

from Arizona northward through Utah, Colorado, Nevada, Wyoming, Dakota, and Montana, whence they strike far northward into the Dominion of Canada.

In thickness and lithological character the Cambrian rocks of North America exhibit considerable variation as they are traced across the continent, and these changes afford interesting evidence of the geographical conditions and geological revolutions of the region in the early ages of Palæozoic time.⁴² In Newfoundland, where the three groups of the system have been recognized, the total depth of strata measured by A. Murray was about 6000 feet, of which the Lower division forms only about 200 feet. In western Vermont and eastern New York the total depth of the system seems to be about 7000 feet; and of this great mass of sedimentary material the lower division may occupy perhaps as much as 5000 feet.⁴³ Over the central parts of the continent west of the line of the Mississippi the thickness diminishes to 1000 feet or less; but again to the west of the Rocky Mountains it increases to 7000 feet or more in Nevada, while in British Columbia it rises to 10,000 feet.

In the northeastern regions the sediments were chiefly muddy, and are now represented by thick masses of shale with a little sandstone and limestone. The limestones increase in number and thickness southward in Vermont, where a considerable mass of calcareous material lies in the lower group below several thousand feet of shale. Still further south the lower group consists largely of sandstones, which are followed by sandy, dolomitic, and purely calcareous limestones. In Nevada, where a thickness of 7700 feet has been assigned to the Cambrian system, the limestones are 4250 feet in aggregate thickness.⁴⁴

⁴² Among writers on the Cambrian palæontology of North America a high place must be assigned to James Hall, E. Billings, C. D. Walcott and G. F. Mathew. Mr. Walcott has devoted himself to the subject with untiring enthusiasm and much skill. His most important memoirs will be found in the *Bulletins of the U. S. Geological Survey*, Nos. 10, 1884, 30, 1886, 81, 1891, and in the 10th and 12th Annual Reports, 1890. He gives a full bibliography. Of great importance also are the memoirs on the Cambrian rocks and fossils of Canada, by Mr. Mathew, published in the *Trans. Roy. Soc. Canada*, from the first volume 1882 onward.

⁴³ Walcott has found *Olenellus* about 2000 feet below the summit of the series, but he hesitates to assume that it can really range through such an enormous thickness of strata, 10th Ann. Rep. U. S. Geol. Surv. p. 583. See his later section in 12th Ann. Rep. 1892, plate xlii.

⁴⁴ A. Hague, Ann. Rep. U. S. Geol. Surv. 1881-82. Walcott, Monogr. U. S. Geol. Surv. vol. viii. 1884.