there was then more sunshine than now. Mr. Reid suggests that the scarcity of thoroughly aquatic mollusks and of fish indicates that during some stages, at least, the climate was dry rather than moist. As a result of more favorable meteorological conditions vegetation flourished even far north where it can now hardly exist. The frozen tundras of Siberia appear then to have supported forests which have long since been extirpated, the present northern limit of living trees lying far to the southward. Indications of a more equable and milder climate are likewise supplied by the plant-remains found in Pleistocene tufas of different parts of Europe, where species now restricted to more southern countries were then able to flourish together with those which are still native there."

The fauna of the northern parts of our hemisphere was then an extraordinary one. It was marked more especially by the presence of the last of the huge pachyderms, which had for so many ages been the lords of the European forests and pastures. The hairy mammoth and woolly rhinoceros roamed over the plains of Siberia and across most, if not the whole, of Europe. These animals were probably driven southward by the increasing cold, and they appear to have survived some of the advances of the ice, returning into their former haunts when a less wintry climate allowed the vegetation on which they browsed once more to overspread the land.<sup>16</sup> Some of the mammals now restricted to the far

<sup>&</sup>lt;sup>14</sup> Nathorst, Engler's Botanische Jahrb. 1881, p. 431; C. Schröter, "Die Flora der Eiszeit," Zürich, 1883.
<sup>15</sup> The mammoth lived in the neighborhood of the extinct volcanoes of central Italy, which were then in full activity. From discoveries in Finland, it has been inferred that the extinction of this animal may not have been much before historical times. A. J. Malmgren, Oefv. Finsk. Vet. Soc. Forh. xvii. p. 139. Consult Boyd Dawkins on the range of the mammoth in space and time: Q. J Geol. Soc. xxxv. 1879, p. 138; and Howorth, Geol. Mag. 1880; "The Mammoth and the Flood" and "The Glacial Nightmare."