CAMBRO-SILURIAN STRATIGRAPHY

Introduction

BY TRYGVE STRAND

Cambro-Silurian is a term generally used to include the deposits of the Cambrian, Ordovician and Silurian systems. The Cambro-Silurian deposits in Norway are of different facies types, characteristic of the different parts of the Caledonian geosycline and its eastern border.

Before the deposition of the Cambro-Silurian sediments the surface of the substratum of Archean rocks had been levelled into a peneplane, recognized over great parts of Scandinavia as well as in many other parts of the world. In parts of Scandinavia the deposition of thick masses of Eocambrian sparagmites must have contributed to obliterate existing relief.

We have first to consider the deposits of the Oslo region, the only part of Norway where the Cambro-Silurian sediments are completely unmetamorphosed (disregarding the contact metamorphism by the Pemian intrusives) and where well preserved fossils can be found in a great number of horizons allowing a detailed biostratigraphy.

The deposits of the so-called eastern facies were laid down upon Archean rocks or upon the sediments of the Sparagmite complex and equivalent deposits. The areas of deposition are firstly in central southern Norway, including the Sparagmite region. Deposits of the eastern facies occur also along the whole of the eastern Caledonian margin, although in great parts of this tract only the lower, Cambrian, part of the sequence has been preserved, the rest having been cut off by the nappes. The eastern facies of the Cambro-Silurian can be classed as miogeosynclinal in the terminology of Stille. The thickness is rather large and there is much of terrigeneous material. Caledonian volcanic and intrusive igneous rocks are not found in the deposits of this type. The rocks are unmetamorphosed in the east and are of low metamorphic grade farther to the north-west. The deposits occur in an autochtonous or parautochtonous position above the original Archean basement.

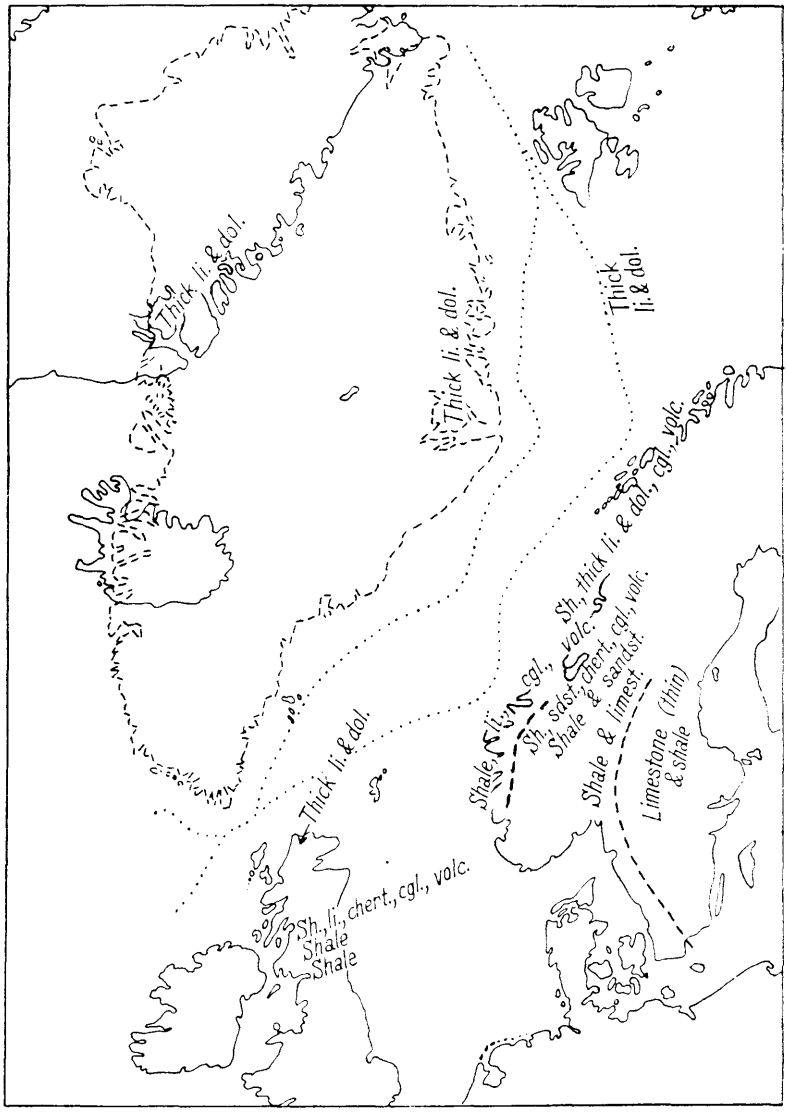

Fig. 39. Map to show the distribution of the different facies of the Lower Ordovician deposits in Scandinavia and neighbouring regions. Greenland is shown in the position it may have had according to the theory of continental drift. (After O. Holtedahl 1938.)

A distinct facies is typified by the deposits of the Trondheim region. There are great thicknesses of mainly pelitic sediments. Coarse conglomerates and deposits of flysch type characterize parts of the sequence. Volcanic rocks occur at various horizons and a multitude of bodies of igneous rock of all orders of size have been intruded into the sediments. The metamorphism varies in grade from an almost unmetamorphic state to amphibolite facies conditions, a great part of the rocks being in the greenschist and epidote-amphibolite facies. We thus have a eugeosynclinal facies characteristic of the central parts of a geosyncline. In one area the sediments of this facies type are known to have been deposited upon the substratum of an allochtonous crystalline rock. Probably all rocks of the present facies occur in allochtonous positions.

A second facies of eugeosynclinal type, of great thicknesses and with the presence of intrusive rocks, is typified by the sediments in Nordland, northern Norway. Volcanic rocks are present also in this type of facies, but little has been known of their distribution until now. Especially characteristic are the sedimentary iron ore deposits and the very thick sequences of limestone and dolomite. — In spite of the great thicknesses the deposits of the Nordland facies were deposited under more quiet conditions than the sediments of the Trondheim region facies. Conglomerates are less frequent and the sediments seem to have been deposited from well weathered and sorted material. The thick and rather pure carbonate deposits are reminiscent of the calcareous and dolomitic facies of the Cambro-Silurian in the shelf deposits in the western foreland of the Caledonides, in the American-Arctic regions. But the high grade of metamorphism and intensive granitization undergone by the rocks, generally under amphibolite facies conditions, testify to their central position in the geosyncline. The deposits of this type occur as nappes. Their original basement is unknown.

Cambro-Silurian deposits of the Oslo region.

BY GUNNAR HENNINGSMOEN

The Oslo[1] region is a narrow, nearly rectilinear area (c. 220 × 45 km) that extends from the Langesund area in the southsouthwest to Ringsaker in the northnortheast. The Cambro-Silurian beds of the

[1] In 1925 the name of the city was changed from Kristiania back to its older name Oslo.