

In Easter and Wester Gothland patches of Silurian strata are met with preserved in horizontal sheets under an overlying capping of diabase. But when the rocks are traced into the western parts of Norway and through the central regions where the boundaries of Norway and Sweden meet, they present a remarkably different development from that just described. According to the researches of Kjerulf, Dahll, Tornebohm, Brögger, and Reusch, vast masses of quartzite, mica-slate, gneiss, hornblende-schist, clay-slate, and other crystalline rocks can be seen reposing upon recognizable Silurian strata in numerous natural sections. Not improbably these Scandinavian metamorphic rocks, like those occupying a similar position in Scotland, will be found to include portions of different pre-Cambrian systems which, together with the Cambrian and Silurian strata, have been subjected to such great disturbance as to have had a new crystalline structure superinduced upon them. Enormous displacements and lateral thrusts have driven the crystalline rocks over the fossiliferous strata, as in Scotland, but the details of this structure, which has been recognized by Tornebohm, have still to be worked out. As regards the date of these great earth-movements and metamorphism, it is important to remember that, as already stated (p. 1190), Upper Silurian fossils have been found by Reusch at Bergen in the crystalline schists themselves, as well as in the limestones intercalated in and underlying them.¹⁰⁰

Western Europe.—The researches principally of Gosselet and Malaise have demonstrated that a considerable part of the strata grouped by Dumont in his "Terrain Rhénan," and generally supposed to be of Devonian age, must be relegated to the Silurian series.¹⁰¹ Though almost concealed by younger formations, the Silurian rocks that are laid bare at the bottom of the valleys of the Ardennes can be paralleled in a general way as under:

¹⁰⁰ See Dahll, *Förh. Vedensk-Selskab. Christiania*, 1867. Kjerulf, "Geologie des Süd. u. Mit. Norwegen," 1880. Tornebohm, *Bihang K. Svensk. vet. Akad. Handl. i. No. 12*, 1873; *Geol. För. Stockhom Förhand. vi.* 1883, p. 274; xiii. 1891, p. 37; xiv. 1892, p. 27; *Nature*, xxxviii. 1888, p. 127. Brögger, "Die Silurischen Etagen 2 und 3 im Kristianiagebiet," 1882, p. 352. Pettersen, *Tromsø Museums Aarsheft*, vi. 1883, p. 87. F. Svenonius, *Neues Jahrb.* 1882 (i.) p. 181. Nathorst, "Sveriges Geologi," p. 141.

¹⁰¹ Gosselet, "Esquisse Géologique du Nord de la France," p. 34. "L'Ardenne," *Mem. Carte Geol. France*, 1888, p. 137. Murlon, "Geol. de la Belgique," p. 40; Malaise, *Mem. Couronn. Acad. Roy. Belgique*, 1873; *Bull. Acad. Roy. Belg.* xx. 1890, p. 440. C. Barrois, *Ann. Soc. Geol. Nord*, xx. 1892, p. 75; in this work references are given to the literature of French Silurian geology.