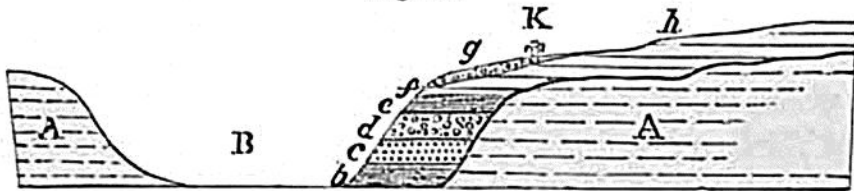


Another resemblance between the distribution of the drift fossils in Europe and North America has yet to be pointed out. In Norway, Sweden, and Scotland, as in Canada and the United States, the marine shells are confined to very moderate elevations above the sea (between 100 and 700 feet), while the erratic blocks and the grooved and polished surfaces of rock extend to elevations of several thousand feet.

I described in 1839 the fossil shells collected by Captain Bayfield from strata of drift at Beauport, near Quebec, in lat. 47°, and drew from them the inference that they indicated a more northern climate, the shells agreeing in great part with those of Uddevalla in Sweden.* The shelly beds attain at Beauport and the neighborhood a height of 200, 300, and sometimes 400 feet above the sea, and dispersed through some of them are large boulders of granite, which could not have been propelled by a violent current, because the accompanying fragile shells are almost all entire. They seem, therefore, said Captain Bayfield, writing in 1838, to have been dropped down from melting ice, like similar stones which are now annually deposited in the St. Lawrence.† I visited this locality in 1842, and made the annexed section, fig. 123,

Fig. 123.



- | | |
|---|---|
| K. Mr. Ryland's house. | d. Drift, with boulders of syenite, &c. |
| h. Clay and sand of higher grounds, with <i>Saxicava</i> , &c. | c. Yellow sand. |
| g. Gravel with boulders. | b. Laminated clay, 25 feet thick. |
| f. Mass of <i>Saxicava rugosa</i> , 12 feet thick. | A. Horizontal lower Silurian strata. |
| e. Sand and loam with <i>Mya truncata</i> , <i>Scalaria Grœnlandica</i> , &c. | B. Valley re-excavated. |

which will give an idea of the general position of the drift in Canada and the United States. I imagine that the whole of the valley B was once filled up with the beds *b, c, d, e, f*, which were deposited during a period of subsidence, and that subsequently the higher country (*h*) was submerged and overspread with drift. The partial re-excavation of B took place when this region was again uplifted above the sea to its present height. Among the twenty-three species of fossil shells collected by me from these beds at Beauport, all were of recent northern species, except one, which is unknown as living, and may be extinct (see fig. 124). I also examined the same formation farther up the valley of the St. Lawrence, in the suburbs of Montreal, where some of the beds of loam are filled with great numbers of the *Mytilus edulis*, or our common European mussel, retaining both its valves and purple color. This shelly deposit, containing *Saxicava rugosa* and other characteristic marine shells,

* Geol. Trans. 2d series, vol. vi. p. 135. Mr. Smith of Jordanhill had arrived at similar conclusions as to climate from the shells of the Scotch Pleistocene deposits.

† Proceedings of Geol. Soc. No. 63, p. 119.