

and further *Orbulina suturalis*. In the tropical regions evolution of *Globigerinatella insueta* and the group of *Globorotalia fohsi* is important.

The Miocene-Pliocene boundary cannot be defined exactly on a worldwide base, since climatic differentiation is already strongly pronounced.

The boundary Tertiary/Quaternary (Pliocene-Pleistocene) is characterized by deterioration of climate and its influence on the fauna and flora over extensive areas in the northern as well as the southern hemisphere.

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The Pleistocene of the Inn valley/Tyrol

(Abstract)

Pleistocene deposits and the morphological characteristics of the Inn valley in the Tyrol have gained great importance on the stratigraphy of the Quaternary and the paleogeography of the entire Alpine region as well. Four different main glaciations can be traced in the foreland of the Alps, according to their moraine deposits and fluvio-glacial gravel beds (ranging from GÜNZ as the oldest over MINDEL and RISS to WÜRM as the youngest member). In the surroundings of Innsbruck the most complete series of Pleistocene sediments in the inner Alpine region are to be found. This area shows three different ground-moraine deposits of separate glaciations and two fossiliferous beds in interglacial and interstadial sediments.

The "Hötting Breccia" located on the slopes and along the foothills of the "Nordkette" North of Innsbruck was deposited in a comparatively warm interglacial period. In the "Geologenstollen" the underlying ground moraine of the Mindel glaciation (classified by some authors as Riss) can well be made out. The breccia contains frequent plant fossils such as imprints of needles of *Pinus silvestris* and leaf imprints of *Rhododendron ponticum* found in some outcrops. The "Conglomerate of Ampfaß", which is underlain also by ground moraine deposits, is most probably of the same age.

Both breccia and conglomerate are overlain by younger ground moraine sediments and again above these the so-called "terrace sediments" are following, made up by varved clays and silts near the bottom of the sequence and coarse gravel at its top. In a clay pit situated E of Innsbruck (loc. Baumkirchen) pollen grains, wood belonging to different plants and fish remains were found in fine grained sediments. Radiocarbon dates of the (subfossil) wood gave the result of 26,800 and 31,000 before present. The above clays, silts and gravel beds again are superposed by ground moraine deposits which are related to the latest stage of the Würm glaciation due to the fact, that these are showing the formation of recent soil.

Concluding from the finding of erratics, the height of glaciation of the Inn valley glacier system in the vicinity of Innsbruck (574 m. a. s. l. = 1,780 ft.) reached as high as 2,400 m. a. s. l. (= 7,440 ft. a. s. l.).

References

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Evolutionary trends in the foraminiferal genus *Uvigerina* in the Badenian of the Vienna basin

(Abstract)

The zonation of the Badenian was proved by means of the evolution of the benthonic foraminiferal genus *Uvigerina* and several guideforms were described already in 1953 (PAPP & TURNOVSKY, Jb. Geol. B.-A., 96). Unfortunately, these guide-fossils sometimes are lacking while other species, occurring throughout the Badenian beds, normally are present in a sufficient number of specimens.

Due to this fact a method was developed recently, demonstrating the evolution of *Uvigerina* by means of metrical methods (PAPP & SCHMID, Verh. Geol. B.-A., 1971/1). In this study it is shown, that sculptural features may be neglected and the number of specimen restricted too, thus having the possibility to use this method for samples from wells with an often limited material. The features taken into consideration are: the number of chambers and the length of the tests. An average index-number, representative of the degree of evolution, was determined arithmetically for several surface outcrops representing the type-localities of the Badenian zonation. The increase of the indices from the oldest to the younger beds of the Badenian (14.0 to 64.8) was checked and confirmed by the study of well-samples in superposition too. As the main result it is pointed out, that we are able to evaluate the stratigraphic position of *Uvigerina* bearing beds from the Badenian of the Vienna basin merely by determination of the index-numbers of the *Uvigerina* populations.