

oldest and, therefore, lowest parts, while their outer parts have been more or less eroded by the advancing ocean."¹ Thus it is conceived that barrier beaches originate as true beaches at the mouths of rivers on a low coast; that as this coast sinks beneath the sea, the river mouths are drowned to form lagoons, while the beaches, being tied to headlands at either end, remain relatively fixed in position; that as soon as the subsidence allows the sea a better opportunity to cut the beach away from its supporting headlands, there is a rapid widening of gullies, and a conversion of the reef into a broken chain of sand islands.

It will be noticed, by those familiar with the commonly accepted principles of shore-line morphology² that the first or "rudimentary stage, as outlined above, is the final stage, according to the accepted theory. Barrier beaches along coasts like that of New Brunswick are commonly believed to owe their origin to a rapid accumulation of shore drift along the concave line of breakers between headlands, and to follow these retreating headlands in their shoreward migration, narrowing the lagoons as they go, until at last they reach the mainland, and the lagoons vanish, so that the barrier passes into a true beach. In other words, the small beaches which Professor Ganong regards as "*forming*" would be regarded by most physiographers as *disappearing* barrier beaches. It is perhaps sufficient reason for the rejection of this theory of subsidence in favour of the commonly accepted one, that long bars or barriers of this kind occur between headlands on lakes whose level has been unvarying. Moreover, since both the headlands and the beaches, on the New Brunswick coast, are known to have been rapidly retreating, during the last few centuries, at least, this horizontal shifting, alone, of the sand reefs towards the shore, is competent to account for the several stages of development noted, if the long barriers which bridge the greater re-entrants are taken as the more youthful type, and the short beaches at the mouths of streams on the most exposed headlands mark the end of the life history of the barriers. Here, as in the case of the rapid recession of sea-cliffs, we find no necessity for progressive coastal subsidence.

¹ Op. cit., p. 5.

² See, for instance, W. M. Davis: *Physical Geography*. Boston, 1899, pp. 353-354.