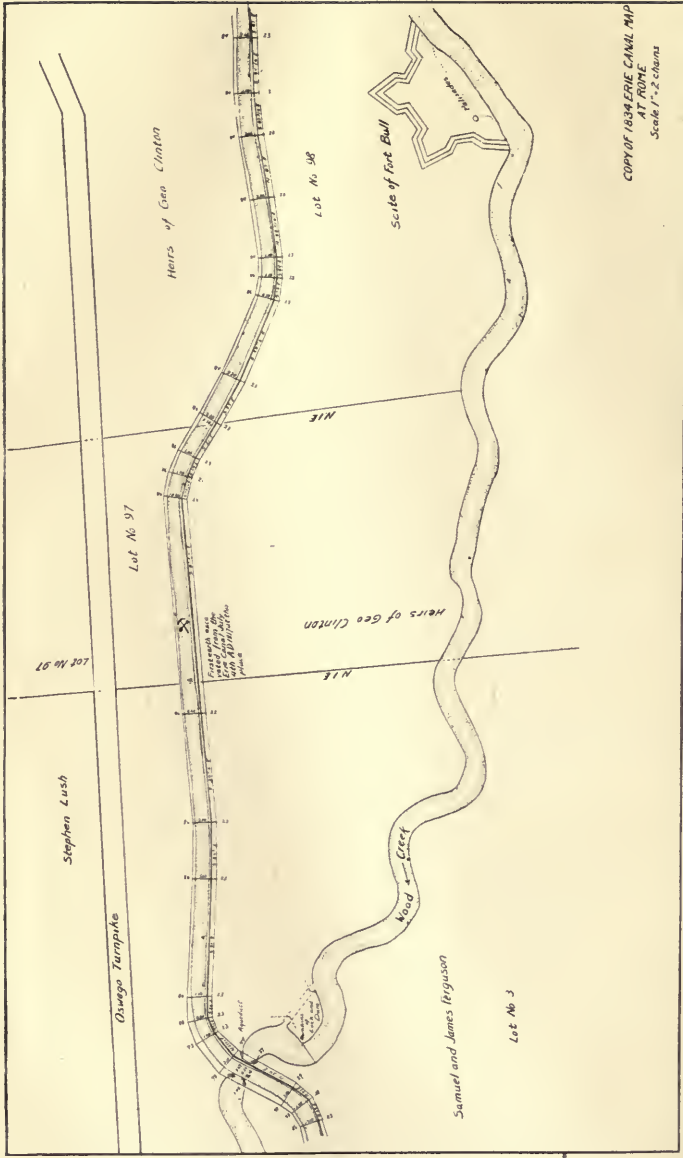
On the morning of the 4th, delegates to the celebration were conducted by the local Chamber of Commerce to numerous points of interest in and about Rome. The region is rich in sites of historical interest, and the visitors, in a long procession of automobiles, were afforded opportunity to inspect the spot where formerly stood Fort Stanwix, now in part occupied by the handsome Colonial home of the Rome Club. From here the visitors were taken along the line of the old carry, westward to Fort Bull, a site now marked by a boulder monument. Nearby are still to be seen remains of an ancient dam used in early days to hold back the water of Wood creek until the loaded boats were ready to start, when the gates would be opened and the boats floated on the flood on their way to Oneida lake.

Later the visitors inspected the summit level, where, at New London, is located the first of the two locks required to pass boats between the summit level of the Barge Canal and Oneida lake.

Finally, driving over what was formerly the old Oswego Plank Road, but is now an important State highway, the party arrived at the spot where, at sunrise, July 4, 1817, the first excavation for the Erie canal was made. The exact spot has been located by Senior Assistant Engineer Noble E. Whitford, and had been marked by a stake and pile of stones in which had been implanted a small cedar pole, cut from a nearby clump, from the top of which floated an American flag. As the spot happens to be in the now nearly dry bed of the recently abandoned portion of the Erie canal, it did not lend itself especially well to grouping about it a great number of people, but as many as could gather in the rather limited range of the camera did so and a picture of the historic place was taken. It is interesting to note in the group the presence of Hon. George Clinton, whose constant and efficient advocacy of an enlarged waterway has won for him the title of "Father of the Barge Canal"; for just a century ago his grandfather, Governor DeWitt Clinton, was present in person at this same spot aiding in the actual starting of the canal for which he had so persistently labored.

The inspection tour also included a visit to Hyland's Mills, with their famous fish-propagating ponds and springs; and the great Delta dam, which has made a lake from 50 to 60 feet deep and over eight miles long, covering completely the former village of Delta, in a valley which now forms the great storage basin for the Barge canal.

In the afternoon, at the Family theatre, in Rome, a great throng convened for exercises, presided over by Hon. Henry W. Hill. Governor Charles S. Whitman, Hon. F. M. Williams, State Engineer and Surveyor; Gen. W. W.



COPY OF ISMERE CANAL MAP
 AT ROME
 Scale 1/2 inches

ERIE CANAL MAP OF 1834, SHOWING PLACE NEAR ROME. WHERE CANAL CONSTRUCTION BEGAN.

Wotherspoon, Superintendent of Public Works; Hon. Thaddeus C. Sweet, Speaker of the Assembly, and other State officials were present. Mr. S. H. Beach, Chairman of the local Committee of Arrangements; introduced Senator Hill with a brief, appropriate address. Chairman Hill in accepting the post of Chairman spoke as follows:

Mayor Midlam, Mr. Lawton, President of the Rome Chamber of Commerce, Mr. Clinton, Chairman of the Executive Committee of the New York State Waterways Association, State officers, ladies and gentlemen:

The celebration of Independence Day and of the beginning of the building of the Erie canal at Fort Stanwix, a century ago, was a happy omen of the fruition of both political and commercial freedom from pre-existing conditions, the first of which, prior to 1776, denied to the people of this and other provinces voice in public affairs and the latter of which hampered them in their activities. The enterprising citizens then residing in this historic region and the state officials, having the supervision of the first contract, dated June 27, 1817, for the construction of that section of the original Erie canal extending through the Rome summit level, wisely and enthusiastically participated in the public exercises on that occasion. Governor DeWitt Clinton, who took office on July 1, 1817, Col. Samuel Young and the other canal commissioners, state engineers, Judge Joshua Hathaway, who delivered an address, Judge John Richardson, who removed the first spadeful of dirt and many others joined in the ceremonies.

That was the culmination of the long and untiring efforts of DeWitt Clinton and others to establish navigable communication between the great lakes and the Atlantic ocean, an event at that time and under the conditions then existing of consummate achievement in statesmanship, that betokened the ultimate upbuilding of the state in agriculture, manufactures and of its far-reaching commerce to that of the proportions of an empire.

Col. Samuel Young in his address 100 years ago in this town on that occasion said: "We have assembled to commence the excavation of the Erie canal. The work when accomplished will connect our western inland seas with the Atlantic ocean. It will diffuse the benefits of internal navigation over a surface of vast extent, blessed with a salubrious climate and luxuriant soil, embracing a tract of country capable of sustaining more human beings than were ever accommodated by any work of the kind."

DeWitt Clinton predicted it would be a "canal as to the extent of its route, as to the countries which it would connect, and as to the consequences, which it would produce, without a parallel in the history of mankind."

These prophetic utterances to some extent indicate the sweep of vision of those who projected New York's matchless canal system, that has contributed immeasurably to the upbuilding of its diversified activities, its wealth and its liberal humanities.

In appreciation of the manifold activities and inestimable services of the Clintons and others, whose "number is legion," and of the foresight, liberality and sacrifices of the people of the state a century ago in providing for and carrying to completion the most gigantic American undertaking in some respects of the 19th century, we are assembled to observe the centenary of the beginning of its building in this vicinity on July 4, 1817.

The people of the State of New York are officially represented by His Excellency Governor Whitman and Speaker Thaddeus C. Sweet of the Assembly, State Engineer and Surveyor Frank M. Williams, Superintendent of Public Works General W. W. Wotherspoon, members of the canal board, the New York State Waterways Association, by its president, its vice-presidents, the chairman of its executive committee, George Clinton, the chairman of its committee on resolutions, P. W. Cullinan, several other state association officers and by many of its members, the City of Rome is represented by its mayor, Mr. Midlam, and other officers and many of its citizens and the Rome Chamber of Commerce by its president, Mr. Lawton, and many of its members and many other cities and commercial organizations are represented by delegates, a list of which so far as obtainable, will appear in the official records of the celebration. In addition to these, many representative citizens from the political divisions of the state are in attendance to join in the centenary exercises. To all these officials, delegates and representatives and to all others present on this occasion, we join with Chairman Beach of the Rome Canal Centenary Committee in extending a hearty welcome. We will now proceed with the formal addresses, which will be both edifying and highly entertaining.

New York has excelled in its chief executives. They have quite generally appreciated its unique position among the states of the Union and have done what they were able to do to promote its commercial as well as its general development to the proportions of an empire.

Chairman Hill introduced for the first speaker of the afternoon, Hon. George Clinton, chairman of the executive committee of the New York State Waterways Association, and special delegate from the Buffalo Historical Society for the centenary celebration. Mr. Clinton's address is given in full, in pages following. Others who spoke, following Mr. Clinton, were Governor Whitman; Hon. Frank M. Williams, State Engineer and Surveyor; Hon. Thaddeus C. Sweet, Speaker of the Assembly; Mr. E. R. Carhart of New York, former president of the New York Produce Exchange; Mr. W. Pierrepont White of Utica, and Oswald P. Backus of Rome.

EVOLUTION OF THE NEW YORK CANAL SYSTEM

BY HON. GEORGE CLINTON.¹

To give a complete history of the canals down to the time of the first improvement would take much greater time and space than the present occasion warrants. This paper will therefore be limited to sketching the evolution of our canal system and the improvement of the canals, with a mere outline of their history.

While all the heads of the state have contributed largely to its prosperity, by far the greatest agency in laying the foundations of New York's commercial and industrial supremacy has been the Erie canal, and the three canals most intimately connected with the early history of the state have been that and the Champlain and Oswego canals. This paper will, therefore, be devoted primarily to the Erie and the Oswego, with such relation of historic facts as cluster around the Champlain canal that may be of interest.

THE ORIGINAL CANAL IDEA.

In the past there has been much controversy over the interesting question, "Who originated the Erie canal?" It is enough to say that after all that has been written and said on this subject it is not possible truly to give the credit for this to any one person for the simple reason that no one originated the idea of the Erie canal as constructed. So far as the basic idea of connecting Lake Erie with the Hudson by water channel is concerned, the statement made by Cadwalader D. Colden in 1825 in his memoirs prepared at the request of a committee of the Common Council of the City of New York correctly and clearly enunciates the impossibility of coming to any conclusion. He says: "How much in vain, then, must it be to inquire who first thought to connect the western and northern and southern waters. Many had opportunities of acquiring all the knowledge connected with the subject, and it is probable that the thought of water communications, where they are now made by the Western Inland Lock Navigation Company, was common to hundreds at the same time. Could we pursue this inquiry with any prospect of success it would be a futile labor. The discovery would be of no benefit to the community, and but little more credit would be due to one to whom the original thought might be traced if he did nothing towards executing the idea he had conceived than if it had been a dream" (page 13).

1. Address at the centennial of the beginning of construction work on the Erie Canal, at Rome, N. Y., July 4, 1917. Mr. Clinton was a special delegate from the Buffalo Historical Society on this occasion.

This was written by Mr. Colden almost one hundred years after the idea of making some connection with the Great Lakes by water had been suggested by his grandfather, Cadwalader D. Colden, then surveyor general of the Province of New York. The truth is that the Erie canal and our other canals are the products of evolution, increase of knowledge and the growing demands of commerce.

MANY DESERVE CREDIT.

If the limitations of this paper would permit, it would be interesting to trace at length the parts taken by the many thoughtful and able men in the projection, advocacy and construction of our canals; but there are so many who are entitled to greater or less credit that a discussion of the parts taken by them would occupy so much space it would be impossible to lay before this convention the facts which I regard as of most importance and of the greatest interest. I may, however, mention a few names of those who have been given, and are entitled to, credit for suggestion, promotion, investigation, advocacy and legislative and constructive action during the early stages of the consideration of the propriety of constructing the Erie, Oswego and Champlain canals and during the actual creation of those great works. In addition to Christopher Colles, an ardent advocate of constructing a canal through from the Hudson to the Great Lakes, Elkanah Watson, who claimed the credit of suggesting the idea of the Erie, but who merely independently voiced what was in the minds of many people; Gouverneur Morris, who was one of the first canal commissioners, appointed on account of his ability and because he had also suggested the possibility of connecting the Erie with the Hudson; Messrs. Adgate, Williams, Livingstone and Barker, all of whom took a very active part in the legislative transactions which resulted in canal construction; George Clinton, first Governor of the State; George Washington, first President of the United States and commander of the Revolutionary forces; Cadwalader D. Colden, John Smith, Peter Schuyler, Jesse Hawley, Joshua Forman, Thomas Eddy, Jonas Platt, Jeremiah VanRensselaer and Cadwalader D. Colden, the younger, are entitled to our grateful remembrance and the greatest credit for promoting the artificial inland waterway system of our State. I have not yet mentioned my ancestor, DeWitt Clinton. He was chosen by the canal advocates of that day on account of his great ability, energy and deep interest in the public welfare as the great champion of our waterways, and to him the credit is due of co-ordinating the labor of the others and by his eloquence and knowledge securing the necessary legislation and finances and the actual construction of our great canals. Yet, when speaking of the canals, he, recognizing that he alone could never have brought about the consummation of these great works and that many others were as necessary as he to their achievement, said, "for the good which has been done by individuals or communities, in relation to this work, let each have a due share of credit."

It is interesting to follow this process of evolution of ideas that has given us our artificial waterways. We are apt to give particular individuals too much credit for their greatness and we are prone not to acknowledge the great Power above which guides our destinies

and the lessons taught to men by nature herself. Indeed, we do not often enough stop to think that the individual—his physical energy and his mental capacity—is the child of nature and the servant of the laws of God, built up and enabled to see and to act through a growth of thought and action that has preceded him for centuries. Canals were constructed at least 600 years before Christ.

OUR EARLY SETTLERS.

When the English colonized America they planted their settlements along the Atlantic coast. The colonists were barred from the great middle west by the mountains, knew little thereof and of the Pacific coast. The great barrier between them and the middle west was the Appalachian chain of mountains. When the French took possession of the part of the North American continent which they at first occupied, they settled upon the St. Lawrence and were not barred from the great west by any high mountain ridge. At the time of these early settlements the great Iroquois Confederacy, the Five Nations, inhabited and dominated the State of New York from the Hudson to Lake Erie. They were savages pure and simple, cannibalistic, living by the chase, except as they raised maize and a few vegetables and gathered wild fruits, berries and bark. They were warlike and occupied the great military strategic point of this continent. From their domains they could reach the Atlantic coast by the Mohawk and the Hudson, by the Delaware and by the Susquehanna, and they could reach the Ohio and the Mississippi by the Allegheny and, with portages by the great rivers that run southerly from and northerly into Lake Erie, in addition to having the Great Lakes at their command for reaching the northwest, as well as the Desplaines and the Illinois, and, by that way, the Mississippi. With these water communications and through the valleys of the streams they carried on a ruthless war against their neighbors. There was practically no interchange of products between them and other tribes and no commerce.

The face of nature invited the English and the French by the way of the St. Lawrence, the Niagara and the Great Lakes, as well as the Ohio and the Mississippi, the Mohawk and the Hudson to extend their possessions and carry on the fur trade with the savages of the continent. This, the fur trade, was the beginning of the great commerce which now flows between the east and the west in the United States and Canada. The English were barred from the northern routes and the St. Lawrence, although they could reach the St. Lawrence by the Hudson, Lake George, Lake Champlain and the rivers, which, with portages, connect those waters with the Great St. Lawrence.

EARLY APPRECIATION OF WATER ROUTES.

I cannot go into detail of the contest for supremacy between the French and English and it must suffice to say that both the French and the English endeavored to take the greatest advantage of the water communications I have mentioned and that the easiest and most economical way for communication with the Great Lakes was

by Lake Ontario and the Niagara to Lake Erie, the only obstacle to water transportation being the heavy portage around the falls and rapids of the Niagara. The French carried on their fur trade with the west by the St. Lawrence and this route and the English reached Lake Ontario by the Hudson river, the Mohawk, portaging into Lake Oneida and thence down the Oswego. It is interesting to note that the St. Lawrence in those days was called the Cataraqui, Lake Ontario had the same name as the river and the Oswego was called the Onondaga.

The vital importance of connecting the English and French colonies with the Great Lakes in order to carry on the fur trade successfully was apparent to both nationalities. Thus nature had already pointed the way for commerce and the dominion of the continent. It is therefore not surprising that as the heavy portage around the falls and rapids of the Niagara added greatly to the cost and burden of carrying on the only commerce that existed between the east and the west, men should unconsciously take advantage of the book which nature laid before them and, studying it, seek to extend the communication by water directly between Lake Ontario and Lake Erie so that canoes and bateaux, and even small vessels, could proceed directly from the St. Lawrence to Mackinac, the foot of Lake Michigan and the head of Lake Superior without any portages except the one at Sault St. Marie. The French were the first to take this idea up. Cadillac in 1707, communicated with the minister of Louis XIV a scheme for a canal between the two lakes. We do not have the exact idea of Cadillac, but we do possess the reply of the minister to him. I quote from "An Old Frontier of France," a very thorough, able and interesting early history of the Niagara Frontier, written by Frank H. Severance and published for the Buffalo Historical Society. He says (page 161, Vol. I):

"A document of the time, of singular interest, is a letter from the minister, Pontchartrain, to La Mothe-Cadillac, in which, replying to a proposal of the latter to connect Lakes Erie and Ontario by a canal, it is remarked: 'It does not seem to me that we can at present undertake the junction of the Lake Ontario with Lake Erie by a canal, as you propose, because of the expense. However, send me an analyzed statement ("*Un mémoire raisonné*"), with a plan and estimate of cost.'"

We thus see the germ of the idea of the Erie canal, that is direct water communication between the Atlantic and the Great Lakes.

Further evidence that this was not a mere dream, but that Cadillac was in earnest is found in a communication between Cadillac and D'Aigremont with Pontchartrain, the French minister. To quote again from Mr. Severance's work (page 201, Vol. I):

"On this point a document of 1708, summarizing certain letters of Cadillac, says: 'It would be necessary to make a junction between Lake Erie and Lake Ontario. He says that he knows, for that (purpose), a way and a canal which has remained unknown to everyone else until now.' He may have had the Grand River and western end of Lake Ontario in mind; if not, one is at a loss to know what

he did mean. Two years later the *Sieur d'Aigremont*, reporting on conditions at lake posts, wrote:

“ ‘When I passed the portage at Niagara it did not appear to me that any communication between Lake Ontario or Lake Erie could be made that could avoid this portage, and if *M. de la Mothe* knows a means of doing so, I think he is the only man in the country who does. But, My Lord, even if it were true that a communication with Lake Ontario or Lake Erie could be made it could only be done with very great expense and it would not follow from that, that Detroit would be able to obtain from Montreal any help it might need in case of war with the Iroquois, for such help could not even be given to Fort Frontenac, which has to be passed through on the way to Detroit.’ ”

Thus we see that the French were seriously considering a small canal around the falls and rapids of the Niagara.

As the minister of Louis XIV seemed to regard the project of a canal as inadvisable in his time “because of the expense,” it is of some interest to note what the fur traffic with the Indians amounted to so far as the French Government was concerned. Mr. Severance, at page 205 of his work, gives us, from authentic documents, a glimpse of the value of this trade, which amounted in profit to about one thousand dollars a year of our money. I quote (page 205):

THE DAY OF SMALL THINGS.

“That it was the day of small things, in trade as in war, may be illustrated by a statement of provisions, munitions and merchandise sent to the Lake Ontario posts—Frontenac, Niagara, head of the lake, Bay of Quinté—for the year 1722-23. The total government outlay for the three sorts of supplies was 29,800 livres, 17 sous, 6 deniers. Furs from these points, not including Quinté, in 1722, netted 18,178 livres; in 1723, 22,732 livres. This of course was by exchange. In the same season, wages of employes at Frontenac came to 900 livres; the storekeeper at Niagara received 400 livres per annum and the gunsmith the same. The pay of six soldiers was 180 livres each. In the two years named, there was charged to transportation on Lake Ontario 1,050 livres. The total expense of administering these posts, 1722-23, was 35,210 li. 17 s. 6 d.; total receipts from sale of peltries 40,911 li. 8 s. 6 d., a profit of 570 li. 11s.—or a little over \$1,000 a year. This was the trade for which *Joncaire* labored and lived with the Iroquois, for which the Niagara was occupied, for which two great Powers contended!”

LAKE ERIE WITH THE HUDSON.

In the meantime the English were not idle. As the French through *Joncaire* had secured control of the Niagara, the English colonists were practically compelled to carry on the fur trade with the Indians of the west by intercepting their canoes on Lake Ontario and by reaching Lake Erie overland from the south shore of Lake Ontario and from the Seneca River. These means of communication were so expensive and burdensome on account of the long distance by land

that Cadwalader D. Colden in 1724, he then being surveyor general for the colony of New York, examined into the question of feasibility of communication with the west through the Great Lakes by an entirely inland water route. As a result he presented to Governor Burnet a memorial concerning the fur trade of the province of New York, in which he discusses the relative positions of the French and English geographically, their command of the different waters and their facilities for controlling the fur trade. He recognized the necessity of securing water communication, if possible, between Lake Ontario and Lake Erie. He describes the route pursued by the Indian traders from the Hudson to Lake Ontario as follows: "From Albany the Indian traders carry their goods sixteen miles overland to the Mohawk River at Schenectady. From Schenectady they carry them in canoes up the Mohawk River to the carrying place between the Mohawk River and the river which runs into Oneida Lake, which carrying place between is only three miles long, except in very dry weather, when they are obliged to carry them two miles further. From thence they go with the current down the Onondaga River to Lake Ontario." He then adverts to the possibility of connecting, by way of the Onondaga (Oswego) River and the Seneca River, by water directly with Lake Erie. In some document which I have seen he even suggests investigation. The language which he uses in suggesting the possibility of water communication with Lake Erie is as follows:

"But besides this passage by the lakes, there is a river which comes from the country of the Senecas, and falls into the Onondaga River, by which we have an easy carriage into that country, without going near Lake Ontario. The head of this river goes near to Lake Erie, and probably may give a very near passage into that lake, much more advantageous than the way the French are obliged to take by the great fall of Niagara, because narrow rivers are much safer for canoes than the lakes, where they are obliged to go ashore if there be any wind upon the water. But as this passage depends upon a further discovery, I shall say nothing more of it at this time."

Colden's suggestions do not seem to have been acted upon but they certainly show that men as early as 1724 recognized the necessity and were thinking of the possibility of a connection of Lake Erie with the Hudson.

Probably following the ideas suggested by Colden's memorial, Governor Burnet in 1724 established a substantial settlement where Oswego now stands, with a view to intercepting the Indian canoes from the west bearing furs destined for Montreal and inducing them to change their destination to Albany.

NATURE'S GEOGRAPHIC PLAN.

We thus see that nature's geographic plan, the topography of the continent, the courses of the streams and the situation of the lakes, the location of the tribes of savages and the abundance of fur bearing animals led men on to conquest and trade and taught them that the waterways furnished them the best and cheapest means of reap-

ing the advantages of commerce with the savages and that those routes should be utilized to the best advantage by connecting them with artificial waterways. And so we see that from a process of knowledge gained and evolution of ideas the connection of the upper lakes with Lake Ontario and with the Hudson naturally presented itself to the minds of the early colonists. That the knowledge and ideas thus gained should have been lost and revived in later years is impossible and I think it goes without saying that increase of knowledge, increase of commerce, the settling of the west, increase of wealth and means of construction simply continued the process of nature's teachings in the minds of many men, with the result that the Erie and Oswego canals came into being.

WARS HELPED PROGRESS.

Among other factors, in addition to the greed for conquest and a desire to build up commerce, we find that war is a potent one in the evolution of all great human undertakings. It not only teaches man many things that help his progress, but it often removes obstacles in the way of commerce and industry. We find that with free use of the waterways between the east and the west sought by the French at Niagara, the English colonists made comparatively little advance in their endeavor to extend colonization, and trade with the western Indians. But when the so-called French and Indian war was ended and the treaty of peace between France and England signed in 1763, French domain and control east of the Mississippi River ended and the British became possessed of the entire country, which included the Great Lakes, the Ohio and its tributaries and all the waters and portages which connect that great river with the Great Lakes and the upper lakes with Lake Ontario and the St. Lawrence. This removed the greatest obstacle to English colonization of, and trade with, the west, and set them to thinking more seriously of improving the means of water transportation by artificial canals.

AN EVOLUTION.

The treaty of 1763 was naturally followed by an extension of English colonization in this State and to some extent in the West, and trade with the Indians was fostered and grew. This condition of affairs brought forcibly to the minds of men the absolute necessity of providing cheaper and more expeditious means of transportation. There being no railroads and the construction of highways through the mountains and dense forests and over a multitude of streams was not within the means or capacity of the colonists. Indeed such construction would have been too slow and would have retarded colonization and trade if relied upon. The inevitable consequence was that men thought and schemed for the improvement of nature's highways—the waterways. What they learned and the knowledge they transmitted to those that followed them led on to the final consummation—the construction of our canals.

While the slow work of advancing civilization was proceeding, the war of the Revolution came. That also performed a great work in the civilizing and peopling of the United States. When, in 1783, Great

Britain by treaty acknowledged the Independence of the United States, the St. Lawrence from St. Regis, Lake Ontario, the Niagara and the upper lakes and their connecting waters became the boundary between Canada and the United States, Lake Michigan passing wholly under our jurisdiction, and the Ohio and its tributaries were included within the limits of the independent states under conflicting grants from the British crown. The great northwest territory or parts of it was claimed by Virginia, Massachusetts, Connecticut, Pennsylvania and New York, but in a spirit of amity and for the good of the new nation, compromises were made and the territory turned over to the nation, with certain proprietary reservations in parts, that did not involve sovereignty. This immense area was thus opened to settlement and colonists began to cross the mountains. Still one obstacle to untrammelled colonization of the territory existed which had to be removed by war. The Indians in the territory were savage and implacable. They feared and therefore resisted the inflow of the white man. It was not until General Wayne in 1794 defeated the Indians at the great battle of the Fallen Timber that they were forced to make a treaty which opened the northwest to immigration and settlement without hindrance.

IMMIGRATION'S INFLUENCE.

We can now trace another great factor in the evolution of human affairs which led up to the building of the canals. War had done its work well and the colonists and people from across the Atlantic beheld the opportunity to acquire homes in the fertile northwest territory. The influx of immigrants west of the mountains at first was largely confined to the western part of our State and Tennessee and Kentucky. As the population in New York State increased the necessity for cheap transportation in our own State became apparent and when, subsequently, the immigration increased and flowed beyond our boundary into the territory now comprising Ohio, Indiana and Illinois, the need for water communication directly between the Atlantic by way of the Hudson and the Mohawk, together with the Great Lakes, stared our people in the face. The cost of carriage of persons and property was almost prohibitive. The waterways were the only available highways, and the many and heavy portages occasioned such great loss of time and so much labor that the expense of carriage could not be reduced. There were some roads, it is true, but they were not of the best and were utterly insufficient. It is hardly necessary to call attention to the fact that not only were means of access to the Northwest Territory a necessity to enable immigrants to reach it, but it was also a necessity to keep them supplied with necessaries, clothing and the materials and implements for building and for cultivating the land, as well as food until they could support themselves. Immigrants, too, could not make any reasonable progress unless they were able to send their products of the land and the forest to the east; they could not buy from the east unless they could sell to it.

Nevertheless, immigration continued to flow into the Northwest Territory to such an extent that it was very early divided into separate territorial jurisdictions and the increase of population was such

that Ohio, Indiana and Illinois were admitted to the Union in the early years of the last century.

A UNITED STATES CANAL.

We thus see that with full knowledge of the physical condition of the country, with the lessons of the past before them, with the limited commerce represented by the fur trade having grown into the great commerce existing and potential which the settlement of the Northwest Territory created, the thoughts of, not one man or a few men, but of many men reverted to the same ideas shadowed forth by Colden in 1724; namely, the connecting of the waters of Lake Ontario with those of Lake Erie by an artificial waterway, through which boats could pass without having to surmount the heavy portage at Niagara, and the overcoming of the obstacles of navigation between the Hudson and Lake Ontario by way of the Mohawk, Oneida Lake and the Oswego River. The great obstacles to water transportation between the Hudson and Lake Ontario were, the portage around the great fall of the Mohawk River, the portage around the little falls of that river, a few rapids, the portage from the Mohawk into Wood Creek and the portages of the Oswego River. There was talk and constant talk about a canal around the Falls and there was agitation to remove the obstacles between Lake Ontario and the Hudson. Men knew, in a general way, what the necessities were and what should be done, but there was no definite plan. Finally Christopher Colles took the matter up and ably and independently urged upon the Legislature of New York the improvement of the Mohawk, and the construction of a canal from Rome to, and the improvement of, Wood Creek. During these times discussion of the wisdom and feasibility of reaching the St. Lawrence by connecting the upper Hudson with Lake Champlain and that lake with the Chambly, arose. This route, however, it was quite plain would not greatly facilitate communication with the west by water, for the St. Lawrence would be reached near Montreal and the heavy current and great rapids, as well as the long distance necessary to reach the east end of Lake Ontario would make the route certainly more expensive for transportation to the west and to the Northwest Territory than the direct route from the Hudson, by the Mohawk, Oneida Lake, the Oswego River and Lake Ontario. In addition to this the exigencies of war had to be considered. Communication by the Hudson-Champlain-Chambly route would be partly through Canadian territory by land and a long distance through it by water, and it would be more available for us by the British, in case of war, than it would to the State of New York or the United States for it would furnish a direct highway of attack, the strategic route for entering New York, the same route followed by Champlain, Montcalm and Burgoyne. Thus the natural exigencies of commerce, as well as the threat of the god of war led our people to center their minds on the improvement of the waterways within our own boundary and led up directly to the construction of the Erie Canal.

Cadwalader Colden nearly a century before the time that I am speaking of had, in the report to which I have referred, pointed out the advantages and disadvantages of the two water routes and pro-

nounced strongly in favor of the interior water route by the Mohawk, and Governor Burnet had anticipated the utilization of that route by planting his settlement at Oswego.

We thus find that a difference of nationality, impediments to transportation and the physical conditions resulted in a consensus of opinion that while the Champlain route was advisable for trade with Canada, the interior route through the State of New York to the Great Lakes was the only one which could insure our commerce with the west, expedite the settlement of the great Northwest, preserve the advantages of the State of New York in commerce and its various industries and be available, not being exposed to attack, to aid operations in case of war. In other words, the geographical and political conditions were still operating powerfully towards the construction of a canal from the Hudson to the Great Lakes.

This resulted in the passage in the Assembly March 21, 1808, of a resolution instructing the surveyor general, then Simeon DeWitt, to make an accurate survey of the waterways on the usual route of communication between the Hudson River and Lake Erie and such other contemplated route as he might deem proper. The Senate concurred in this resolution April 6, 1808, and the surveyor general appointed James Geddes to do the work. October 20, 1809, Geddes made a report to the surveyor general in which he covered very thoroughly the different routes which might be pursued, one by the way of Lake Ontario and one directly from Three River Point to Lake Erie. This report is very valuable historically and has great merit from an engineering point of view. Geddes considers all the engineering features of both routes and the variation possibly of the route to Lake Erie. However, the details of the report are not pertinent for the purposes of this address. Nevertheless, it is curious to know that the same questions which have arisen several times since in connection with a proposed ship canal around Niagara Falls were being considered at that time, as plainly appears from Mr. Geddes' statement in the report comparing the merits of the two routes. He says:

ARGUMENT OVER ROUTES.

"In comparing the Ontario route with the interior one, it is obstinately insisted upon, in favor of the latter, that it would be bad policy in the United States, to open a communication for sloops between Erie and Ontario, as the products of all the upper lakes would on their passage to the ocean, come into Ontario, and when there, the lockage to the tide in the St. Lawrence being only 206 feet, while it is 574 feet to the tide in the Hudson, there would be danger of the whole lake trade being diverted to a port in the territory of another nation. It is likewise contended, that if the two routes should not differ materially in the cost of making, the interior one ought to be preferred, as being free from the risk and uncertainty of wind and waves: That merchants can afford to pay higher freight when property is secure, and will arrive on a day certain. 'It is a consideration of some importance,' says a correspondent, 'that the inland canal would always be safe in the event of war with Great Britain. It will impose an additional value on a long tract of fine

country, through which it must pass; will increase its population, and of course the wealth and prosperity of the state.' On the other hand, it is insisted upon that cheapness of conveyance, the grand desideratum in all such works, would best be obtained by the Ontario route, as the great emporium of the lakes would be 150 miles nearer the tide in the Hudson, if placed at Oswego, than if at Black Rock; and that the produce of the upper lakes would be carried cheaper through Ontario to Oswego, than 150 miles forward on a canal. In answer to this the fact is stated, that \$5.25 is now the common price for carrying 7 barrels (about a ton) of salt from Oswego to Lewiston, 26 miles short of Black Rock, while, according to Mr. Robert Fulton's calculation, a ton would be carried 150 miles on a canal for \$1.50. Mr. F. supposes the case, of a canal being made at the public expense, and no toll taken but the charge of the bargemen. If the cost of making would amount to the same on either route, then the toll due a canal company would be the same on either, and the one being set off against the other, brings it to the bargemen's charge as stated by Mr. F.''

The additional argument for the interior route and against the Ontario route, with a ship canal around the Falls, which, as we have seen, appeared in the report of Cadwalader Colden, colonial surveyor general in 1724, that commerce once reaching Lake Ontario from the west would be likely to pass down the St. Lawrence route to Montreal, whereas this could not occur if the interior route were adopted, does not seem to have been advanced. This probably was so because the rapids of the St. Lawrence seemed an insurmountable obstacle to direct commerce between Montreal and the west by vessels larger than bateaux. This obstacle had been foreseen nearly a century before, together with a remedy which has since been applied by the Canadian government; namely, the construction of canals around the rapids.

EARLY WATER CORPORATIONS.

Prior to this survey and leading up to it two corporations had been created by the Legislature for the improvement of navigation between the Hudson and Oswego, the Western and the Northern Inland Lock Navigation Companies. The promoters of these companies were General Philip Schuyler and Elkanah Watson and they were the most active in their operations. The Western Company was to improve the western route and the Northern Company to connect Lake Champlain with the upper Hudson. These companies expended very considerable amounts of money, raised by subscription and appropriation by the Legislature, in building locks at Little Falls, at some places around other rapids in the Mohawk and in connecting the Mohawk at Rome, or rather where Rome now is, with Wood Creek and Oneida Lake, and the Northern Company did some work towards connecting the Hudson with Lake Champlain. Nevertheless it soon became apparent that these improvements were utterly inadequate to care for the increasing flow of immigration to the western part of this State and the great Northwest Territory, accompanied as it was with the necessity for better facilities for carriage of the commerce that was constantly swelling. It was this condition

of affairs which led to the investigation in 1808 of the physical conditions guiding and controlling the feasibility and economy of a through adequate water route between the Great Lakes and the Hudson, and to the legislative resolution directing the surveyor general to survey and report.

INCREASE OF POPULATION.

At this point it is of interest to note the increase of population in the area covered by the Northwest Territory. Soon after that great area had been conveyed to the United States it was divided into territories, Ohio and Indiana being shortly after cut out, and Michigan, Wisconsin, Illinois and Minnesota subsequently created. As I have stated, the Indians in the territory covered now by Ohio and part of Indiana were conquered by General Wayne in 1794, those further west were defeated and brought into subjection by General Harrison at the battle of Tippecanoe in Indiana in 1811. The precarious condition arising from the hostility of the Indians prevented at first the rapid settlement of the territory and after the Indians were brought into subjection, immigration began to increase. Ohio was made a state in 1802 or 1803 (there is a dispute as to the date arising from the peculiar enactments of Congress); its population in 1800 was 45,365; in 1810 it was 230,760; in 1820 it had increased to 581,295. The State of Indiana was admitted in 1816; its population in 1800 was 5,641; in 1810, 24,420, and in 1820, 147,178. Illinois was admitted to the Union in 1818; in 1810 its population was 12,282; in 1820, 55,162, this state growing more slowly than Indiana and Ohio in white population on account of the unsettled conditions existing between the Indians and the whites up to and throughout the war of 1812. The other western states were very sparsely settled until after the events connected with the construction of the Erie Canal, to which we are now giving attention. These figures show very clearly that as soon as immigrants in the Northwest Territory could safely settle and cultivate their farms, they began to seek the great west in large numbers. This of course stimulated the efforts of far-seeing men in this state to secure water communication with the Great Lakes. I have not mentioned the increase of population in New York State, but this also is of interest as bearing upon the evolution of the idea of the Erie Canal. Up to the Revolution the population of New York began to grow and find its way westward, necessitating better communications between the eastern and western parts of the state and becoming a potent factor in the agitation for a canal through to Lake Erie. The population of New York (confined almost wholly to the eastern part of the state) was, in 1719, 340,120; in 1800, 589,051; in 1810, 959,049; in 1820, 1,372,111. Space and time will not permit me to go into the details of the distribution of this population and it must suffice to say that towns and villages sprang up along the Mohawk and west to the Genesee Valley and to Buffalo at Lake Erie, as well as through what we commonly call the present southern tier of counties.

WASHINGTON'S PLAN.

It would seem that enough has been said to show that the idea of a water connection between the Hudson by Lake Erie was the outgrowth of circumstances, and that the route, so far as the State of New York and the United States were concerned, was all that was in contention in the early part of the nineteenth century. Whether a canal should be built which would have Oswego for its terminus and pass Niagara Falls by a ship canal, or whether the terminus, by an inland route, should be Lake Erie, was the only mooted question. This was discussed, pro and con, and reasons given by many for the one route and for the other, but there was nothing definite known or settled upon. Washington has been given credit for suggesting a through route, but he never did, he merely spoke of the feasibility of a water route through the state to connect eastern New York with the Lakes, something that hundreds of other men knew and talked about. Washington, indeed, had a plan of his own which was utterly antagonistic to the interests of New York State. He urged roads to connect Maryland and Virginia with the west and the construction of a canal to connect with the Allegheny from Lake Erie and from that river or the Monongahela by canal across the mountains to the navigable waters of the Potomac, a plan which, if successful, would have diverted the commerce of the west from our own state.

The same factors were influencing the minds of men in the days of which I have spoken; those who had particular interests advocating the Oswego route, and those who were looking to the great interests of the country and the state, looking to an inland route. Among the latter might be mentioned Christopher Colles, who, without definite plan, urged very early in the last century direct connection by an inland route with Lake Erie, and Elkanah Watson who later advocated the same idea. It would seem, however, that Gouverneur Morris is entitled to credit for the first conception of a dream of a canal from Lake Erie to the Hudson. As early as 1803, he made the suggestion, but he had no definite plan, his idea being impracticable from an engineering point of view. It was that a canal should be constructed practically upon an inclined plane, of course with descending locks to the Hudson.

The necessity for an adequate canal connection with Lake Erie by some route and the constant discussion resulted in the Legislature, by joint resolution of March, 1810, appointing a commission "to explore the route of an inland navigation from Hudson's River to Lake Ontario and Lake Erie." The commissioners were Gouverneur Morris, Stephen Van Rensselaer, DeWitt Clinton, Simeon DeWitt, W. North, Thomas Eddy and Robert R. Livingston. These commissioners on March 2, 1811, made a full report after personal inspection of all available routes, they having the assistance of competent engineers. This legislation and the selection of the personnel of the commission was largely due to the energy and ability of DeWitt Clinton, he having been chosen to head the advocates of a canal through to Lake Erie.

CLINTON'S PRIVATE JOURNAL.

Clinton kept a private journal of the trip through the State, which has been published and is of great interest. It not only indicates the care taken by the commissioners in making their investigations, but gives a picture of the settlements and people along the entire route. The journal covers many pages. The commissioners left Albany on the 3d of July, 1810, and wended their way by boat and wheeled vehicles, following the route of the Mohawk, crossing over the divide at Rome and proceeding through Oneida Lake. Clinton speaks of the earnings of the Western Canal Company at Little Falls, stating that in April, May and June, two hundred and forty-two boats passed the Falls. He gives the amounts received by the Company for tolls from 1803 to 1810, amounting to something less than fifty thousand dollars. He also refers to the fact that two boats passed through the locks in the presence of the commissioners, one a Durham boat from Ithaca with potash, part of which came from Oswego, stating that the boat when fully loaded drew twenty-eight inches of water and was capable of carrying one hundred barrels of potash or two hundred and forty of flour; that it paid for lockage at Rome \$16.50. He also speaks of Utica as a flourishing village and gives us the information that produce is carried by land from Utica to Albany, the freight rate being eight shillings for one hundred pounds, by water to Schenectady, six shillings. This would be about 20 cents per ton mile by land and 15 cents per ton mile by water. This rate necessarily was largely increased by the difficulties of navigation west of Utica and by the necessity of carriage by land over many miles. We thus can see the pressing necessity of furnishing cheap water navigation to Lake Erie, because the rate was almost prohibitive, even in those days; today it would absolutely prevent commerce passing through the State of New York. The diary then carries us to Fort Stanwix or Fort Schuyler, Rome. Clinton speaks of it as important strategically to protect the passage between the Lakes and the Mohawk River. He also states the interesting fact that the commissioners dined on a salmon caught in Fish Creek about eight miles from Rome. In this connection he remarks that salmon came into the Lake Oneida and continued until winter; that they brought sixpence a pound. The diary carries us down the Oswego River and up the Seneca River and overland to Buffalo. By way of Lewiston, the Niagara portage and past Niagara Falls, the route followed by the commissioners ended at Lake Erie. At Buffalo, Clinton says, there were thirty or forty houses, the Court House of Niagara County, several stores and taverns and a post office. He remarks that it is a place of great resort and that all persons that travel to the western states and Ohio, from the eastern states, and all that visit the Falls of Niagara, come this way.

We thus get an idea of the social condition of affairs existing in the state when the exploration for an inland navigation route was made in 1810, supplementing what has been said about the influx of population to the western part of the state and the Northwest Territory.

FAVORED INLAND ROUTE.

The report of the Commission is a very able one, not dealing merely in generalities, but giving all the material facts, although, necessarily, not the engineering details, for those had to be worked out later. It evidently favored the through inland route direct from the Hudson by way of the Mohawk, Wood Creek, Oneida Lake, the Seneca River and thence overland to Lake Erie, and it contains this prophetic statement: "Thus, it is evident that the canal will, if properly effected, turn to the United States the commerce of the upper lakes," meaning not merely the United States, but the State of New York. The report further adverts to the question whether the state shall bear the whole expense or whether the nation should share in it. As to this it is sufficient to say that the Federal Government was asked to aid in the construction of the Erie Canal later, but refused to do so, and that several attempts have since been made to secure national aid, but it has always been refused. The War of 1812 intervened after the making of this report and prevented active undertaking of steps looking to the construction of the canal. However, in 1816, the Legislature was besieged by petitions to take the matter up again and in February of that year a memorial of the citizens of New York was presented urging the construction of a canal direct from Lake Erie by the inland route, giving an estimated expenditure of two and one-half millions of dollars, and in April, 1816, an act was passed providing for the appointment of commissioners to devise and adopt such measures as may or shall be requisite to facilitate and affect the community, by means of canal and locks, between the waters of the Hudson and Lake Erie, and the navigable waters of Lake Champlain. By the first section of the bill DeWitt Clinton, Stephen Van Rensselaer, Townsend M'Coun, Melancton Wheeler, Henry Seymour, Joseph Ellicott, Jacob Van Rensselaer, Philip I. Schuyler, Samuel Young, John Nicholas, William Bayard, George Huntington and Nathan Smith were appointed commissioners.

We have thus followed the evolution of the idea which resulted in the construction of the Erie and Champlain canals and I think it must be quite plain to the mind of any impartial man that no individual is entitled to the credit of the origination of our artificial waterways, but that that is due, as I have said, to geographic, topographic, geologic, political and commercial necessity and the peopling of a new country, impressing upon men from time to time the need of artificial waterways, followed by the exploration; investigations and thought of many minds crystalizing into the final consummation of the wisdom of building the canals as they were built.

The further evolution of the idea seen in the improvement of our canals depends upon the same factors and it is therefore necessary for me merely to state the facts in order to show the final working out of all the elements that went to produce the great results we see today.

INDUCED POPULATION.

The original Erie Canal was begun with great ceremony at Rome on the 4th of July, 1817, and it was practically completed on the 26th day of October, 1825. The completion was celebrated with

great pomp by mingling the waters of Lake Erie with those of the Atlantic at New York City. It is no part of my undertaking to describe these well known celebrations. The original canal had a draft of about four feet of water, was about forty feet in width at the water surface and about twenty-eight feet in width at the bottom with locks ninety feet by twelve, and accommodated boats of about seventy tons. At first it was navigated by passenger boats, with handsome and comfortable accommodations, as well as freight boats. The commerce between the east and the west began to grow immediately and far exceeded the expectations of the early promoters even before the advent of the railroads. Immense numbers of immigrants passed to the west over the Erie Canal. Indeed, the beneficial effects that immediately followed the opening of the canal are past description and an enumeration of statistics would simply confuse the mind. I may, however, call attention to the facts heretofore stated of the great increase in population that followed in this state, particularly New York City, and in Ohio, Indiana and Illinois, and of the subsequent tremendous increase of population of the entire west; I would also call attention to the fact that while the population of this state was 959,049 in 1810, in 1830 it was 1,918,608, that is five years after the final completion of the canal, parts of which had been in actual use for some years before, the population of this state had been increased nearly one million. The population of the City of New York about 1817 was one hundred thousand and in 1830 it had arisen to over two hundred thousand.

Following the development of the canal there are some facts which are interesting to note, but the details are either so well known to this audience or will be so covered by subsequent papers, that I shall confine myself to a bare statement of those which indicate the further development of the idea of necessity for water communication between the Hudson and the Great Lakes and between the Hudson and Lake Champlain.

The great success of the canals as factors in commerce, furnishing cheap transportation until years after the commencement of the railroads and the effect of the improvement of the latter and the construction of trunk lines north and south of the State of New York, may be illustrated by reference to the construction of others than the main arteries and the commerce of the Erie.

“THE WESTERN CANAL.”

The Erie was first known as the “Western” Canal but, on account of its terminus at Lake Erie, it came to be known as the Erie Canal. The Champlain Canal was constructed under the original act, but the Oswego and other laterals were not. Steps were taken in 1819 looking to the construction of the Oswego Canal and after various vicissitudes it was opened in 1829. The Oswego Canal is one of the most important of our canal system.

The Cayuga and Seneca Canal was first agitated in 1813 to furnish water transportation from the south, and various companies were organized to construct locks and make connection with the Chemung River. In 1824 steps were taken to connect this water system with

the Erie Canal and after various expenditures of private capital the state completed the necessary locks, channels and connecting canals, making enlargements. The construction of the Black River Canal may be said to have first taken form through agitation in 1825, and after various legislative enactments and appropriations that waterway was finally completed.

The four canals, the Erie, Champlain, Oswego, Cayuga and Seneca and Black River have always been regarded as the canal system of this state and as such have been protected by the Constitution from sale, lease or other disposal.

INDUCED OTHER CANALS.

The construction of these canals caused agitation for further artificial waterways, the idea of which may be said, generally, to have been to connect the important arteries with the rivers and other waterways of Pennsylvania. Thus the Genesee Valley Canal was to connect the Erie with the Allegheny, the projectors having in view their connection with the Ohio. Governor DeWitt Clinton in February, 1825, sent a communication to the Legislature recommending a full investigation of this proposed waterway and in 1836 an act was passed for the construction of a navigable canal, to be known as the Genesee Valley Canal, from the Erie in Rochester through the valley of the Genesee River to near Mt. Morris, and thence by the most eligible route to the Allegheny River at or near Olean. The possibility of the Chemung Canal was the subject of consideration in the latter part of the eighteenth century and after the incorporation of the Lock Navigation Companies and the expenditure of private moneys in the attempt to secure a waterway for connection with the Erie and the Chemung, the canal was finally constructed with the view to reaching the rich coal fields and extensive lumber districts of Pennsylvania. The Chenango Canal and its extension first took the form of a proposition for a canal through the Chenango Valley in 1814, to connect the Erie Canal with the Susquehanna River and with the Pennsylvania canals, and in 1833 an act was passed for its construction at Binghamton up the valley of the Chenango to its headwaters, and thence to the Erie Canal. This waterway was practically completed in 1836. In 1838 a survey from the termination of the canal at Binghamton along the valley of the Susquehanna to the state line near Tioga, thence to connect with a Pennsylvania canal was ordered by the Legislature, and subsequently a company was incorporated to build an extension which finally came under state control and was completed.

Other short canals, such as the Crooked Lake, the Glens Falls feeder and the Shinnecock have been constructed, but the Chemung, Chenango and Genesee Valley were abandoned by the state for the reason that the traffic upon them became so small after the advent of the railroads and the expense of maintenance and operation so great, that their continuance as a means of transportation was thought to be neither necessary nor wise. However, the Shinnecock Canal connecting Great Peconic and Shinnecock bays, near the eastern end of Long Island, still remains and it is hoped that it will be improved in the near future and connect with a canal route on the southern side

of Lake Erie, which will make interior communication between Long Island Sound, via the south side of Long Island, available for barge canal boats.

The history of each of these canals, the rise and decadence of their traffic, would fill volumes, and I must therefore confine myself, as I have stated, to a short review of what has occurred on the Erie.

THE ERIE CANAL'S SUCCESS.

The success of the Erie Canal as a promoter of the commerce and manufactures of the state and the great west, and its effect as a means of rapidly increasing the population of those parts of our country, is apparent when we consider the comparatively inaccessible condition of the western part of our state and of the northwest and middle west, together with sparse population and the great cost of transportation of persons and property before and after the canal came into existence. I have already stated the facts existing before the canal was constructed, as showing how the necessity of existing conditions originated and developed the idea of providing a main artery between the Hudson and Lake Erie and I have already given the figures showing the impetus that that construction gave to the populating of our state and of Ohio, Indiana and Illinois, and the development of their farms and industries. It only remains to advert to the growth of traffic as an index of the beneficial effects of the Erie Canal. To go farther than this would be too great an undertaking for this short paper. From nothing the tonnage passing over the Erie Canal reached high water mark, very nearly 6,500,000 tons, in 1879, notwithstanding the active competition of the railroads. So great a movement of articles transported by water, when it is considered that the construction of the Erie had built up cities, towns and villages throughout the state, had encouraged the construction of canals in Ohio and Pennsylvania, with like results in those states, and had made possible the construction of thousands of miles of railroads connecting the Atlantic coast with the great west, and of railroads running north and south, the railways carrying east and west, north and south many million more tons of freight and hundreds of thousands of passengers, makes it apparent that the Erie Canal was the prime factor in starting, and hastening the building up of the commerce and industries, and the populating, not only of the State of New York, but of the great middle west, the northwest, the south and eventually the southwest of the United States. The benefit to our country at large was immeasurable. I may add that the Erie Canal not only accomplished all this but it originated and has maintained the pre-eminence of the State of New York in commerce and manufactures, in population, wealth and prosperity at all times.

CHANGES IN SENTIMENT.

It is well to note that the physical and social conditions which lead the minds of men to the idea of constructing artificial waterways, sometimes, in the process of evolution, become antagonistic. This is illustrated in the case of the abandoned laterals. The physical conditions remained the same, but the social conditions and ease and

cheapness of transportation by rail became entirely different and prevailed over the opportunities offered by the various rivers, small lakes and valleys. It is also well to note that changes of this character, continually going on, not infrequently bring all the conditions into unison again and impress upon men the wisdom of returning to old paths of commerce. This is illustrated very clearly by the movement now being agitated for the construction of a waterway on the south side of Long Island connecting with the Sound by rehabilitation of the Shinnecock Canal and the construction of a canal from Flushing Bay on the north of the Island to Jamaica Bay on the south; the improvement of the Glens Falls feeder, and in the case of the Black River Canal, its improvement and the improvement of the Black River in connection with it. I may add also the rehabilitation of a portion of the Chemung route and negotiations which have been had with a view to the improvement of the Susquehanna by Pennsylvania, so as to reach the coal regions of that state. I can not devote the time or space to discuss in this paper the various causes of these changes of public sentiment and must confine myself to the statement, which can be verified, that they will facilitate water transportation over the main system of canals and cheapen the carriage of freights accordingly. The Chemung improvement will certainly also facilitate and cheapen the transportation of that most important product of the mines, coal, together with its distribution to the people of this state and to the people of the west.

Realizing that the process of evolution to which I have been addressing myself is dependent upon forces which are continually at work, I feel that this paper would not be complete without a sketch of the improvement of our canals which has taken place and is now going on, for they are the results of what has gone before.

THE COMING OF RAILROADS.

The coming of the railroads in the early thirties of the last century had no effect upon the usefulness of the canals or the necessity of maintaining and operating them, but as railroad improvement increased and ten-ton freight cars were replaced by those that would carry from twenty to even fifty tons, drawn by coal-burning locomotives of tremendous weight and power over heavy steel rails resting on well and carefully constructed roadbeds and modern bridges and viaducts, the cost of transportation by rail, with the superior terminal facilities of the railroads, placed our canals in the position of being feeble factors in transportation. In addition to this the great trunk lines combined and by differential rates, intended to give the lines terminating at Atlantic ports equality in securing freight, began the process of crushing out competition by the canals of this state in connection with the Great Lakes.

CANALS PAID FOR THEMSELVES.

Prior to the great improvements of railroads, however, the tremendous increase of commerce between the east and the west made it imperative that our main canals should be improved. Passing by legislation for particular improvements on the Champlain, Erie,

Oswego and other canals, made from time to time, a glance at the efforts to place our main canal arteries at first in a condition to properly accommodate the growing commerce, and afterwards to put them on a par with the railroads, will suffice to illustrate the continuance of the evolution. Before doing this we may take notice of the fact that by constitutional amendment (Article 7, Section 9), in 1882, tolls were abolished. This step in the direction of making our canals efficient shows that the prior improvements (which will be spoken of hereafter) had not accomplished the desired result. We may also note here that it appears from the report of a Legislative Commission, referring to a report made by the auditor of the Canal Department for 1875, that the revenue of the Erie, Champlain and Oswego canals, after deducting all costs for construction, repairs and maintenance with interest thereon, at 6 per cent., was \$63,000,000; that is, the report shows that the revenues from the main arteries had brought a great net profit to the state in dollars and cents, as well as caring for all losses upon the canals which were finally abandoned.

ENLARGEMENTS.

For the reasons above stated and the necessity of complying with the demands of commerce, the first step towards increasing the capacity of the Erie Canal was taken in 1834. This step was the construction of double locks to expedite the passage of boats. The idea was not a new one, it having been discussed as early as 1825, but it first took form in 1834 through a report of the canal commissioners. The final result of the agitation which followed was the passage on May 11, 1835, of a law which authorized the canal commissioners to enlarge the Erie Canal and construct a double set of lift locks as soon as the Canal Board believed that the public interest required the improvement. Under this act locks were rebuilt, some were doubled and an enlargement, with some changes of location, begun, together with other improvements of the prism. This method of procedure continued, with interruptions, until 1862, when the Legislature by law put an end to the almost haphazard improvement, by declaring the first enlargement officially completed. The work of enlargement thereafter went on by fits and starts but was not called enlargement or improvement; what was done towards perfecting the construction previously accomplished coming under the head of maintenance and repairs and comparatively small special appropriations. This improvement gave us, nominally, a canal seven feet deep, 55.5 feet wide on the bottom and 70 feet wide on the surface of the water with locks 100 feet by 18, having a capacity for the passage of boats carrying two hundred and forty tons of freight.

THE NINE MILLIONS.

The great increase in traffic between the East and the West, the tremendous enlargement of the carrying capacity of the railroads at very low rates and the combination between the trunk lines, as the years passed by attracted attention to the fact that the commerce of our State, and particularly of our great port of New York, was in danger. This made clear the absolute necessity of improving our

canal system so that its competition with the railroads might operate as a regulator of their freight rates and continue the natural flow of commerce through the State from the West to the East and from the East to the West. Consideration was given to methods of improvement, such as the enlargement of the carrying capacity of boats through improvements in methods of navigation, some of the ideas advanced being what was called the Belgian Cable System (which turned out to be a failure) and the use of steam as the motive power instead of horses and mules. But it was quite clear that any means of increasing the ability of boats navigating the canals to save time and expense were entirely inadequate to meet the exigencies of the case, and the attention of those who believed in the regulating effect of our canals as well as their importance as active factors in transportation, was directed to enlargement of prism capacity. About the first fruit of this was what is called the Seymour plan, which was to deepen the canal by raising the banks and lowering the bottom so that a depth of water of nine feet would be attained. Serious and long agitation followed until sufficiently strong public sentiment had been aroused, when the plan, in 1895, for deepening and improving the Erie Canal so that it would have a depth of nine feet was adopted by the Legislature and ratified by the people. The amount asked and authorized for this work was nine millions of dollars, but unfortunately the estimates of the state engineer, from which this amount was fixed, had been cut down, so that only one-half of the sum necessary was provided. Work proceeded, however, until the money was exhausted. In spite of grafting on the part of subordinates of the state officials and of ignorance and insufficient preparation, between one-half and two-thirds of the work was done and quite well done. The failure to accomplish the improvement with the moneys provided by law and sanctioned by the people and charges of fraud and speculation caused the appointment of a commission to investigate, and the stoppage of all further work. The plan was never carried out.

After the stoppage of work upon the enlargement last described, agitation for improvement of the canals continued. Railroad competition and discrimination continued to undermine the commerce of the state and threaten disaster to the port of New York. In addition to this an agency extremely injurious to our prosperity had become more active. This had for some years been having a considerable effect upon the commerce between the Great Lakes and the port of New York, but its effects were becoming more and more apparent. I refer to one of the elements of evolution to which I have heretofore spoken in connection with the early history of the origination of our canal system. It will be remembered that Cadwalader D. Colden in his report to Governor Burnet speaks of the necessity of having waterway connections with the Great Lakes, so as to intercept or prevent trade going to the St. Lawrence, and that Mr. Geddes in his report to Simeon DeWitt, surveyor general, in 1808, states that one of the arguments against a ship canal around the Falls is that it would open up an avenue of trade between the west and Montreal. That this factor was the real and threatening one, foreseen by the men of the early days, has been proved by the construc-

tion of the Welland Canal connecting Lakes Erie and Ontario through the Canadian peninsula and by the construction of canals around the rapids of the St. Lawrence. These canals the Canadian government had improved and enlarged and the trade between Montreal and the west had grown and was growing greatly, thus threatening great injury, if not destruction, of the flow of commerce through the State of New York.

THE BARGE CANAL.

The agitation for further improvement of our canals became so pressing and public sentiment for it so strong that Governor Roosevelt in 1899 appointed a commission which examined into the advisability of improving the canals and reported in favor thereof, and providing for a depth of twelve feet of water in the prism. This was followed by a reference of the entire matter to the state engineer and surveyor with engineer counsel, the result being a report upon all existing conditions and suggesting different routes for the Erie, with changes in the Champlain, giving estimates of cost. In 1903 the Legislature passed an act referring to the people the question of incurring an indebtedness of one hundred and one millions of dollars to be applied to the proposed improvement. The indebtedness was authorized by the people in the same year. The act provided for a change in the route of the Erie, back to the one originally outlined in the report of Colden made in 1724, the one which had been followed prior to the construction of the Erie Canal by those trading with bateaux, as far as Lake Ontario. The route finally adopted proceeds from the Hudson at Waterford up the Mohawk, through a canal connecting that river with Oneida Lake, thence down the lake and through Oneida River, improved, to Three Rivers Point, thence on the Oswego to Lake Ontario and by the Seneca and Clyde Rivers to a point near to and west of Clyde, thence overland practically on the line of the Erie Canal to the Niagara River at Tonawanda, the Erie Canal from Tonawanda to Buffalo being preserved. The act of 1903 included the Champlain and Oswego Canals. The capacity of all the canals mentioned was increased by furnishing a depth of twelve feet, a bottom of seventy-five feet in the prism and two hundred feet in wide waters. The locks as finally provided for being three hundred and twenty-eight feet long and forty-five feet wide, with a depth of twelve feet over the miter sills. Subsequently the people ratified an appropriation of seven millions of dollars for the improvement of the Cayuga and Seneca Canal to give it the same dimensions and capacity as the other improved canals. The work of improvement has progressed slowly since the passage of the act of 1903, but it is expected that it will be completed in May, 1918. The improved canals, now known as the Barge Canal system, will increase the size of boats that can navigate it to a tonnage capacity of at least five times that of the existing canal, namely, from 240 tons to 1,500 tons.

THE TERMINALS.

The competition of the railroads disclosed and emphasized the fact that in any system of transportation proper terminals had become a vital necessity, and it was also apparent that the improved canals

could not perform the duty expected without such terminals. In 1911, therefore, the Legislature submitted to the people an act providing for an indebtedness of \$19,800,000 to construct proper public canal terminals for the receipt, delivery and protection of freight cheaply. The indebtedness being ratified, the work has proceeded and terminals where needed will have been constructed by the time the Barge Canal system is opened, or not long thereafter.

Discrimination against the waterways by the railroads in the past through refusal to interchange traffic upon a just basis and in other ways, and the actual use of the canals by them to the great detriment of their use by individuals and independent corporations, had made plain in years past the necessity of compelling the railroads to perform their public duty with relation to the waterways without discrimination, and the advocates of canal transportation, with the assistance of the chambers of commerce throughout the state, procured the passage in 1917 of a law, based upon the Interstate Commerce Act and the Panama Canal Act, which will prevent the railroads discriminating, compel them to interchange traffic with the canals on a just basis and made it impossible for them to control commerce on the canals directly or indirectly. This is done by prohibitions, mandates and by giving the Public Service Commission jurisdiction and ample powers. At the same time the act does not place any additional burdens upon those using the canals in transportation.

I believe that I have now clearly shown that the construction of our canals originally, and their improvement, and the abandonment of some, have been the result of natural causes operating through the years in a process of evolution, and that to give any single man, or set of men, credit for origination is to fly in the face of the facts and to contradict the unchangeable law of nature, of economics and of society, which have been in existence and working out the welfare of mankind for ages. If I have accomplished this I shall have not only added something to history, but to a clear conception of the fact that there is an over-ruling Power that guides our destinies through laws that always operate in the same way and for the benefit of mankind.

In closing, I would say that it would please me greatly, had I the time and space to mention the names of those in the past and the present who are entitled to be recognized as having done great work for the promotion of the prosperity of the people of our state through the creation and improvement of our waterways, the construction of canal terminals and the prevention of discrimination by the railroads, but to do so would involve danger, through failure of memory or lack of information, of omitting the names of many men who have taken part in this great work. However, if I may repeat the language of Judge Jonas Platt, "As to the merit of the first design of a canal, directly from Lake Erie to the Hudson, it belongs in my opinion, exclusively to no person. It was gradually developed to the minds of many who were early acquainted with the geography and topography of the western region of this state," and add to it the words of DeWitt Clinton; "For the good which has been done by individuals or communities, in relation to this work, let each have an equal share of credit."

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