

strangely different are known not to be permanent causes : temperature is found to depend on the disposition of land and sea, and the position, not of the geographical pole, which is single and central in each hemisphere, but of the pole of greatest cold, which, in at least the northern hemisphere, is double, and not central,—Asia having one, and America another ; and if, as is generally held, there be a correspondence amounting almost to identity between the poles of greatest cold and the magnetic poles, then these poles are not fixed, but oscillating. Nor are we left to infer on merely general grounds that the climate of our country *may* have been at one time greatly more severe than it is now. There is also *zoological* evidence that it *was* greatly more severe. It is a curious and significant fact, that the group of shells found in the boulder-clay, resting over the scratched and grooved rocks, and accompanying the scratched and polished pebbles, is essentially a boreal or semi-arctic group. This little shell from the boulder-clay of Caithness,—the *Trophon scalariformis* or *Fusus scalariformis*, which, from its small size, seems to have escaped the fate that crushed its larger contemporaries into fragments, is not now found living on our coasts, though it still exists in considerable abundance in the seas of Greenland ; and several of its neighbours in the clay, such as *Tellina proxima* and *Astarte Borealis*, are of the same northern character. Nay, in cases in which the shells of the boulder-clay still live in our seas, we find those of a northern character, such as the *Cyprina Islandica*, that, though not rare on the shores of Scotland, is vastly more abundant on those of Iceland, occurring, not in the present British, but in the present Icelandic proportions. The *Cyprina Islandica* is one of the most common shells of the clay, and, as its name testifies, one of the most common shells of Iceland ; but it is by no means one of the most common shells at the present time of our Scottish coasts.