

of twenty-four years ago. I give those of to-day from a paper of 1891,<sup>1</sup> relating to Eastern Canada only :—

These conclusions have, in my judgment, been confirmed, and their bearing extended, more especially by the researches of Mr. Chalmers, who has shown in the most convincing way that glaciers proceeding from local centres along with sea-borne ice, may have been the agents in glaciating surfaces and transporting boulders in Nova Scotia and New Brunswick. Taken in connection with the observations of Dr. Dawson and Mr. McConnell in the Cordillera region of the west, and those of Dr. Bell, Dr. Ells, Mr. Low, and others in the Laurentian country north of the St. Lawrence, and in the Province of Quebec, we may now be said to know that there was not, even at the height of the glacial refrigeration of America, a continental ice sheet, but rather several distinct centres of ice action,—one in the Cordillera of the West, one on the Laurentian V-shaped axis, and one on the Appalachians, with subordinate centres on isolated masses like the Adirondacks, and at certain periods even on minor hills like those of Nova Scotia. It would further seem that, in the west at least, elevation of the mountain ridges coincided with depression of the plains. In Newfoundland also, it would appear from the observations of Captain Kerr, with which those of Mr. Murray are in harmony,<sup>2</sup> though they have been differently interpreted, that the gathering ground of ice was in the interior of the island, and that glaciers moved thence to the coasts, but principally to the east coast, as was natural from the conformation of the land and the greater supply of moisture from the Atlantic.

The labours of Murray in Newfoundland, of Matthew, Chalmers, Bailey, and others, in Nova Scotia and New Brunswick, have considerably enlarged our knowledge of Pleistocene fossils, showing, however, that the marine fauna is the same

<sup>1</sup> Supplement to 4th edition of "Acadian Geology," 1891.

<sup>2</sup> Trans. Royal Society of Canada, vol. i.