

RECENT CHANGES IN THE COAST LINE IN THE COUNTY OF
KINGS, NOVA SCOTIA.—By FREDERICK J. CHURCHILL,
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Few places are more fascinating than the sea shore for those who are interested in observing the forces of nature at work.

Having spent the greater part of my life near the shore, the writer has frequently watched the meeting-place between land and sea, a location continually changing and with greater rapidity than most of us are aware. There is no place upon the surface of the earth where changes take place more rapidly; and during the span of one brief human existence, the careful observer notices many changes that escape the inexperienced eye.

These forces being destructive and constructive are very interesting. They alter the landscape that delights the eye and inspires the imagination. The north-western portion of Kings County is bounded on the north by the Bay of Fundy. There the great tides, forcing their way up a narrow bay, carry their waters far inland up the still narrower estuaries where they carry on their work. On the bay shore, destruction seems to be the rule, and the sea is surely working its way inland.

Here the hard trap sheet overlying the soft sandstone, at first appears to be an impenetrable barrier; but it is slowly yielding to the attack of the waves and chemical changes. The jointing in the trap is a good lodging-place for water, and as it freezes the rock fragments soon roll down the cliff, and the soft underlying sandstone, being exposed, soon yields itself to the elements. In the spring of the year one may see several tons of rock debris fall at one time to the beach below the overhanging cliff. The probable rate of erosion along this coast is from six inches to a foot each year. After this rock mass is broken up, it is distributed by the tides in various parts of the bay. As we move easterly along the coast and pass Blomidon, we leave the trap rock on its south side, and find the friable sandstone as the bed-rock of the country. It is here that the greatest changes are taking place. Destruction goes on everywhere and at a rapid pace.

These rocks are broken by numerous small faults with a displacement of only a few inches, and this makes them fall an easy prey to the destructive forces.

My personal observations at Kingsport, Starr's Point, consist of several careful measurements during a period of five and six years; and I find the rate of erosion is from five to six feet per year. I placed in the ground iron pipes, and measured the distance to some conspicuous object, such as the corner of a foundation of a house or a large tree.

In July, 1917, at Kingsport, an iron pipe was placed in the ground, one hundred feet from the edge of the cliff and near a large oak tree; and on August, 1923, it was only 44 feet from the edge of the bank, an erosion rate of 56 feet in six years. This gives a rate of 9 feet, 4 inches, per year, which is too great to be an average, as at this particular locality the underlying rocks are very soft. At other places than Kingsport, measurements will average nearly six feet per year. Near the mouth of the Perea River, six feet a year seems to be a fair average.

At Starr's Point and Evangeline Beach careful measurements show six to seven feet per year. Bathing houses at Evangeline Beach that were six feet or more from the edge of the Cliff in 1912, fell to the beach the following spring of 1913. At Starr's Point the writer well remembers when a party consisting of about a dozen persons climbed a stack on the beach and there ate their lunch; today it has almost entirely disappeared. The same can be said of a number of these stacks along the coast.

A well-known Kings County land surveyor told me that in 1884, he surveyed lands then belonging to one Hueston, now owned by Major Henshaw, at Perea. The orchard of this property which was resurveyed by the same person in 1920, had lost 210 feet, six rows of apple trees had disappeared and each row was 35 feet apart, making a loss of nearly six feet per year.

About thirty years ago there appeared in the Wolfville "Acadian," an advertisement of a lot of marsh land for sale, near the mouth of the Cornwallis River. That lot does not exist

today. The owner is well known to the writer and told him the facts. It consisted of several acres. As it was not dyked off from the tides, and it was nearly all loose soil, it cannot be considered as an average rate of erosion.

On the banks of the Avon River, at Horton Bluff, near Avonport, erosion is the rule; and a few miles north of Hantsport the Dominion Atlantic Railway had to move its track inland owing to the river cutting into its bank.

At Hantsport old deeds show that erosion is taking place rapidly; and during my brief experience, buildings have had to be moved inland in order to save them.

Fortunately there is a compensating force replacing in other localities the destruction that takes place in the parts that have been referred to. All of the rivers flowing into the bay, carry into it their load of sediment, and one can readily see these constructive changes as well as the destructive ones. The Cornwallis River has built up a large delta at its mouth; and the early Acadians, by dyking this marsh, reclaimed much of this valuable farm land. This River is still extending its delta, and at low tide, with the exception of a swim of about 100 yards, one can walk between Kingsport and Evangeline Beach. Twenty years ago this was impossible according to several old observers.

Old charts show that the Avon River is fast building up its Delta; and at Hantsport, places where vessels could once anchor at low tide are now mud flats. The fact that the river is cutting into its bank, proves that it is building up its flood-plain, as rivers so doing begin to meander.

At the mouth of Gaspereau River old deeds prove that the river is increasing its delta and more marsh-land is appearing above the low-tide line than thirty years ago.

The changes taking place in this area makes a fertile field for the speculation of the theory of isostasy. Many well-known geologists, such as Sir Archibald Geikie, believe that, as a land area receives heavy accumulation of sediments, it begins to sink under its load, and the partly submerged forest at Bont Island, north of Grand Pre, appears to testify to the correctness of this theory.