

land and the areas to the south and southeast, which could have made its fauna more American than British, must have had great length. According to Etheridge, the Lower Silurian of Great Britain, up to 1885, had afforded 161 species of Hydrozoans, 47 of Actinozoans, 5 of Crinoids, 23 of Cystoids, 6 of Asterioids, 174 of Brachiopods, 18 of Bryozoans, 80 of Lamellibranchs, 19 of Pteropods, 67 of Gastropods, 21 of Heteropods, 66 of Cephalopods, 188 of Trilobites, 31 of Entomostracan and Phyllopod Crustaceans; no Eurypterids, no Insects, no Fishes.

Scandinavia and Russia adjoining.—The area of metamorphic—mostly Archæan—rocks covers, besides the Scandinavian peninsula, the country to and including the White Sea and thence southwest to the Gulf of Finland, thus inclosing entirely the Gulf of Bothnia. The Cambro-Silurian borders this region at the North Cape; also north of St. Petersburg and south of this place westward along the south side of the Gulf of Finland to the Swedish islands of Gotland and Öland in the Baltic, and the adjoining east coast of Sweden. Then, over the interior of Scandinavia, there is a large area on the west side of the mountains from above Trondhjem to the shores south of Bergen; and east of the mountains about Östersund and Christiania, and also at some other points. The beds have in general a thickness of from 1000' to 2000'. There are in Finland, Stage B (the first), Graptolitic beds containing *Lingula*, *Siphonotreta*, *Obolus*, the limestones containing *Megalaspis*, *Orthis* (*O. parva*), *Orthoceras*, *Porambonites*, *Asaphus*, *Ceraurus*, *Ampyx*, *Phacops*; in Stage C, *Echinospharites*, *Orthoceras*; and above, *Orthis* (*O. lynx*), *Porambonites*, *Pleurotomaria*, *Ceraurus*, *Phacops*; Stage D, with *Strophomena*, *Lichas*, *Ceraurus*, *Phacops* (*Chasmops*); Stage E, with *Leptæna* (*L. sericea*), *Strophomena* (*S. deltoidea*), *Orthis* (*O. testudinaria*), *Phacops*, *Encrinurus*, *Cybele*; Stage F, with *Orthis*, *Strophomena* (*S. expansa*), *Bellerophon* (*B. bilobatus*), *Phacops*, *Ceraurus*, *Encrinurus*.

France.—The Armorican sandstone of Brittany afforded Lebesconte and Barrois: 3 Trilobites; only 4 Brachiopods, and those of the *Lingula* family; over 30 Lamellibranchs, a Bucania, and 3 Ceratiocarids,—but a poor representation of the fauna of the period, because of the impurity in the waters which a sandstone formation indicates. Barrois refers the beds to the age of the Chazy and Trenton limestones of the United States. The Ceratiocarids include: *Ceratiocaris*, *Myocaris lutsaria* Salter and *Trigonocaris Lebescontei* Barrois. The Lower Silurian rocks of Portugal have afforded a very large Trilobite of the genus *Lichas*. It is named *Lichas* (*Uralichas*) *Ribeiroi*. The total length is estimated to be 560 mm., and 385 mm. without the caudal spine, which is 175 mm. long. (*Comm. des Trav. Géol. du Portugal, Fauna Silurica*, Lisbon, 1892.) This is the longest Trilobite described; it exceeds 2 feet in length. *Paradoxides regina*, described by Matthew from the Cambrian of New Brunswick, was estimated to have a total length of 450 mm.

Bohemia.—The Lower Silurian of Bohemia is divided by Barrande into 5 sections. They afford Trilobites of the following genera. (The numbers in parentheses show in which of the 5 sections they occur; and the — and +, that the genus had species also in preceding or later time.) *Agnostus* (+ 1, 5), *Acidaspis* (1 to 5 +), *Æglina* (1 to 5), *Amphion* (1), *Ampyx* (5 +), *Areia* (2, 5), *Arctusina* (4 +), *Asaphus* (1 to 5), *Barrandia* (1), *Bohemilla* (1), *Calymene* (1 to 5 +), *Carmon* (1, 5), *Ceraurus* (1 to 5 +), *Cyphaspis* (5 +), *Dalmanites* (1 to 5), *Dindymine* (1 to 5), *Dionide* (1, 3, 5), *Harpes* (1 +), *Harpides* (1), *Homalonotus* (2 to 5), *Illænus* (1 to 5 +), *Lichas* (1, 5 +), *Ogygia* (1, 5), *Phacops* (4, 5 +), *Phillipsia* (5), *Placoparia* (1, 2), *Proetus* (1, 5 +), *Remopleurides* (5), *Sphærexochus* (5 +), *Telephus* (4, 5), *Trinucleus* (1 to 5), *Triopus* (2).

In Asia, Silurian beds of the Tibetan Himalayas, described by Salter and Blandford, have a thickness of 6000', and afford species of *Heliolites*, *Ptilodictya*; *Leptæna*, *Strophomena*, *Orthis*, *Ctenodonta*; *Holopœa*, *Cyclonema*, *Trochonema*, *Raphistoma*, *Pleurotomaria*, *Murchisonia*, *Bellerophon*, *Theca*; *Orthoceras*, *Cyrtoceras*, *Lituites*; *Calymene*, *Sphærexochus*, *Lichas*, *Ceraurus*, *Illænus*, *Asaphus*, but no American or European species.