cover an area of not less than 550 miles and have a thickness of about 8000 feet; the rocks are felsytes, andesytic and other lavas, and volcanic tufa.

3. **The Bala** (Sedgwick, 1838), **or Caradoc group** (Murchison, 1839): consisting of shales, flags, and sandstones, with some limestone. — The Caradoc rocks in Shropshire are about 4000 feet thick, while the Bala, in the Bala district, Merionethshire, have a thickness of only 1100 to 1200 feet, and the chief limestone stratum is only 20 or 30 feet thick near the middle. The Coniston limestone, the equivalent of the Bala, has a thickness of 200 feet. The Upper Coniston beds are Upper Silurian.

In Caernarvonshire, northwestern Wales, great eruptions took place in this period, making eruptive accumulations 6000 to 8000 feet thick. The rocks are porphyries, felsytes, andesytes, besides diabases. Ireland, also, had its eruptions.

4. **The Lower Llandovery group.** The beds have a thickness in South Wales of 600 to 1000 feet, but they are absent from North Wales. They consist of shales, flags, sandstones, and conglomerates. The Upper Llandovery is closely related to the Lower in rocks and fossils. The two were separated, and the former made the base of the Upper Silurian, by Sedgwick in 1853, who called them the May Hill sandstones. This arrangement is adopted by Geikie.

The thickness of the Lower Silurian rocks of Wales has been estimated at 25,000 feet. But over a fourth of this is owing to volcanic contributions, which, as they are of an extraordinary source, should be set aside in comparing the thickness of the sedimentary beds of different regions with reference to elapsed time. In the south of Scotland the thickness is over 16,000 feet.

It is not possible to make out a precise parallelism between the British and American strata. Approximately the Arenig group represents the Calciferous; the Llandeilo flags, the Chazy; the Bala and Caradoc, the Trenton; and the Lower Llandovery, the Utica and Hudson beds.

The Lower Silurian and Cambrian formations of Norway, Sweden, Russia, and Bohemia, which rest upon Archæan rocks, have but little thickness — 1000 to 2000 feet; and, adding what denudation may have carried away, 4000 or 5000 feet would be a large estimate for the original amount.

In northern and northwestern France, or Normandy and Brittany, Lower Silurian rocks occur in a much upturned condition. The *grès Armoricain* is a sandstone, according to Barrois, of the age of the Chazy and Trenton limestones. Below it, and also above it, are shales or slates, and those above may represent the remainder of the Lower Silurian. They are found, also, of similar character in the Asturias, northern Spain, and in the Pyrenees.

In Bohemia, the Lower Silurian of the basin of the Prague is the Stage D, or 2d Fauna, of Barrande. It consists of shales, with some quartzyte and conglomerate below, and has a thickness of about 3000 feet.

In southern Sweden (Scania), the beds are mostly shales, many of the beds Graptolitic, with some limestone; and are divided into a Lower, Middle,