

that it was difficult to correlate these rocks with those of better known regions. More sedulous research, however, has now in large measure removed this difficulty, and shown that some of the recognized life-zones of western Europe can be detected in Russia.⁹² At the bottom lies (1) the Callovian stage, consisting of clays, divided into—*a*. Lower with *Amm.* (*Cosmoceras*) *calloviensis*, *A. gowerianus*; *b*. Middle with *Amm.* (*Cosmoceras*) *Jason*, *A.* (*Stephanoceras*) *coronatus*; *c*. Upper with *Amm.* (*Quenstedticeras*) *Lamberti*, *A.* (*Cosmoceras*) *Duncani*. (2) Oxfordian, composed of dark sandy clays and divided into—*a*. Lower with *Amm.* (*Cardioceras*) *cordatus*, *A.* (*Card.*) *vertebralis*, *A.* (*Perisphinctes*) *plicatilis*, *A.* (*Aspidoceras*) *perarmatus*; *b*. Upper with *Amm.* (*Cardioceras*) *alternans*, *A.* (*Perisphinctes*) *Martelli*. (3) Volgian, consisting of green, brown, and dark sandstones and sands. The lower part of this group contains *Amm.* (*Perisphinctes*) *virgatus*, *A.* (*Perisph.*) *Pallasi*, *Belemnites absolutus*, *B. magnificus*, *Aucella Pallasi*, *A. mosquensis*, and the higher part yields *Belemnites mosquensis*, *Holcostephanus Blaki*, and many species of the lamellibranch *Aucella*. The group is correlated by Pavlow with the Portlandian stage of western Europe. At the top a number of species pass up into the Neocomian series.⁹³

North America.—So far as yet known, rocks of Jurassic age play but a subordinate part in North American geology. Perhaps some of the red strata of the Trias belong to this division, for it is difficult, owing to paucity of fossil evidence, to draw a satisfactory line between the two systems. Strata containing fossils believed to represent those of the European Jurassic series have been met with in recent years during the explorations in the western domains of the United States. They occur among some of the eastern ranges of the Rocky Mountains (Colorado; Black Hills, Dakota; Wind River Mountains; Uinta Mountains; Wahsatch range, etc.), as well as in the Sierra Nevada, California, and other localities on the western side of the watershed. They have been recognized far to the north, beyond the great region of Azoic and Palæozoic rocks, in the Arctic portion of the continent. They have been met with also in South America, where

⁹² Neumayr, *Geogn. Palaeontol. Beiträge*, 1876, vol. ii.; Nikitin, *Neues Jahrb.* 1886, ii. p. 205; Mem. Acad. St. Petersburg, 1881; Pavlow, *Bull. Soc. Geol. France*, xii. 1884; *Bull. Soc. Nat. Moscou*, 1889, 1891.

⁹³ Pavlow, *Bull. Soc. Nat. Moscou*, 1891.