

Three successive, mainly erosional, terrace ledges/terraces, sometimes with thin gravel cover, were attributed to the Holocene. They cut into Pleistocene gravel accumulations, sometimes also into the bedrock.

Weathering clays are widely distributed, particularly in the Flysch zone at its contact with the Limestone Alps, and over softer rocks of the latter (Neocomian marls and some Hauptdolomit varieties). Rock debris (talus, talus cones and stone fields) rim most of the harder rock exposures in the Limestone Alps. Landslides are formed in both the weathering clay and rock debris covers.

Karst phenomena are not particularly conspicuous in the area mapped. Small caves/rock shelters developed mainly in Tithonian limestones of the UTN and in the Hauptdolomit. Active karst sinks and less active polja are encountered mainly in the outcrops of the Dachsteinkalk and Hauptdolomit, being marked in talus, weathering clays and terrace accumulation.

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A detailed explanation of the geological map 1 : 10.000 is stored in the Scientific Archive of the Geologische Bundesanstalt.

## Blatt 91 St. Johann in Tirol

### Bericht 1993/1994 über paläontologische und biostratigraphische Untersuchungen von Brachiopoden der Steinplatte auf Blatt 91 St. Johann in Tirol

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The collecting and study in the classical area of the Upper Triassic Steinplatte "reef" was focused on the brachiopods coming from the "reef" limestones. At the same time, the attempt was made to find possible differences between brachiopod assemblages of these limestones and of the neighbouring basinal Kössen Beds.

On the western side of the Steinplatte complex the collection was made in the A- and B-reefs sensu OHLEN (1959) (= A-, B- mounds in PILLER, 1981). The lower parts of these mounds are represented according to PILLER, 1981 by bedded terrigenous limestones with bivalve-coral-hydrozoan assemblages. These limestones contain the richest brachiopod fauna. The upper parts of the mounds are mostly perpendicular walls. Due to their massive character, lesser terrigenous content and also access, these limestones have yielded only rare brachiopod specimens till now (e.g. "Rhynchonella" subrimosa sensu SUÈSS in the mound A). Lower bedded limestones of mound A contain *Fissirhynchia fissicostata*, *Austrirhynchia cornigera*, *Rhaetina gregaria*, *Rhaetina pyriformis*, *Triadithyris gregariaeformis*, *Zeilleria norica*, *Thecospira haidingeri*, *Zugmayerella uncinata* and *Zugmayerella koessenensis*. Similar limestones of mound B yielded *Fissirhynchia fissicostata*, *Austrirhynchia cornigera*, *Rhaetina gregaria*, *Rhaetina pyriformis*, *Zeilleria norica* and *Zugmayerella* sp. A very interesting mound was ascertained 1994 about 150 m S of Köhrgatterl showing well the passage to the typical Kössen Beds, with relatively abundant brachiopod fauna. Lowermost bedded limestones of this mound contained big terebratulids *Rhaetina pyriformis*, then *Fissirhynchia fissicostata*, *Austrirhynchia cornigera*, *Zeilleria norica*, *Zeilleria elliptica* and *Zugmayerella uncinata*. Overlying massive limestone yielded one

specimen of *Austrirhynchia cornigera* and *Zeilleria* sp. In the poorly bedded, nodulous limestones of the Kössen type in the southernmost parts of the section the following species were ascertained: *Fissirhynchia fissicostata*, *Austrirhynchia cornigera*, *Rhaetina pyriformis*, *Zeilleria norica*, *Z. austriaca*, *Z. elliptica* and *Zugmayerella koessenensis*. The locality in the light-grey limestones near the down-hill run N of the Plattenkogel (capping facies of the "Oberrhätkalk" sensu STANTON & FLÜGEL, 1989) yielded *Fissirhynchia fissicostata*, "Rhynchonella" subrimosa sensu SUÈSS, *Rhaetina pyriformis*, *Zeilleria norica*, *Z. austriaca*, *Oxycolpella oxycolpos*, *Zugmayerella uncinata*, *Zugm. koessenensis* and *Laballa suessi*.

Limestone layers in the middle and upper parts of the Kössen Beds near the Köhrgatterl (locality 2 "Untere Kössener Schichten" in E. KRISTAN-TOLLMANN et al., 1991) contained *Fissirhynchia fissicostata*, *Rhaetina pyriformis*, *Zeilleria norica*, *Z. austriaca*, *Oxycolpella oxycolpos*, *Sinucosta emmrichi* and *Zugmayerella koessenensis*. About 90 m from this locality a small occurrence of the Kössen limestone was ascertained near the road to Stallenalm, with lumachelles of *Zugmayerella uncinata*, accompanied with some specimens of *Fissirhynchia fissicostata*, *Zeilleria elliptica* and *Zugmayerella koessenensis*. The Kössen Beds overlying the mound A (locality 5 "Untere Kössener Schichten" in E. KRISTAN-TOLLMANN et al., 1991) yielded following brachiopods: *Fissirhynchia fissicostata*, *Rhaetina pyriformis*, *Zeilleria norica* and *Oxycolpella oxycolpos* in the limestone layers, and *Fissirhynchia fissicostata* and *Zeilleria elliptica* in the marly intercalations. In the Kössen Beds just above the mound B *Fissirhynchia fissicostata*, *Rhaetina pyriformis* and *Oxycolpella oxycolpos* were found.

The older literary data on brachiopods from Steinplatte referred practically only to the Kössen Beds (F.F. HAHN, 1910; W. VORTISCH, 1926; J. KUSS, 1983). It is interesting that none of these authors mentioned *Austrirhynchia cornigera* – the only brachiopod species considered in the recent literature characteristic of the Rhaetian s.s. Basing on the present study, it seems that there is no great difference between average brachiopod assemblages of the "Oberrhät-kalk" and Kössen Beds on Steinplatte.

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