EXKURSION A4

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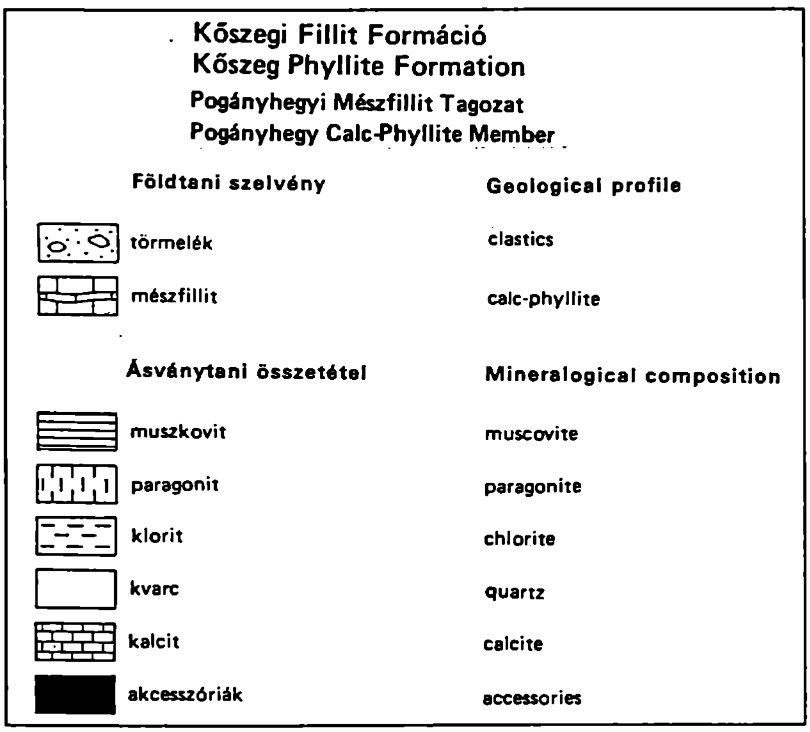
FREITAG 5.10. Empfehlenswerte Unterlagen: Topographische Karten 1:50.000 Blatt 138 RECHNITZ sowie die Geologischen Karte 1:50.000 Blatt 138 RECHNITZ einschließlich Erläuterungen (Geologische Bundesanstalt)

Von Österreich fahren wir über Oberwart-Großpetersdorf zum Grenzübergang Schachendorf-Bucsu, von wo die Exkursion in den auf ungarischem Staatsgebiet gelegenen östlichsten Teil des Rechnitzer Fensters ihren Ausgang nimmt.

Stop 1. Road-cut of Velem, Szabohegy, Köszeg, Köszeg mountains

On the SW slope of the Szabohegy, on the upper reaches of Meszes Valley, at the Otto Hermann Memorial Plate, the road-cut of Velem has exposed low-grade calc-phyllites belonging to the Poganyhegy Calc-Phyllite Member of the Köszeg Phyllite Formation. Access is possible by motor vehicle.

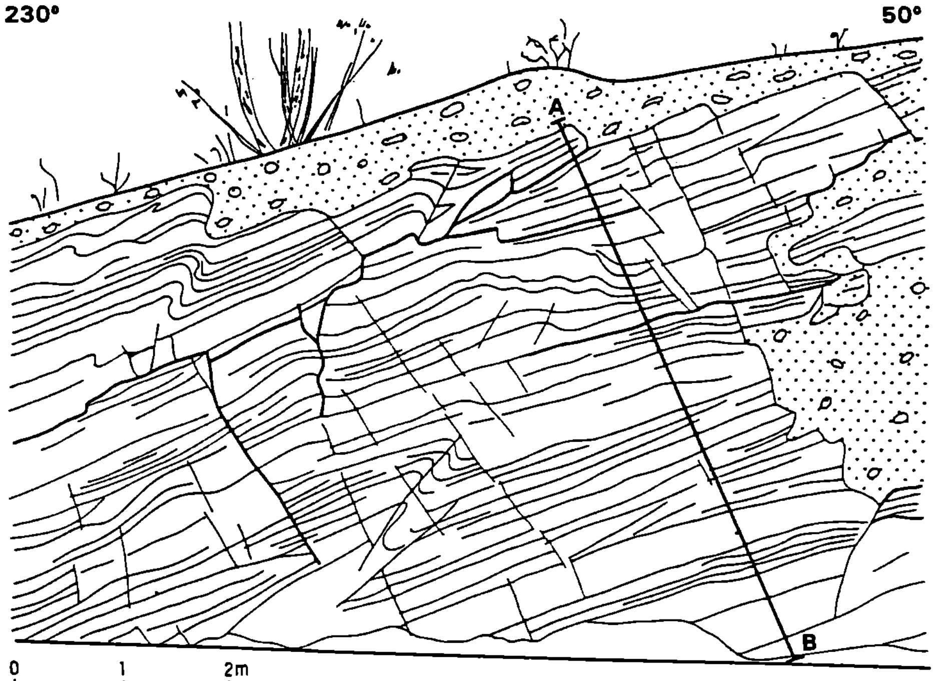
The NW part of the rock wall, about 50 m long and 3 m high, is heavily weathered, while the SW part is composed of more fresh rock. The calc-phyllite is well-foliated, to which a locally marked mega- and microfolding adds more variety. Average dip values of the beds: 202°/22°, 206°/24 - 30°, 228°/16 - 25°, 230°/30° and 240°/20°. The axes of the macrofolds are oriented at 140°-320°. The fault paths coincide by and large with the schistosity planes. These zones are mylonitized or, respectively, they are filled with an earthy



Legend to fig. 1.

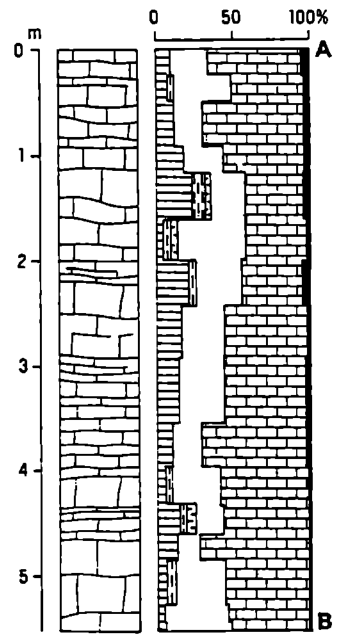
MAGYARORSZÁG GEOLÓGIAI ALAPSZELVÉNYEI

Kőszegi-hegység, Kőszeg, Szabó-hegy, velemi út bevágása

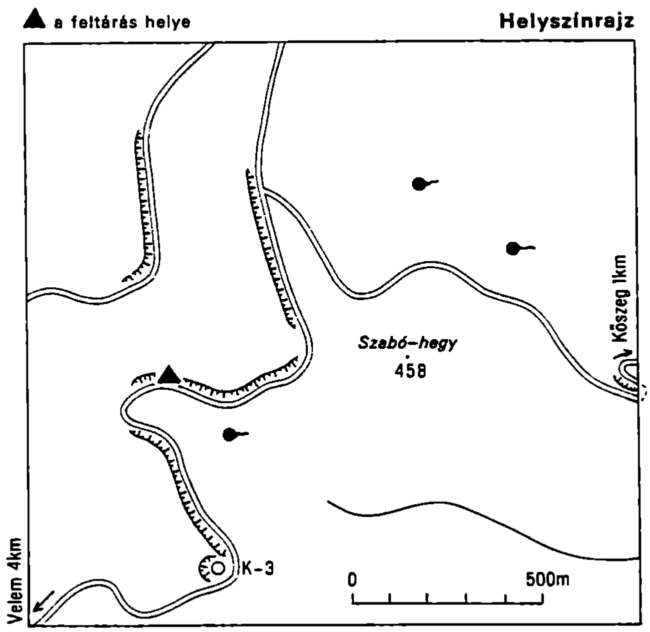


Földtani szelvény

Ásványtani összetétel



Helyszínrajz

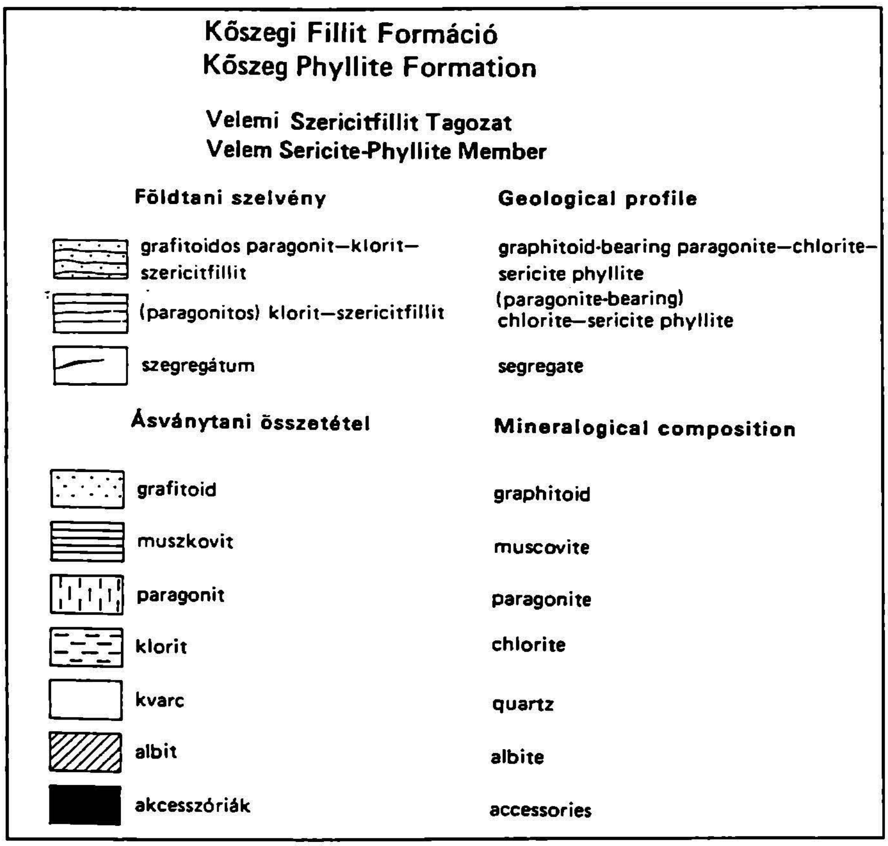


Kőszegi Fillit Formáció, Pogányhegyi Mészfillit Tagozat

Fig. 1: Road-cut of Velem, Szabóhegy, Kőszeg, Kőszeg Mountains.

material of limonitic stain. Dip values of steep faults or cleavage planes running nearly parallel to the road: 306°/80°, 308°/80°, 310°/83 - 88°. The rock constituting the profile is for the most part calc-phyllite which is intercalated by thinner sericite-phyllite bands.

Predominant mineralogical component is calcite. Its slightly elongated xenoblastous grains - locally rolled into the shape of a spindle - are slightly oriented, being more or less closely packed. In varying measure though, they are not too much contaminated with different kinds of inclusions. The load enrichments of minute opaque inclusion grains and limonitic infiltration, respectively, have resulted in palebrownish stain. Not unfrequently, they are polysynthetically twinned. Mica-like minerals are present in the phyllite in considerably smaller amounts, too. Their fairly developed plates of lat-shaped cross section form slightly oriented bundles or appear as solitary crystals, or they may even be microfolded. The most frequent mica is colourless muscovite (sericite) accompanied by lower amounts of paragonite. Showing a pale greenish-brownish pleochroism, chlorite or vermiculite are much scarcer.



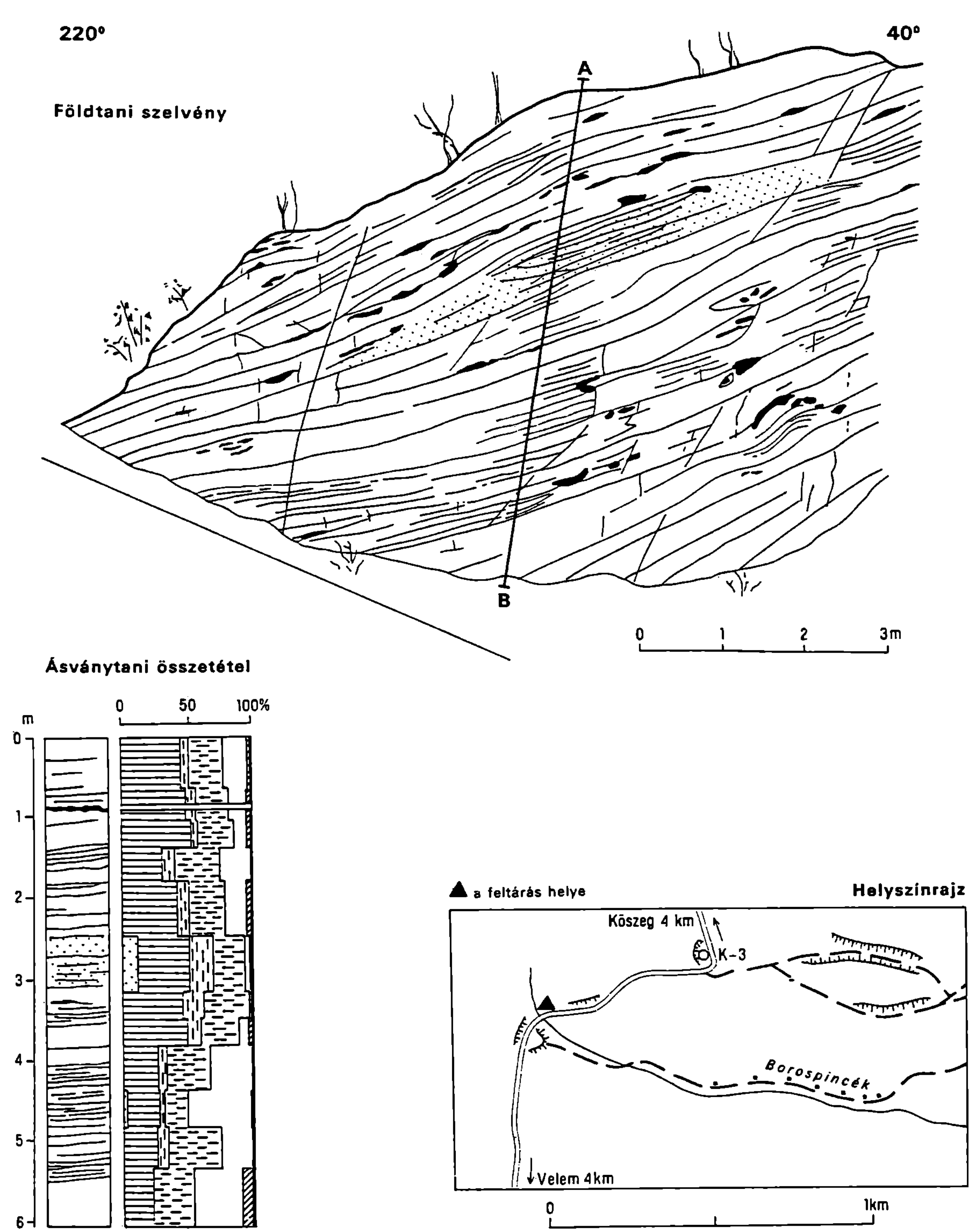
Legend to Fig. 2

The quartz grains are scattered in the calcite field, appearing as solarity crystals or forming minor aggregates disposed in bands. In these the grains are slightly intertongued, nearly limpid and of a wavy extinction. Together with the quartz grains or quite alone, single albite grains similar to quartz in habit appear, too.

On the accessories it is opaque-bound graphitoid, micro-crystalline or of scattered aggregate habit, that is the most common. Associated primarily with the micaceous components, it is enriched, as a rule, along the fault paths. In addition, some zircon, rutile and tourmaline as well as titanite, opaque ore and limonite patches can be identified. Limonite is mainly of infiltration origin, having resulted in transparent opaque fissure-fill pseudomorphs and impurities (contaminations).

MAGYARORSZÁG GEOLÓGIAI ALAPSZELVÉNYEI

Kőszegi-hegység, Kőszeg, Borospincék völgyfője, szirt



Kőszegi Fillit Formáció, Velemi Szericitfillit Tagozat

Fig. 2: Valley-head, Wine Cellars Valley, Kőszeg Mountains.

The redbrown portion, heavily impregnated by limonite in the E part of the profile, is a kind of "terra rossa" decomposed to different degrees, having been produced in the course of near-surface weathering.

The source rocks seem to have been carbonate deposits contaminated in varying measure by impurities. During the Early Alpine deformation, they got metamorphosed into a low-grade greenschist facies.

Based on analogies that seem to be borne out by faunistic record from Austria, the premetamorphic deposition seems to have taken place in Dogger-Malm times. The Kőszeg Mountains were formed as a member of the Penninic Series.

Stop 2. Valley-head, Wine Cellars Valley, Kőszeg Mountains

On the SW side of the Pogányhegy, on the upper reaches of the Wine Cellars Valley, at the crossing of the valley by the highway there is a huge rock face with low-grade sericite-phyllite rock exposed. The rock here belongs to the Velem Sericite-Phyllite Member of the Kőszeg Phyllite Formation. Access is possible by motor vehicle.

Striking NE-SW the road crossing has obliquely intersected the rock beds. Thin to thick-bedded, well-foliated rocks are found here. Because of the heavy deformation by rolling and fracturing, the dip values that can be measured are quite uncertain: an average dip between 64°/30° and 58°/35°. In some places low-grade folding is noticeable, too. The fold axes strike about 140°-320°.

The commonest mineralogical components of the chlorite- or sericite-phyllites representing the main type are mica-like minerals. Their tiny or, less frequently, fairly-developed plates form banded bundles, being generally organized according to the schistosity. The micaceous fields are often curved, in fact they may be even microfolded. Both muscovite/sericite (with more or less paragonite) and chlorite are frequent contituents. The former is colourless, the latter shows a pale yellowish-greenish pleochroism. The two are largely intermingled, being often even interlayered. Admixed to the micaceous field portions of forming separate, schlierlike segregates quartz appears as single crystals or as minor aggregates in which the individual grains are closely packed. Their extinction is sligthly wavy. They are limpid, containing hardly any inclusion. Albite is a secondary component, its xenoblastous grains being relatively well developed and separable into two types: the older solitary feldspar grains associated with some micaceous parts are slightly porphyroblastous in habit and simple, their rims being frequently coated by limonite. Their inclusion content consists of fine, acicular rutile and sericite tending to become opaque. Appearing in the younger segregates, albite is xenoblastous in habit, showing but slight sericitic alteration. Represented by microcrystalline aggregates and tending to become opaque, graphitoid is associated with the micaceous field portions. Varying amounts of tiny, microlite-like, acicular rutile are found in the same position. In the more heavily deformed zones both accessories get enriched. Further accessories: tourmaline, zircon, apatite and opaque ore. The limonitic infiltration that has affected the rock has produced stainings, fissure-fills and displacements manifested in bands.

The source rock seems to have been a clayey-muddy sediment of basin facies. Deposited supposedly in Liassic time, the sediment involved altered to phyllite in the course of a low-grade greenschist-facies alteration associated with the Alpine orogeny.
The metamorphic rocks of the Köszeg Mountains belong to the Penninic Series.

Stop 3. Köszeg Mountains, Cák, Felsö Quarry

Aligned on the N side of the valley having its mouth NNW of Cák village, old and new quarries have exposed metasandstone-metaconglomerate beds included in a calcareous phyllite sequence. Access to the quarries is possible by motor vehicle and, from Köszeg, by regular coach service.

The characteristic metaconglomerate of this locality was named "Cák Conglomerate", for the first time, by JUGOVICS (1918). The rocks exposed in the quarries are assignable to the Velem Calcareous Phyllite - and Cák Conglomerate Formations.

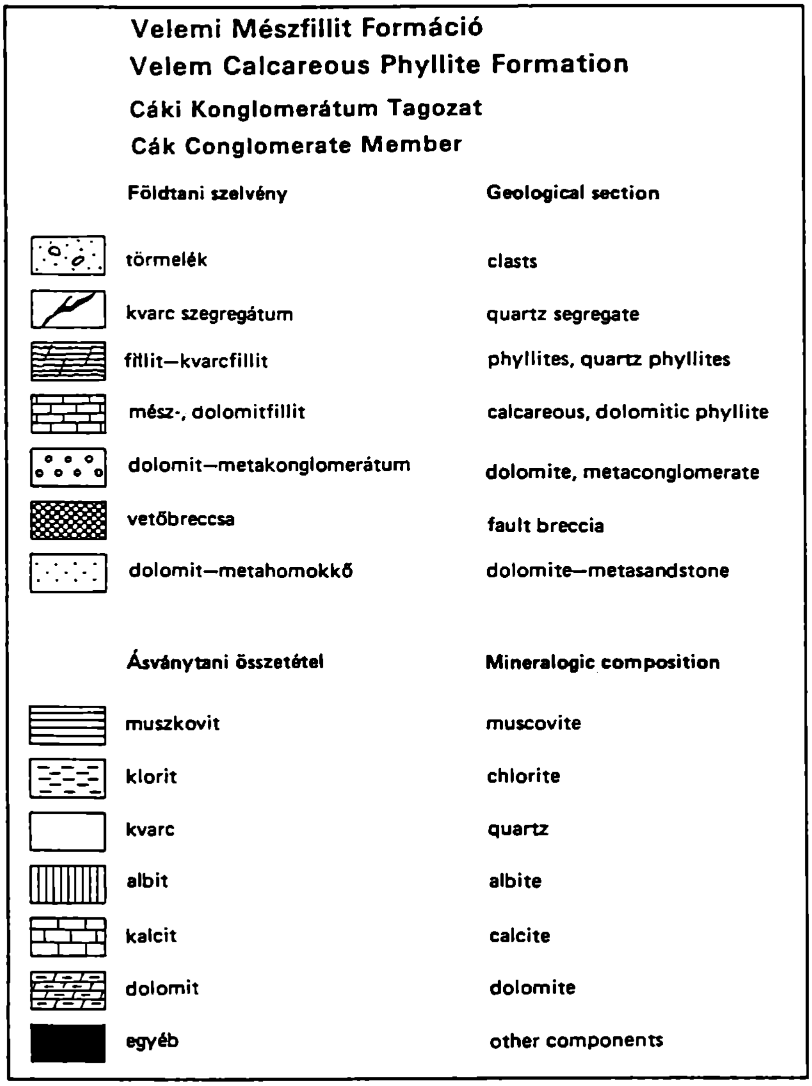
In the NW, NE and E walls of the abandoned upper (Felsö-)quarry, the metaconglomerate is always found exposed near the bottom, whereas the overlying rock is always calcareous phyllite. The underlying metaconglomerate forms a scarely foliated mass interbedded, in a lobate pattern, with the overlying rock.

From the overlying rock, the calcareous phyllites are slightly to fairly affected by schistosity and fined-grained. After a low-grade greenschist-facies metamorphism, the essential components of the rock are constituted by chlorite, muscovite, quartz, albite, calcite and - in some beds - dolomite minerals. The organic matter content of the parent rock has been converted into a graphitoid of meta-anthracite rank associated with the mica-rich parts.

Interbedded with the calcareous phyllites are chlorite-muscovite phyllites which derive from a mainly clay-mud source material with little or no lime content. A similar grade of metamorphism affected them as the calcareous phyllites. Overwhelming muscovite and chlorite form bundles of tiny plates affected by rolling. The variation of their proportions to each other has resulted in a banded pattern. The enrichment of graphitoid and rutile has added a darker colour shade to the mica bands. Quartz forms lenticular schlier bodies. Albite and calcite may be added to it accessorily. The detrital dolomite of varying grain size deposited in the sedimentary basin underwent recrystallization in the course of metamorphism, but the detrital grains have preserved their original structure in direct proportion with the increase of grain size.
The fine-grained, i.e. completely recrystallized, dolomite-constituted rock shows a texture and structure that is similar to that of calcareous phyllite. Relictic dolomite sand grains are round with a heavily resorbed edge and a microcrystalline inner structure being slightly to fairly affected by graphitoid impurity admixture. Mica, quartz,

albite and carbonates are in most cases dissociated from one another, forming separate lumps. Originally present mainly as lime mud, calcite appears to have constituted the matrix which, however, has been completely recrystallized.

Forming a separate outlier in the exposure, the dolomite-metaconglomerate seems to have been emplaced as a result of tectonic deformation. It is made up of dark grey and black, very strongly rounded pebbles cemented by a matrix that is not or is just a little bit affected by schistosity. Averaging 4 cm in diameter (boulders attaining a maximum of 30 cm across may be encountered, too), the pebbles represent a microcrystalline or small-grained dolomite rock to which mainly graphitoid impurities were admixed. In very subordinate proportion, dolomitic limestone, gneiss and muscovite schists (mica-schist) are also encountered. Originally finegrained, the matrix was affected by infiltrations and completely recrystallized, thus being separated by a sharp contact from the rock fragments therein.



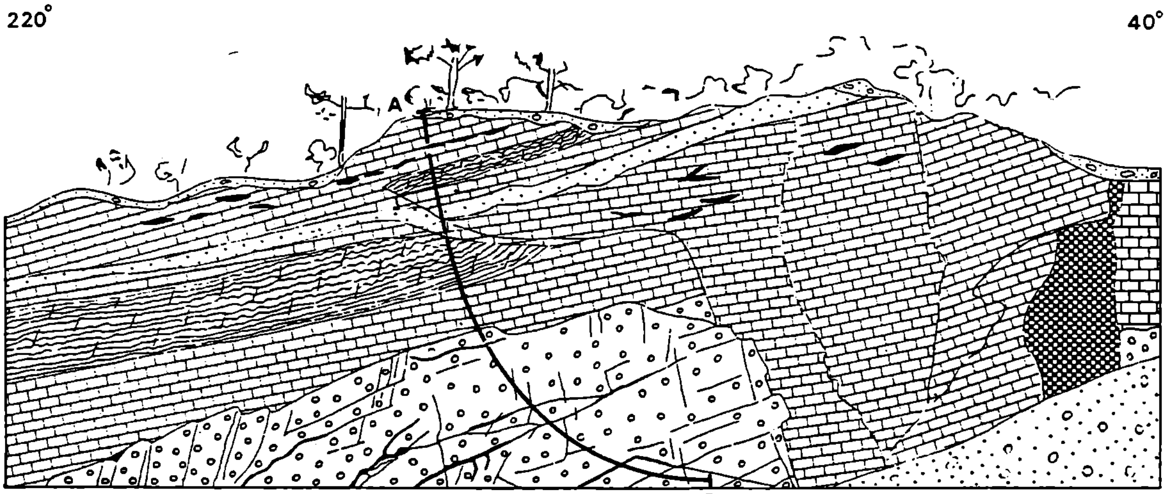
Legend to Fig. 3.

Laterally secreted quartz lumps, sills and transversal veins follow the older tectonic directions, being oriented 280°/40°. The transversal faults belong to the category of younger tectonic elements showing orientations of 40°/70-80° and 156°/60°. In the NE part of the wall the succession of rock beds ends with a crushed zone.

The Köszeg-Rechnitz Mountains are made up mainly of crystalline schists which W.J. SCHMIDT assigned, in 1956, to the Penninic by relying on analogies with the Hohe Tauern in Austria.

MAGYARORSZÁG GEOLÓGIAI ALAPSZELVÉNYEI

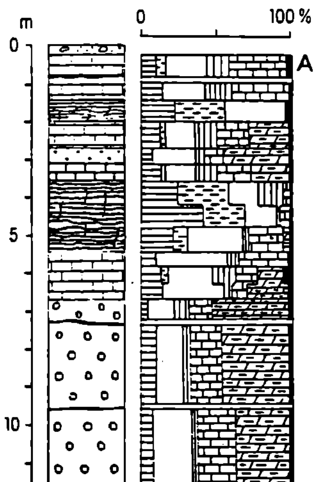
Kőszegi-hegység, Cák, felső kőfejtő



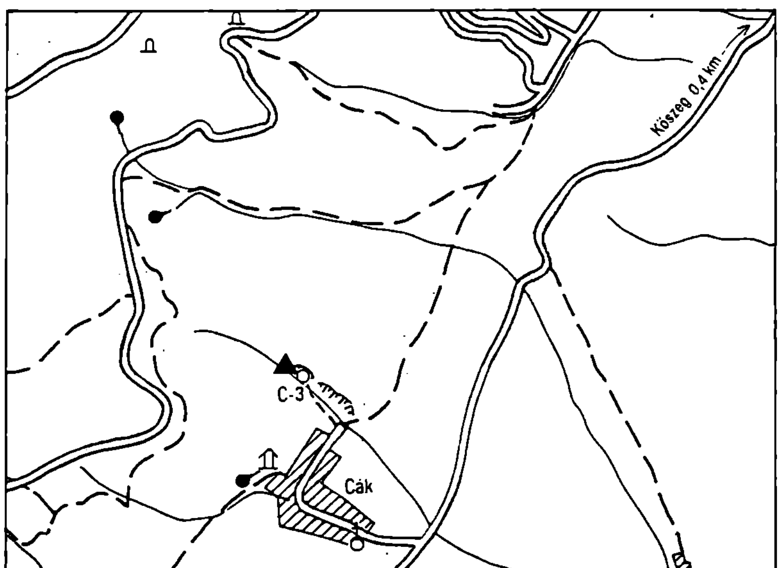
Földtani szelvény

0 3 m

Ásványtani összetétel



Műemlék boronaházak ○ Fúrás ▲ A feltárás helye **Helyszínrajz**



0 500 m

Velemi Mészfillit Formáció, Cáki Konglomerátum Tagozat

Fig. 3: Kőszeg Mountains, Cák, Felső Quarry.

The origin of the Cák Conglomerate has been the subject of arduous debates from the very beginning and the problem has not been completely and exhaustively settled up to now. Geneticall, it was taken to be respectively mylonite (JUGOVICS, 1918), basal conglomerate (A. FÖLDVARI - J.NOSZKY - F. SZEBENYI - F. SZENTES), Liassic breccia (SCHMIDT, 1951), fluviatile detrital sediment (J. ORAVECZ) and coastal deposit (MOSTLER & PAHR, 1981). The opinions diverge even as far as its age is concerned: earlier authors assigned it to the Upper Paleozoic, W.J. SCHMIDT dated it as Jurassic, whereas, judging by its dolomite pebbles, J. ORAVECZ supposed a post-Permian, H. MOSTLER and A. PAHR a post-Middle Triassic age (such fossils were found by them in the pebbles).

What is certain is that the pebbles must have been emplaced from afar, as no dolomite-containing or dolomitic in beds other than these are known from the sequence here. The most probable explanation is that the pebbles were introduced by fluviatil transport from such an environment, where overwhelmingly Middle Triassic dolomite- or dolomitic rocks had been exposed (supposedly soon after being deposited).

Haltepunkt 4. Straße Rattersdorf nach Bernstein -- Kalkglimmerschiefer und Quarzphyllite

Nach Passieren des Grenzübergangs Köszeg (Güns)-Rattersdorf fahren wir das Günstal aufwärts in westlicher Richtung. Das Günstal ist in diesem Abschnitt in Quarzphyllit eingesenkt, die am nördlichen Hangfuß verlaufende Straße läßt dies erkennen. Knapp vor Lockenhaus durchschneidet sie den Quarzphyllitsporn (Flußschlinge der Güns), der die Burg Lockenhaus trägt. Nach etwa einem Kilometer weitet sich das Tal, sein nördlicher Hang besteht nun aus Tertiär, den Rabnitz-Schichten, einer pliozänen Schluff-Sand-Schotter-Ablagerung.

Haltepunkt 5. Polisberg -- Sinnersdorfer Konglomerat

Mit dem Polisberg, ca. 500 m östlich der Kreuzung mit der B 50, ragt älteres Tertiär (Sinnersdorfer Schichten, ~ Karpat) durch die Rabnitz-Schichten.

An der Basis des (künstlichen) Aufschlusses ist grobklastisches "Sinnersdorfer Konglomerat" vorhanden. Das gut verfestigte Konglomerat besteht vor allem aus Gesteinen der Grobgneiseinheit, vereinzelt sind unter den gut gerundeten Komponenten auch Wechselgesteine zu finden. An keiner Stelle dieses an den Grundgebirgsrändern weitverbreiteten tertiären Basiskonglomerats sind jedoch Komponenten aus dem Penninikum vorhanden! Dies wird als Beweis dafür angesehen, daß bei seiner Ablagerung (~ Karpat) die Rechnitzer Fenstergruppe noch von den ostalpinen Decken begraben war.