

sammelte Probe eines sehr feinkörnigen, grauen und überraschend frischen Granits hingewiesen werden, der aufgrund von Monazitanalysen ebenfalls als permisch einzu-stufen ist. Im Gegensatz zu den zumeist ziemlich kantigen variszischen Granitgeröllen war dieses Geröll sehr gut gerundet. Es handelt sich um einen peralumischen S-Typ-Granit (A/CNK: 1,22) mit einem Rb-Gehalt von 330 ppm und einem Sr-Gehalt von ca. 70 ppm. Eine Probe eines feinkörnigen Vulkanits derselben Lokalität zeigt dieselben geochemischen Charakteristika.

Permischer, vermutlich riftbezogener Magmatismus manifestiert sich im Geröllspektrum also nicht nur in Form von A-Typ-Graniten/Vulkaniten sondern auch durch S-Typ-Granite und Vulkanite.

#### Frühvariszische Granitoide des „Cetischen Typs“

Wurden bei den Untersuchungen im Jahr 2003 nur einzelne Granitoide dieser Gruppe gefunden, so erwies sich bei der Beprobung 2004 ein Aufschluss bei Neulengbach (Baugrube im Ortsteil Au) als ein „Massengrab“ Cetischer Kristallingerölle. An den sieben in diesem Aufschluss auf-gesammelten Cetischen Granitoiden zeigt sich auch sehr schön die von FRASL & FINGER (1988) postulierte Zweiteilung der Granitoide des Cetischen Typs in den Hornblende-führenden quarzdioritischen bis tonalitischen Schaittener Typ und den saureren meist granodioritischen Buchdenkmal-Typ.

Die Granitoidgerölle des Schaittener Typs können auf-grund ihrer relativ basischen Zusammensetzung ( $\text{SiO}_2$  um 60–63%), eines sehr hohen Natrium/Kalium Verhältnisses, sowie eines charakteristischen Spurenelementmusters mit sehr hohen Ba- (600–1000 ppm) und Sr-Gehalten (300–1000 ppm) bei gleichzeitig sehr niedrigen Rb- (15–80 ppm) und Nb-Gehalten (<8 ppm) geochemisch i.a. leicht erkannt werden. Auch die saureren Gerölle ( $\text{SiO}_2$  bis 75%) aus der Gruppe der cetischen Granitoide (Buchdenkmal-Typ, FRASL & FINGER; 1988) zeigen ein verwandtes Spu-

renelementspektrum mit hohen Sr- und niedrigen Rb-, Nb-Gehalten.

Alle untersuchten Proben des Cetischen Typs weisen eine niedrigtemperierte Überprägung auf, wie dies bereits von FRASL & FINGER (1988) als generelles Merkmal der Gruppe beschrieben wird. Typisch ist z. B. eine Chloritisierung der Biotite und Hornblenden (v. a. in den Proben des Schaittener Typ), bruchhafte Deformation und starke Serizitisierung der Feldspate und eine weitgehende Rekristallisation des Quarzes (vor allem in den Proben der Buchdenkmal Gruppe).

Für die Granitoide der Cetischen Gruppe wird aufgrund von Rb-Sr-Datierungen am Buchdenkmal-Granit der Typlokalität (THÖNI, 1991) generell ein frühvariszisches Alter angenommen. Dies konnte durch Zirkondatierungen an einem Geröll von Au bei Neulengbach bestätigt werden. Für eine dem Buchdenkmal-Typ zugeordnete Probe ergab sich ein Zirkon-Kristallisationsalter von  $368 \pm 8$  Ma.

#### Epimetamorphe Orthogneise eines vermutlich ostalpinen Kristallins

Zu den bisher untersuchten zwei Orthogneisproben (HUMER & FINGER, 2004) kamen bei der Probeneinholung 2004 vier weitere hinzu. Sie stammen alle aus den Königsstettener Blockmergeln. Das Material ist typisch leukokrat, sehr feinkörnig und straff geschiefert.

Geochemisch zeichnen sich die Orthogneisgerölle durch saure ( $\text{SiO}_2$ : 73–75%) und schwach peralumische Zusammensetzung (A/CNK: 1,03–1,08) aus. Dies spricht für saure I-Typ-Granite als Ausgangsgesteine. Allen Proben gemein sind niedrige Eisen- ( $\text{Fe}_2\text{O}_3$  tot 0,3 bis 0,8%), Niob- (5–11 ppm), Yttrium-, Zink- (<15 ppm) und Zirkoniumgehalte (40–100 ppm). Interessant ist die Uniformität dieser Orthogneisgerölle. Das bereits im Bericht 2003 postulierte variszische Alter des granitischen Ausgangsgesteins wurde durch Monazitdatierungen an einer weiteren Probe abgesichert.

## Blatt 57 Neulengbach

Siehe Bericht zu Blatt 40 Stockerau von BERNHARD HUMER & FRITZ FINGER.

## Blatt 65 Mondsee

### Bericht 2008 über paläobotanische Untersuchungen in der Gosau-Gruppe des Kohlbachgrabens nördlich von St. Gilgen auf Blatt 65 Mondsee

LENKA HRADECKÁ, Jiří KVAČEK, HARALD LOBITZER  
& MARCELA SVOBODOVÁ  
(Auswärtige MitarbeiterInnen)

Already several times findings of „undeterminable plant remains“ were reported from the coal-bearing rocks of the Lower Gosau Subgroup North of St. Gilgen.

In summer 2008 one of us (J. KVAČEK) detected and collected a small flora in grey marls of an eastern tributary creek of Kohlbachgraben, which is situated North of the road from St. Gilgen to Scharfling and east of the Kohlbachgraben main creek. This creek leads to the North to the Plomberg farmer cottage and merges downhill with the main

creek of Kohlbachgraben in the northern part of St. Gilgen village. The flora was collected below the first waterfall. It consists of one conifer twig and 4 types of angiosperm leaf fragments, which are preserved as leaf casts.

The poorly preserved conifer twig is classified as *Brachyphyllum* sp. It shows massive helically arranged leaves similar to the specimen known from the locality Häuselkogel near Bad Ischl. Angiosperm leaves are assigned to the form genus *Dicotylophyllum*. *Dicotylophyllum* sp. 1 and sp. 2 are fragments of thick entire-margined leaves. *Dicotylophyllum* sp. 3 is represented by a basal part of a leaf which is seemingly entire-margined, but shows small (1 mm) spiny teeth. The other angiosperm leaf shows parallel venation and comparably long fragments of linear leaves 2–3 cm wide. It is assigned to the genus *Monocotylophyllum* and differs from the genus *Pandanites* (which is quite common in the locality St. Wolfgang – Tiefengraben) in having no spines and no M-shape in transversal section. Together with this foliage

Table 1.  
Composition and number of main palynomorph groups in St. Gilgen samples.

Sample	Dynocysts	Acritarchs	Micro-foraminifers	Pteridophyte spores	Fungal spores	Gymnosperm pollen	Angiosperm pollen <i>Normapollis</i>	Σ
1a	11	1	42	6	1	8	14	83
1b	0	0	0	0	0	0	5	5

various axes and fragments of roots co-occur on the same bedding plane. The whole assemblage maybe represents an aquatic assemblage.

The conifer twig and small entire-margined leaves with spines argue for a mesophytic/xerophytic flora. This is a very similar situation as in the Häuselkogel flora. As far as we can assume from the limited preliminary data (small entire-margined or spiny leaves), the palaeoenvironment of the flora was probably quite dry and warm.

### Foraminiferal assemblage

Two samples from layers 2a and 2b contain a relatively poor foraminiferal assemblage, which is composed only of about 10 benthonic species; plankton was not found. The specimen diversity of sample 2b is lower than in 2a. Forms with agglutinated tests as *Gaudryina trochus* (D'ORBIGNY), *Gaudryina* sp., *Marssonella oxycona* (REUSS) and *Pseudotextulariella cretosa* (Cushman) together with fine agglutinated sessile species of the genera *Diclytopsella* and *Dictyopselloides* prevail. Among other agglutinated species, *Ammodiscus gaultinus* BERTHELIN and coarse agglutinated tests of *Ammobaculites* sp. and *Haplophragmoides* sp. are present.

Calcareous benthos is represented by frequent occurrence of *Quinqueloculina angusta* (FRANKE), *Quinqueloculina* sp., *Spirillina cretacea* (REUSS), *Trocholina* sp. and a few specimens of *Vaginulina robusta* (CHAPMAN).

The organic part of washed material of both samples is formed also by fragments of echinodermata (spines and small fragments), by green algae, fish teeth, fragments of bryozoa and corals, ostracoda and small pyritized gastropods. Pyrite is very frequent in sample 2a and less frequent in 2b.

Concerning an interpretation of paleoenvironment we can suppose shallow-water conditions (*Vaginulina* and agglutinated species) with local fluctuation of salinity (occurrence of *Quinqueloculina*) and local dysoxic conditions. The benthos is represented by sessile or active epifaunal deposit feeders (*Trocholina* and *Spirillina*, etc.) with flat or conical tests, resting on and partially buried in the sediment-water interface. On the basis of the character of the foraminiferal assemblage the samples show a Turonian or Turonian/Coniacian boundary age.

### Palynomorpha

Detailed micropalaeontological analysis of sample St. Gilgen 1a disclosed a relatively well preserved but very poor assemblage of planispiral type of inner microforaminiferal linings, organic-walled microplankton – dinocysts and acritarchs, pteridophyte and fungal spores, pollen grains of gymnosperm and angiosperm origin (see table 1). Microforaminiferal linings are most abundant. Dinoflagellate cysts consist of *Spiniferites ramosus*, *Florentinia* sp. and *Prolixosphaeridium* sp. The preservation of dinocysts is very poor, specimens are very often covered by amorphous matter which does not allow the determination.

The spore-pollen flora consists of slightly more numerous mostly triporate angiosperm pollen of the *Normapollis* group, with the genera *Complexiopollis*, *Trudopollis* sp., *Interporopollenites* sp. and *Plicapollis* sp. The gymnosperms are represented by inaperturate *Taxodiaceapollenites hiatus*, *Corollina* (*Classopollis*) *torosa*, associated with occasionally present

disaccate *Pinuspollenites* sp. Pteridophyte spores of *Stereisporites psilatus* and *Cyathidites minor* occur.

The palynofacies includes rich yellow- to red-brown-stripped tracheidal phytoclasts and other membranous tissues, although palynomorphs are generally uncommon.

Low dinocyst species diversity and the prevalence of microforaminiferal tests is an indication of shallow marine conditions. On the contrary to sample 1a, in sample 1b only 5 specimens of poorly preserved *Normapollis* pollen were found covered by yellow organic matter. Palynofacies consists of yellow amorphous structureless organic matter strongly degraded and indeterminable organic debris.

Concerning triporate angiosperms found in St. Gilgen sample 1a, according to GÓCZÁN et al. (1967) *Trudopollis* firstly appears in the middle Turonian, *Plicapollis* in Turonian and *Interporopollenites* in Upper Turonian. Therefore the Turonian age is also supported by the palynomorphs encountered.

The fieldwork was financed by the bilateral cooperation programme between GBA Vienna and ČGS Prague. In addition, the research of KVAČEK was supported by grant No. MK 0002327201 of the Ministry of Culture of the Czech Republic. SVOBODOVÁ was supported by grant No. GA CR 205/06/1842 of the Grant Agency of the Czech Republic and by research program AV0Z30130516. HRADECKÁS research was supported by the internal CGS project No. 324000 „Bilateral and close to boundary cooperation of CGS“.

## Bericht 2008 über Untersuchungen von Brachiopoden in den Raibler Schichten auf Blatt 65 Mondsee

MILOŠ SIBLÍK  
(Auswärtiger Mitarbeiter)

The aim of the field works was tracing brachiopod occurrences in Upper Triassic (focussing on the Raibl Beds) and Lowermost Liassic sediments on map sheet 65 Mondsee, from where Upper Triassic brachiopods have not been reported yet. The field work was made together with Harald Lobitzer from 11<sup>th</sup> to 15<sup>th</sup> of August 2008 on the base of bilateral cooperation act between the Geological Survey of Austria and the Geological Survey of the Czech Republic.

The most hopeful area in the Raibl Beds was the vicinity of the Eisenauer Alm. About 500 m WNW of the Eisenauer Alm (W of the Buchberghütte, 1015 m) in the brook (BMN RW: 458 300; HW: 294 645) frequent but poorly preserved shells of the lamellibranch *Alectryonia montiscaprilis* (Klipstein) were found in the dark grey marly limestones. These massive limestones are changing in some levels with thin layers of sandy marls. Remains of brachiopods occur only very rarely, one incomplete specimen only of *Adygella bittneri* (WÖHRMANN) was found in the marly limestone.

About 250 m NW from there another place with macro-fossil fragments could be found on the marked touristic path no. 19 (BMN RW: 458 270; HW: 294 740) leading from the Eisenauer Alm to Kienberg via Kreuzstein. Fragmentary internal moulds of smooth (rarely ribbed) lamellibranchs (*Avicula*?) and some very badly preserved small brachiopod fragments represented the fauna. The area along this marked path could yield, however, possibly some better findings after longer sampling in the future.