

sated by those which are again produced in the winter. The ice and snow go on accumulating from year to year, and finish at the end of the period by forming, at the coldest pole, a sort of crust or cap, vast, thick, and heavy enough to modify the spheroidal form of the earth. This modification, as a necessary consequence, produces a notable displacement of the centre of gravity, or—for it amounts to the same thing—of the centre of attraction, round which all the watery masses tend to restore it. The south pole, as we have seen, finished its *great winter* in 1248 B.C. The accumulated ice then added itself to the snow, and the snow to the ice, at the south pole, towards which the watery masses all tended until they covered nearly the whole of the southern hemisphere. But since that date of 1248, our *great winter* has been in progress. Our pole, in its turn, goes on getting cooler continually; ice is being heaped upon snow, and snow upon ice, and in 7,388 years the centre of gravity of the earth will return to its normal position, which is the geometrical centre of the spheroid. Following the immutable laws of central attraction, the southern waters accruing from the melted ice and snow of the south pole will return to invade and overwhelm once more the continents of the northern hemisphere, giving rise to new continents, in all probability, in the southern hemisphere.”

Such is a brief statement of the hypothesis which Adhémar has very ingeniously worked out. How far it explains the mysterious phenomena which we have under consideration we shall not attempt to say, our concern being with the effects. Does the evidence of upward and downward movements of the surface in Tertiary times explain the great change? For if the cooling which preceded and succeeded the two European deluges still remains an unsolved problem, its effects are perfectly appreciable. The intense cold which visited the northern and central parts of Europe resulted in the annihilation of organic life in those countries. All the water-courses, the rivers and streams, the seas and lakes, were frozen. As Agassiz says in his first work on “Glaciers”: “A vast mantle of ice and snow covered the plains, the valleys, and the seas. All the springs were dried up; the rivers ceased to flow. To the movements of a numerous and animated creation succeeded the silence of death.” Great numbers of animals perished from cold. The Elephant and Rhinoceros perished by thousands in the midst of their grazing grounds, which became transformed into fields of ice and snow. It is then that these two species disappeared, and seem to have been effaced from creation. Other animals were overwhelmed, without their race having been always entirely annihilated. The