

of the Champlain submergence was not less than four hundred and seventy-five feet above the sea and was probably higher. Beaches undoubtedly belonging to this submergence have been found near Renfrew, and also at about four hundred and fifty feet at Pembroke, and also at about five hundred and thirty feet at Mackey's Station on the Ottawa River. Between Hudson Bay and Lake Superior shells of the same age have been found up to four hundred and fifty feet above the sea, and within one hundred and fifty miles of the lake. The upper limit of the submergence was probably still higher. It seems almost certain that during the Champlain submergence the sea extended far up the Ottawa valley, probably reaching the head of Lake Temiscaming." He says, however, that within the area no continuous tracing of the marine beaches has been made.

SAXICAVA SAND.

The Saxicava sand is also well represented in the Ottawa valley. It is a shallow water or shore deposit, and where a section is complete rests on the Leda clay. It is yellow or brownish and varies from fine sand to coarse gravel. Sometimes there is a distinct line between this formation and the Leda clay, while in other places the one runs into the other. It is at the junction of the two that the fossils are most plentiful. Exposures of this sand are abundant everywhere in this valley, and in many places nothing else is seen for a long distance. Many such areas were noted in Renfrew county, but no fossils were seen. In a cutting a short distance north of Chelsea Station on the Gatineau Valley Railway there is a narrow seam of coarse yellow sand which in places is full of shells of *Saxicava rugosa* and *Macoma fragilis*. Near this seam, if not in it, a small perfect shell of *Leda arctica* was found, and in a higher bank of Leda clay a fragment of a *Balanus*, probably *Hameri*. These deposits attain a height of four hundred and twenty-five feet at this point. About half a mile west of Carp station this sand forms