a modelling and disintegrating agent of our globe with either the glaciers or icebergs.[1]

Looking at the Northern Hemisphere only, and comparing all the deeply indented coast-lines, say that of North America and Greenland, every yard of which is more or less subject to the action of coast-ice, with the portions throwing off glaciers to form bergs, it will be seen that the coast-ice must in quantity be infinitely greater than the glaciers. All the vast ice-fields which break loose from the frozen regions of the North, and we read of them 300,000 square miles in extent, and seven feet in thickness, are, in their passage South, driven in upon the land, and help to grind the coast-line and transport its boulders. The Northern field-ice, when it arrives in the latitudes of Newfoundland, is often seen to be covered with boulders, gravel kelp, and other materials, showing it to have been at some time or other in contact with the coast. Ice of this description is well known to the sealers, who carefully avoid it, knowing that seals will not be found upon "dirty jam." From this, together with other information I collected, it would seem that, amongst the inhabitants of Newfoundland, the action of coast-ice as a transporting agent is universally recognized, whilst icebergs in the same latitudes are seldom seen with earthy materials upon them. Capt. A. Jackman, during about 30 years of ice-service on the coast of Newfoundland and Labrador, only once saw a mass of stone of any size upon a berg, whilst coast-ice, with its load of material, has continually been met with. That this should be the case appears on consideration to be evident; for at the outset, when the berg leaves its parent, the glacier, in these Northern regions, it has but little moraine matter to carry,[2] whilst afterwards the winds tending to drive it in upon the shore seem to affect it but little.[3] Now and then it may disturb the strata, and perhaps carry off a portion of the material forming some bank on which it has happened to ground, but to approach the land, as coast-ice does after leaving its birth-place, it is for ever debarred. Carried along by a deep-sea current, with but

[1] Although it may be said that glaciers are not alone confined to Arctic regions, but are also to be seen in the highlands of more temperate climates, it must not be forgotten the distance south that coast-ice is found along shores like those of Labrador, Newfoundland, and Siberia, where glaciers are unknown.

[2] "Owing to the inland valleys (of Greenland) being filled up and levelled to the tops of the hills, there is well-nigh a total absence of those long trains of débris that thunder down the steeps of the Alpine Mountains, and gather in heaps along the sides of the glaciers."—Geikie, "The Great Ice Age," p. 62. Dr. Rink, however, saw moraines above Upernivik.

[3] It might be argued that the bergs carry a burden of rocks and débris frozen to their bases; but in Geikie's "Great Ice Age," p. 61, we read:—"A few stones may occasionally remain frozen into the bottom of the detached iceberg, but it is evident that the greater portion of the sub-glacial deposit must remain at the bottom of the sea," and at p. 71 we read: "By far the larger number of Aretic icebergs therefore contain no extraneous matter, and melt away in mid-ocean without leaving behind them any record of their voyage." However it would be unfair not to quote from the observations of Robert Brown (Quart. Journ. Geol. Soc. 1870, p. 687), who states that on ascending an iceberg he "almost invariably found moraine which had sunk by the melting of the ice into hollows, deep out of sight of the voyager sailing past."