

## Stop 4

### The Upper Silurian sequence at the Valentintörl section

Kathleen HISTON<sup>1</sup>, Annalisa FERRETTI<sup>2</sup> & Hans Peter SCHÖNLAUB<sup>1</sup>

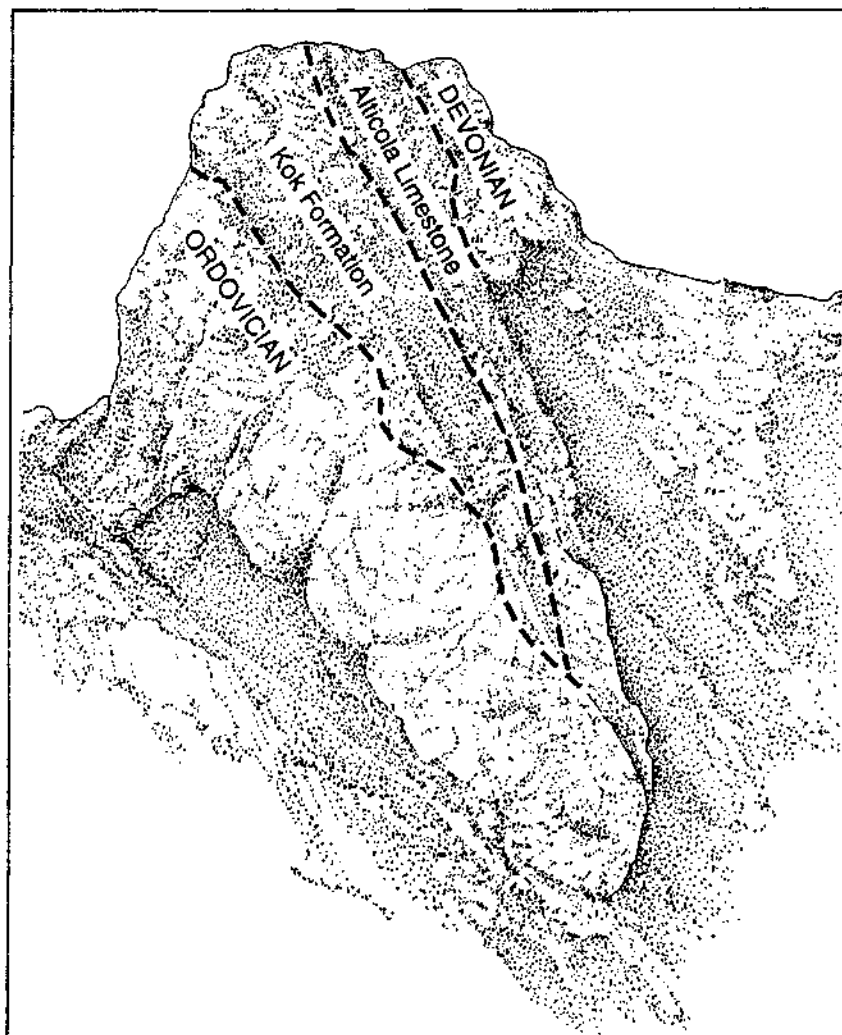


Fig. 12 - View of the Valentintörl section from the west.

<sup>1</sup> Geological Survey of Austria, Rasumofskygasse 23, A-1031 Vienna, Austria.

<sup>2</sup> Dipartimento di Scienze della Terra, via Università 4, 41100 Modena, Italy: email ferretti@unimo.it

The section is exposed at the base of the steep western slope of Valentintörl (2138 m), a spectacular towering thrust sheet which forms the highest point of the Valentin pass (Fig. 12). Various lower Palaeozoic sequences ranging from Late Ordovician to Early Carboniferous in age and representing different facies are fault bounded here as may be seen in a N-S section of the eastern side of the Mountain (Fig. 13). The sequence was initially studied by GEYER (1903) and later by GARTNER (1931) and SCHÖNLAUB (1970, 1971, 1980, 1985). The Upper Silurian sequence (Ludlow) corresponds broadly to the Plöcken facies (see SCHÖNLAUB & HISTON this volume for environmental setting) with an irregular basal contact with the underlying Late Ordovician (Ashgill) **Wolayer Limestone**.

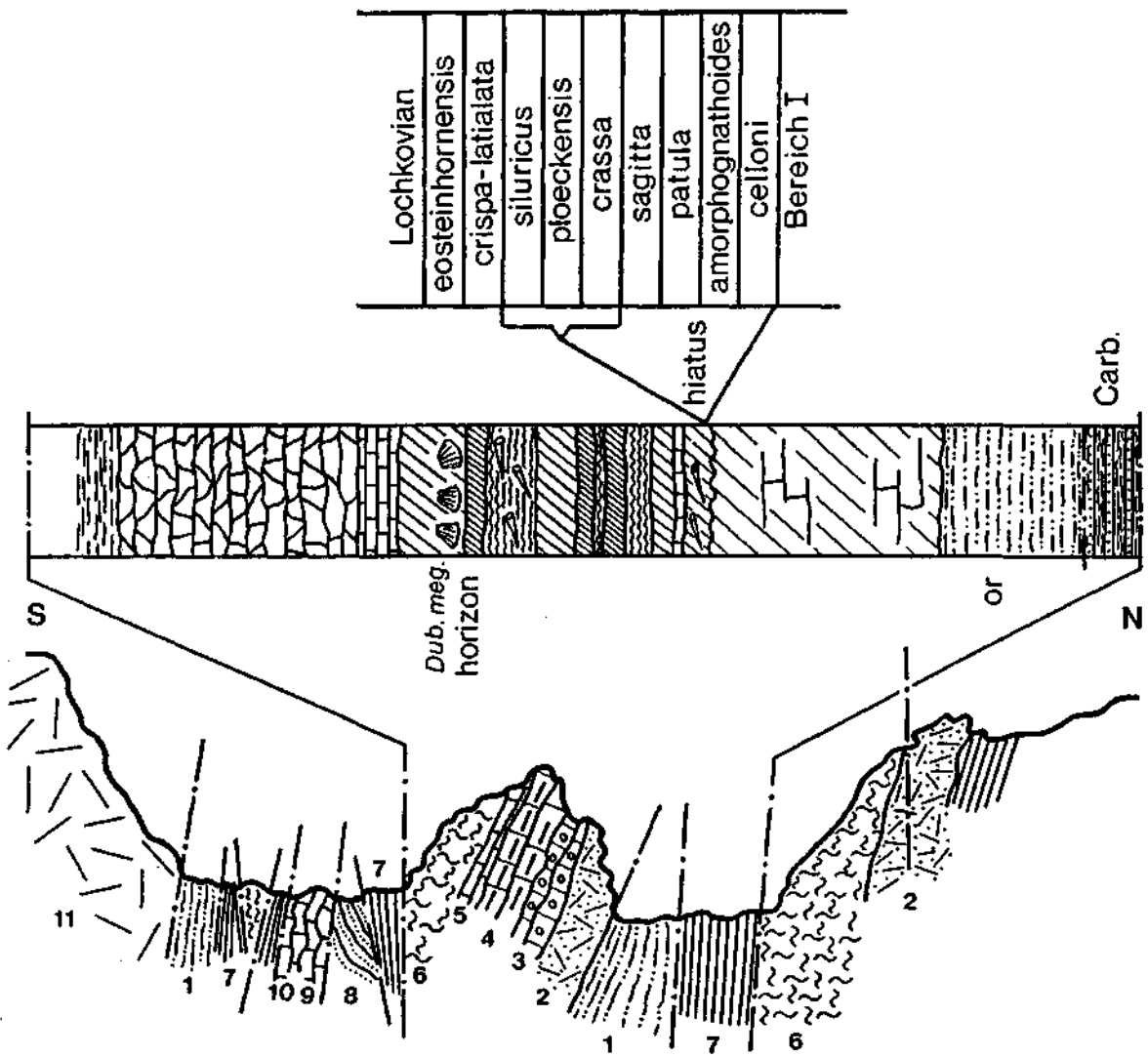
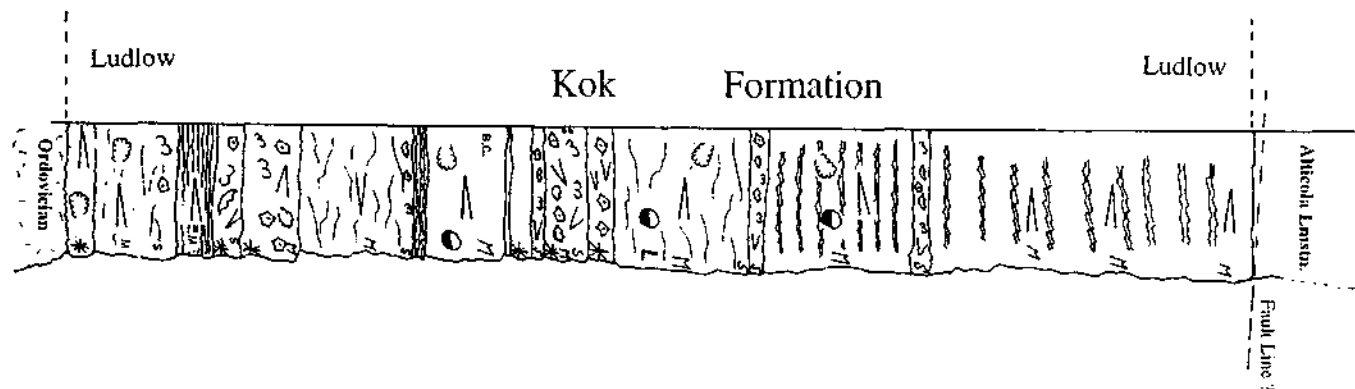


Fig. 13 N-S profile of Valentintörl from the east.

1-Uggwa shales (Ordovician); 2-Wolayer Lmstn. (Late Ordovician); 8-Himmelberg sandstone (Ordovician); 3, 9- Kok Fm (Ludlow); 4-Alticola + Megaerella Lmstn. (Ludlow-Pridoli); 5-Rauchkofel Lmstn.; 6-Findenig Lmstn.; 7-Hochwipfel Fm.; 10 - Devonian (unstudied); 11-Carboniferous (unstudied). (after SCHÖNLAUB 1980)



# Key

Nautiloid:	Telescoping	Brachiopod	Dissolution - D
Orthiscone	Body Chamber - B.C.	Trilobite	Recrystallisation - R
Cyrtacone	Embryonic chamber	Cardiola	Scyphocerinites
Dimension:	Bryozoe	Bivalve	Micritised grains
Small - S	Gastropod	Coral ?	Geopetal
Medium - M	Crinoid	Burrows	Red coating
Large - L		Red colour	
Stylolites	Fe-Mn Crusts		10 cm

Fig. 14 - Stratigraphic column of the Kok Formation, Valentiner section.

Only the conodont fauna has previously been studied from this section (SCHÖNLAUB 1970, 1971) and the **Kok Formation** is first evidenced by the *O. crassa* Biozone (sensu Walliser, 1964) documenting the Early Ludlow. A large hiatus exists therefore at the boundary as both the Llandovery and Wenlock conodont zones are missing. The 4.3 m calcareous sequence (Fig. 14) of reddish-grey predominantly micritic limestones is underlain by a Fe-Mn crust (Fig. 15) which is sometimes exposed as patches on the Wolayer Limestone.

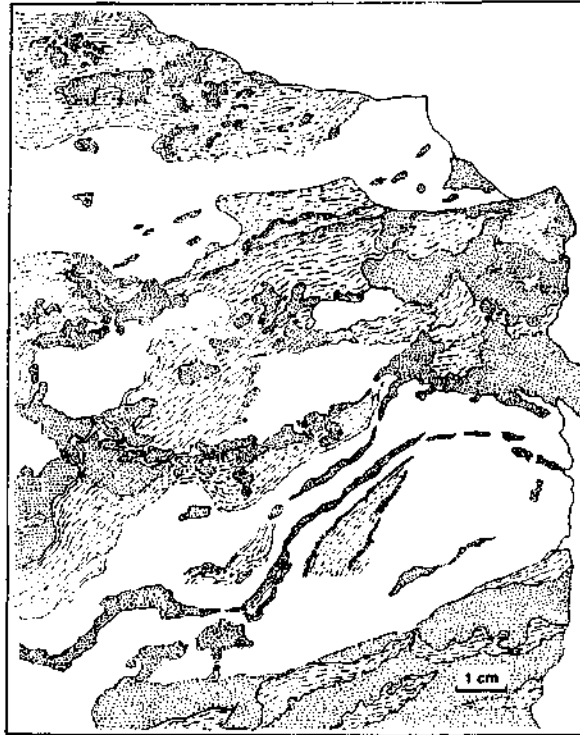


Fig. 15 - Iron - rich mineralisation at the base of the Silurian.

Above the Ordovician / Silurian boundary a red micritic limestone with distinct red layering is developed with a sparse nautiloid fauna oriented parallel to bedding. The nautiloid fauna increases in abundance upwards in the section and a rich trilobite and crinoid fauna is seen. These two lower limestone horizons are capped by a 10-15 cm thick Fe-Mn crust which is distinctively blue-black in colour and contains nautiloid fragments within its laminations.

This is followed by a strata of biotrits rich in echinoderm ossicles, trilobite and brachiopod fauna all with quite distinctive Fe coatings and seems to contain a juvenile nautiloid fauna. These horizons of juvenile fauna with biotrits occur frequently throughout the section. Reddening of the limestones is indicated in Fig. 14 as these "patches" or layered structures are quite prominent and frequent. The frequency of Fe-Mn crusts between the limestone strata increases from the middle to the top of the Kok Formation.

Two main limestone types have been preliminary observed in thin section. A trilobite wackestone-packstone showing echinoderm ossicles, rare small ostracodes, bryozoans, brachiopods, cephalopods and gastropods. The abundance of trilobites which appear to be

complete or represented by large fragments is remarkable. Intensive and elaborated iron coatings and iron-staining are developed on the organisms, but iron is also quite widespread in the matrix (Fig. 15). No gradation, sorting or orientation is here visible. The dominance of benthic organisms and of iron-rich coverings of individuals characterize these sections.

A second type consists of faintly laminated wackestones with echinoderms representing fine biodebris associated with cephalopods. Rare gastropods, ostracodes, bivalves and small brachiopods have been observed in thin section. Iron is even there abundant, with echinoderm ossicles frequently showing iron-banded coatings and iron-staining.

The abundance of Fe-Mn crusts which sometimes are several centimetres thick and occur intermittently within the Kok Formation may be noted even in loose blocks in the debris along the path below the section.

The nautiloid fauna is quite abundant throughout the section and the preservation is similar to that of the Cellon and Rauchkofel Boden section with varying dimensions, orientation to bedding, presence of body chambers and levels of juvenile specimens which may be correlated at particular horizons. Body chambers and geopetals have been observed in certain beds and imply a more tranquil environment and little transport.

The faunal content has as yet not been systematically studied in detail.

The **Cardiola Formation** appears to be faulted out and the **Alticola Formation** has not been studied so far.

#### **Acknowledgements.**

Many thanks to Sherpa for dedicated and careful assistance in the snowy conditions. This work has been greatly improved by illustrations, derived by expert photo-computer composition by Piero Vezzani (Wildlife Image Bank) and magnificent redrawing by Giancarlo Leonardi (University of Modena), to all of which our thanks are due.

This paper was carried out under the auspices of the I.G.C.P. project 421 (North Gondwanan Mid-Palaeozoic bioevent/biogeography patterns in relation to crustal dynamics). K. Histon acknowledges a fellowship from the Austrian Science Foundation (Fonds zur Förderung der wissenschaftlichen Forschung) with which this research is being funded.

# ZOBODAT - [www.zobodat.at](http://www.zobodat.at)

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Berichte der Geologischen Bundesanstalt](#)

Jahr/Year: 1999

Band/Volume: [47](#)

Autor(en)/Author(s): Histon Kathleen, Ferretti Annalisa, Schönlaub Hans-Peter

Artikel/Article: [Stop 4: The Upper Silurian sequence at the Valentintörl section 64-68](#)