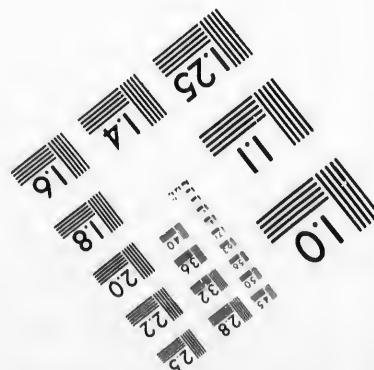
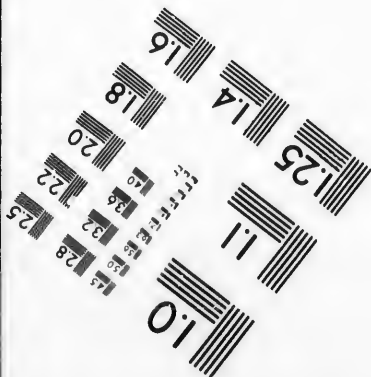
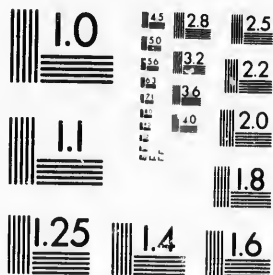


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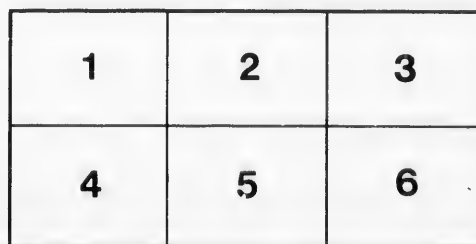
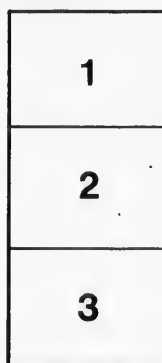
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209

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**The Rideau Lakes.**

By A. T. DRUMMOND.

*(Reprinted from the Canadian Record of Science, January, 1895.)*

## The Rideau Lakes.

By A. T. DRUMMOND.

The term Rideau Canal is rather a misnomer. If we except the five miles of actual canal between the Dufferin Bridge at Ottawa and Hogsback, and, again, the one mile or more each of excavation at Poonamalie and Newboro, the whole one hundred and twenty six miles of water route between Ottawa and Kingston now comprise merely two rivers and a chain of lakes—the Rideau River, which, flowing for sixty five miles on the one side of the watershed, falls at Ottawa into the Ottawa River; the Cataraqui River, which, descending for eighteen miles on the other side, falls at Kingston into Lake Ontario; and, connecting the headwaters of these two rivers, a continuous group of nine beautiful lakes, each lying close to the next and all more or less studded with islands.

Canal journeys are slow and often monotonous. The tourist, whose memories of the beautiful in Canadian river scenery are associated with the Thousand Islands, and who when speeding down the rapids of the St. Lawrence has observed, in striking contrast, the tedious progress through the St. Lawrence canals of the returning steamers as they wend their way back again to the upper lakes, is hardly prepared for the information that, inland, on what is, officially, but, by a misnomer, known as the Rideau Canal, there is for fifty miles a succession of lake scenery more beautiful and more varied than that of the Thousand Islands. And yet it is so. These Rideau Lakes were better known fifty years ago than now. With the opening of the St. Lawrence canals and the construction of railways, the Rideau route ceased to be a main thoroughfare, and is now only locally known.

The character of the scenery here is largely due to the geological features of the country. The cañon at Kingston Mills which forms the bed of the Cataraqui River, is walled by low Laurentian hills of 150 to 200 feet in height, and shows in the bevelled edges of the gneiss near the

water's edge, as well as in the worn crests of these hills, that it has been at one time the track of an ice flow. The softer sandstone cliffs skirting the same river on its southern side in Pittsburg, have had their general S 36° W direction made for them by the same great force. The islands are generally the lower peaks and crests of the Laurentian ridges which the waters of the lakes on finding an outlet have left unsubmerged. And everywhere in the immediate vicinity of the lakes these same Laurentian ridges, green with trees and shrubs to the water's edge, add attractiveness to the scenery and especially beautify the narrow passes and gorges which connect the different lakes.

The Rideau lakes are, in part, artificial. Sand, Opinicon and Indian Lakes and probably also Mud and Clear Lakes, were no doubt somewhat enlarged by the dams at the outlets of the first three lakes, whilst Cranberry Marsh which was one of the sources of the Cataraqui River, became by the construction of the Brewer's Mills dam, the long, narrow but picturesque Cranberry Lake, with every trace of a marsh effaced, and the Whitefish River became, by the erection of a dam near Morton, the equally long and narrow Whitefish Lake.

The effect of these last named dams being on the same level has been to unite Cranberry and Whitefish Lakes sufficiently for navigation purposes. How far they were originally connected has been an open question. Lieut. E. C. Frome, R.E., describing in the Royal Engineers' Reports in 1837, the original line of communication before the canal was constructed, alludes to the route being through Whitefish Lake and by a channel through a quantity of marshy land which had been flooded by dams erected at Whitefish Falls and at the Round Tail, the source of the Cataraqui River. Mr. Andrew Drummond whose personal experiences here date back to 1832 is of opinion that there was a connection between them, and he writes as follows in regard to the sources of the Cataraqui and Gananoque Rivers and to the route of the Rideau Canal here as origin-



ally projected: "I think, originally, there was a flow from Loughborough Lake into the Cataraqui through what was then known by the name, not of Cranberry Lake, but of Cranberry Marsh, which became a lake when the waters were raised by the artificial dams at Brewer's upper mill and at Whitefish Lake. The latter, as far as my recollection serves, was considered the source of the Gananoque River."

"From a mere commercial point of view, the first engineering report recommended the construction of the Rideau navigation route by the way of the Whitefish or Gananoque River, but the British Government decided that it must be built by the Cataraqui River to Lake Ontario direct, and not by an outlet on the St. Lawrence River, where vessels would be more or less subject to annoyance from the United States in time of war."

The great importance of maintaining as far as possible the level of Upper Rideau Lake, by conserving the waters of its tributary lakes, has been forcibly illustrated during the past summer. The long continued drought during August led to the waters falling so low that steamboats and barges drawing five feet constantly grounded in the long, narrow cut at Newboro, and it became a question whether navigation for the larger vessels would not have in consequence to cease over the entire system. This is a difficulty likely to occur more frequently in the future in the Rideau Lakes on account of the gradual removal of large sections of the surrounding forests by fire, and the uncontrolled cutting down of even the smaller sizes of timber there by lumbermen.

#### A RIDEAU LAKES RESERVE.

What is needed here is a forest reserve around the systems of lakes which form the feeders of the Rideau Lakes. By protecting the reserve from bush fires and absolutely withdrawing it from settlement, the trees will be allowed to grow again, and the accumulations from the melted snows and from the summer rains which presently are quickly drained off, will be held back within the forests and

only gradually find their way to the lakes. As in other sections of both Ontario and Quebec, the country here is now reaping the results of a past unwise Government policy under which no practical effort was made to protect the forests from fires or to punish those who carelessly or wantonly were the causes of these fires, and under which the right of cutting timber on the Crown lands has been freely sold with the object of securing for the Government a present cash return, and without the slightest effort at conserving the forests in order to make them a continuous source of revenue in coming years. Though somewhat late and only after so many of its townships had been largely burned over, an effort has been made during recent years by the Ontario Government in conjunction with the lumbermen, to limit forest fires, but more or less apathy still prevails in Quebec, and the general criminal law of the Dominion still fails to grapple practically with the subject. Nearly all forest fires are the result of criminal carelessness or of wanton destructiveness, and are therefore preventable. When will our Governments learn that by year after year showing apathy over the burning of the country's forests, they are wasting not only the country's present revenues but the revenues which would continue to be derived from timber for scores of years to come.

HEIGHTS OF THE LAKE LEVELS.

Assuming the waters of Lake Ontario to be 237 feet above the sea—some authorities mention 232 feet—the heights above tide water of the different Rideau lakes and of some of the upper lakes which supply them are, as determined by the Government surveys, as follows:

	Feet.
Upper Rideau.....	402
Lower Rideau.....	398
Mud, Clear and Indian.....	398
Opinicon.....	386
Sand.....	377
Whitefish and Cranberry.....	317
Bobbs.....	621
Knowlton.....	454
Loughborough.....	403
Canoe.....	466

## DISTRIBUTION OF POTSDAM SANDSTONE.

The recent surveys made by the railway engineers between Rideau and Elgin emphasize the suggestion I have elsewhere made that the Potsdam sandstone has probably had a wider distribution throughout this Laurentian isthmus than was at first supposed. After leaving Rideau Station on the Grand Trunk Railway, the sandstone is met with on lot 9 in the 4th concession of Pittsburg whence it continues to lot 11 in the 5th concession. The beds furnish an excellent building stone. It appears again in the middle of lot 12 in the 5th concession and continues to lot 15 in the same concession when the gneiss again takes its place. Further on, at Brewer's Mills, a few feet of sandstone cap the low Laurentian ridge to the north of the locks, and at the outlet of and at places around, Loughborough Lake a few miles farther north, and also around Knowlton Lake, it is also found. Immediately beyond Morton, on lots 4 and 5 in the 5th concession of South Crosby, and at Jones Falls it reappears, at the latter place forming cliffs of about 70 feet in height. The splendid locks and dam at Jones Falls are built of sandstone. East of Morton it probably underlies the broad stretch of flat country lying between that village and Lyndhurst and thence towards Seeley's Bay. Beyond Lyndhurst about Bass Lake and on the north side of Charleston Lake, it is also met with. On the north western side of Lower Rideau Lake and continuing to Perth and thence north to about the Mississippi River within a short distance of Lanark, there is a broad display of the Potsdam sandstone. It appears also in South Elmsley, and at Portland in Bastard has been used as a building material, though the upper rocks in this vicinity may be of calciferous sand rock. Among and in the neighborhood of the Thousand Islands, the Potsdam sandstone occurs at one or two points on the St. Lawrence side of the Township of Pittsburg, at and around Gananoque, on the lower end of Howe Island, and on Hay, Tidde, and parts of Round and Wellesley Islands, whilst farther down the river, it appears near Alexandria

Bay and continues at intervals to Brockville. There is thus a widespread distribution of it in patches or small areas nearly across the Laurentian isthmus which connects the Adirondacks with the Laurentian country to the northward. And in this locality where glacial action has been so marked, we can imagine that these softer rocks may at one time have had a greater development than now appears.

#### LAURENTIAN ROCKS.

Writing generally of the Laurentian rocks in the Counties of Lanark, Leeds and Frontenac, the late Mr. H. G. Vennor in the Geological Survey Report for 1870, characterizes them as made up of granitoid gneisses, composed of flesh colored feldspar, with grey quartz, greenish hornblende, and some mica, and much cut up by granitic veins. They have, in places, great crystalline limestone bands which can be traced continuously through two or three townships, and sometimes they include broad areas of granitic rocks containing red orthoclase and white quartz.

The economic minerals met with in the neighborhood of the Rideau lakes are iron ore in large quantity at several points, lead and yellow sulphuret of copper but not, thus far, in paying quantities, phosphate of lime at numerous points, mica, marble, granite for paving blocks, and thick bedded sandstone for building material. The iron ore generally, has assayed from 52 per cent. to 60 per cent. of metallic iron, but is occasionally associated with 6 per cent. to 12 per cent. of titanitic acid and some sulphur.

The leading physical features of the country—the lakes, the islands, the low overlooking hills—are all due to the Laurentian rocks, and to the line of direction which these hills or great ridges have taken. At Brewer's Mills on the Cataraqui River the direction is about N. 20° E. From this point to Seeley's Bay their course is about N. 34° E., whilst south-east of Seeley's Bay there are ridges lying N. 30° E. A long, conspicuous gully here which has afforded a probable opening to the engineers for location, takes, however, a course, for a considerable distance, of N. 82° E.

The general dip is towards the St. Lawrence River and the small streams south of Seeley's Bay are tributary to the Gananoque River and not to Cranberry and Whitefish Lakes.

## FLORA.

The flora of the country surrounding the lakes is essentially that common to Central and Eastern Ontario and to the vicinity of Montreal. Even the Western Ontario peninsula would differ from it rather by the prevalence there of western and southern forms than by the absence of species found around the Rideau lakes. Eastern Ontario is, however, the meeting ground of some outliers from floras whose centres of development are elsewhere. Among trees, *Pinus Banksiana*, the Northern Scrub Pine, has made its way from higher latitudes to the southern townships of the County of Renfrew, *Pinus rigida*, the Pitch Pine, a denizen of the Atlantic Middle States, has found a congenial home near Mallorytown and Gananoque and in the township of Torbolton, *Juglans nigra*, the Walnut, has wandered from its native wilds in the west to Ottawa and Montreal, and *Quercus Castanea*, the chestnut oak, has ventured from the Middle and Western States, as far east as Kingston. Among shrubs, *Rhus copallina*, although somewhat common in the United States, is thus far known in Canada only among the Thousand Islands, near Gananoque, where its congener *R. typhina* attains a wonderful development in numbers, whilst *Pyrus sambucifolia* found along the more northerly portions of the United States, occurs at Ottawa and Montreal and ranges thence northwestward to the Rocky Mountains and northeastward to Labrador. Among herbaceous plants there are also a few outliers from other floras, and one or two species like *Podostemon ceratophyllum* found at Ottawa, which have probably been overlooked elsewhere in Ontario.

Are these outliers the advanced guard of their respective species paving the way for a more extended range by becoming acclimatized, or do they constitute a stationary force which physical and climatic influences have pre-

cluded from going farther, or are they a rear guard representing what remains of a retreating force whose maximum stage of activity has been passed, whose area of distribution has been diminishing, and the individuals of whose species are being gradually reduced in numbers. The questions involved are interesting. The suggestion is intelligible that each species has its place and purpose to fulfil in life, just as the lower animals and man have, and has its development and ultimate decline in strength and activity in each individual as well as in the numbers of its species, until, in long course of time, that place is either left void or is taken by some other form or variety more suited to the changes of circumstances which time is gradually but continuously bringing about. Many plants, at the present time, are thus at their maximum stages of activity in individual growth and reproduction, and have now their maximum breadth of distribution; some are merely in the early or initial stages of this activity and at the initial points of their ultimate area of range; whilst others must be on the decline when activity in reproducing the species is lessening, and the area of distribution is being circumscribed. When the stage of decline has been reached, climatal and other causes which would in the ordinary course limit the range, would have greater effects on the species than upon others which were in the progressive stage of activity or had reached the maximum.

#### LAKE SALMON.

One of the finest of our fresh water fishes—the lake salmon—occurs in the Lower Rideau Lake, and is the attraction every summer to many American as well as Canadian sportsmen. It is a deep water fish confined here to this lake more probably because it is the largest lake of the Rideau system and the only one which has a general depth exceeding 100 feet, than because its waters are clearer than those of others of the system. The lake salmon is caught by trolling with the live minnow at depths of 100 to 150 feet, and, like its nobler friend from

the salt water, it affords to the sportsman exciting play for considerable time before it permits itself to be taken.

Care will have to be observed that this valuable fish is not exterminated in this lake. As railways render the locality more accessible, the beautiful scenery must attract tourists and sportsmen in increasing numbers and lead to extinction of the fish unless the lake continues to be periodically restocked with the fry, and fishing is permitted under stringent regulations which are not only made but are also properly enforced.

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