

(7), Trinucleus (6); the ostracods by Beyrichia, Leperditia, Cythere, Primitia, and Entomis; the polyzoa by Fenestella, Glauconome, Ptilodictya, and Retepora; the brachiopods by Atrypa, Rhynchonella, Meristella, Leptæna (10 species), Orthis (nearly 40), Strophomena (17), Crania, Discina, and Lingula; the lamellibranchs by Ctenodonta (17 species), Orthonota (5), Modiolopsis (15), Pterinea (6), Ambonychia (8), Palæarca (5); the gasteropods by Murchisonia, Pleurotomaria, Raphistoma, Cyclonema, Euomphalus, Holopæa and Holopella; the pteropods by Tentaculites, Conularia, Theca; the heteropods by species of Bellerophon, Ecculiomphalus and Maclurea; and the cephalopods by the genera Orthoceras (between 30 and 40 species), Cyrtoceras, Lituities, etc.

The Lower Silurian rocks, typically developed in Wales, extend over much of Britain, though largely buried under more recent formations. They rise into the hilly tracts of Westmoreland and Cumberland,⁷⁸ where they consist of the following subdivisions in descending order:

Coniston Limestone series with the Ashgill shales above the limestone and the Dufton shales below it . . .	}	=	{	Bala beds.
Borrowdale volcanic series (green slates and porphyries): tuffs and lavas without ordinary sedimentary strata except at base, 12,000 ft.	}	=	{	Part of Bala, whole of Llandeilo, and perhaps part of Arenig groups.
Skiddaw Slates, 10,000 or 12,000 ft., base not seen	}	=	{	Arenig group, with perhaps Tre- madoc slates and Lingula Flags.

Apart from the massive intercalation of volcanic rocks, these strata present considerable lithological and palæontological differences from the typical subdivisions in Wales. The Skiddaw slates are black or dark-gray, argillaceous, and in some beds sandy rocks, often much cleaved, though seldom yielding workable slates, sometimes soft and black, like Carboniferous shale. As a rule, they are singularly unfossiliferous, but in some of their less cleaved and altered portions they have yielded about 40 species of graptolites; *Lingula brevis*, traces of annelids, a few trilobites (*Æglina*, *Agnostus*, *Asaphus*, etc.), some phyllopoas (*Caryocaris*), and remains of plants (?) (*Buthotrephis*, etc.). According to Pro-

⁷⁸ Sedgwick's "Three Letters addressed to W. Wordsworth," 1843; J. C. Ward, "Geology of the North Part of the English Lake District" (Geological Survey Memoir) 1876; Nicholson, "Essay on the Geology of Cumberland and Westmoreland," 1868. See also papers by Harkness, Nicholson, Hughes, Marr and others in Q. J. Geol. Soc. and Geol. Mag.