(medium to large crystals having totally replaced previous calcite), 6) orange-yellowish, fossil-free, fine-grained sparite components and 7) coarser sparite, probably a product of transformation from undifferentiated preexisting components. The first five component types are placed to the Tripolitza nappe (originally platform deposits of Upper Triassic to Eocene age). The sixth component may represents previous strata of the Pindos nappe, now recrystallized (deeper marine origin).
At least two main superimposed cement generations are recognised: 1) Dog-tooth cement is initially built in a subaquatic environment, followed by 2) block cement precipitation (recent). The pores are either partly or full-filled with the latter cement. Although the studied member is matrix-supported, rarely, effects of diagenetic compaction are seen between the individual grains. Sometimes, a thin oxidation layer covers the surface of them, pointing to former subaerial exposure (prior to the initial subaquatic cementation). Dissolution of the grains make sometimes impossible, especially due to their small-size, identification of the boundary-limit between grain-margin and the matrix. It is rather the result of intensive pore-water circulation mainly due to the high, primary, fabric-selective porosity of the breccia, which was later secondary affected by the post-depositional tectonic processes of the Kastelli Basin. This fact is further supported by evidence of microscale faulting, running through both the matrix and the grains, additional to three generations of a microjoints framework observed only in the components and concerning mechanical fracturing of the source rock.

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Sedimentation auf der Arabischen Halbinsel während des frühen Tertiärs: Beispiele aus dem Nord- und Zentraloman

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Nach einer ausgedehnten Auftauchphase am Ende der Kreide bis zu Beginn des Paläozäns kommt es zu einer marinen Transgression im Thanet mit der Bildung ausgedehnter Schelfgebiete, die den größten Teil des heutigen Oman bedeckten. Während des Eozäns und Oligozäns veränderten globale und regionale bis lokale Entwicklungen wie eustatische Meeresspiegelschwankungen und geodynamische Ereignisse die Dimension und Faziesverteilung auf dem Schelf.

Jifnain Formation (oberes Paläozän - unteres Eozän)
Die Ablagerungen des flachmarinen Schelfs zeigen eine Entwicklung vom niedrig energetischen zum höher energetischen Milieu. Die Kalke der Jifnain Formation sind überwiegend packstones bis wackestones, am Top zunehmend grainstones und rudstones. Im unteren, mergeligen Teil mit variierender Mächtigkeit findet man Infauna mit Bivalven, zum Teil noch in Lebendstellung, Gastropoden, Echiniden und vereinzelt kleine Korallen. Der obere, mehr karbonatische Teil ist dickbankig und bildet ein deutliches Relief. Hier kommen Horizonte mit Alveolinen oder Rotalgenknollen vor, gelegentlich auch grober Korallenschutt.

Rusayl Formation (unteres Eozän)
Die Rusayl Formation wurde im litoralen Bereich abgelagert und repräsentiert verschiedene sedimentäre Ablagerungsräume vom konglomeratischen Strand- und Gezeitenbereich, über Lagunenfazies mit autochthonen Austernbänken bis zu siliziklastischen und karbonatischen Sandbarren mit Nummuliten und Alveolinen. Sie besteht lithologisch hauptsächlich aus Tonen und Mergeln; gelegentlich sind dünne Kalklagen und Austernbänke eingeschaltet. An der Basis findet man Konglomerate mit Kieselknollen und Quarzklasten.

Seeb Formation (mittleres Eozän)
Die Seeb Formation tritt an mehreren Lokalitäten am Rand der Oman Berge auf. Sie wurde von Nolan et al. (1990) erstmals beschrieben und als mittleres Eozän datiert. Der Ablagerungsraum der Seeb Formation war ein flacher, offenmariner, karbonatischer Schelf, der in verschiedene, lokale Faziesbereiche differenziert ist. An der Basis der Formation bildeten sich an der Batinah Küste während einer marinen Transgression hochenergetische Barren. Der Übergang von Miliolinen- zu Alveolinen- und Nummuliten/Assilinen-Biofazies repräsentiert eine Vertiefung des Lebensraums. Das laterale Äquivalent bilden die Fahud-Schichten, eine Intra-Schelf-Fazies mit eingeschränkter Fauna.

Senaiya Formation (oberes Eozän - unteres Oligozän)
Die Senaiya Formation besteht aus einer Wechsellagerung aus Kalken und Mergeln, oft mit Nummuliten. Kreuzgeschichtete Kalkarenite mit Miliolinen und Nummulitenkalke mit dolomitischen Lagen sind zwischengeschaltet. Der Ablagerungsraum der Senaiya Formation war ein flacher, offenmariner, karbonatischer Schelf (siehe Abb. Karbonatsignatur).
Während des Paläogens entwickelten sich im arabischen Bereich ausgedehnte Karbonatplattformen in Gebieten mit geringerer Subsidenz. Das Paläozän und frühe Eozän ist durch die Jifnain

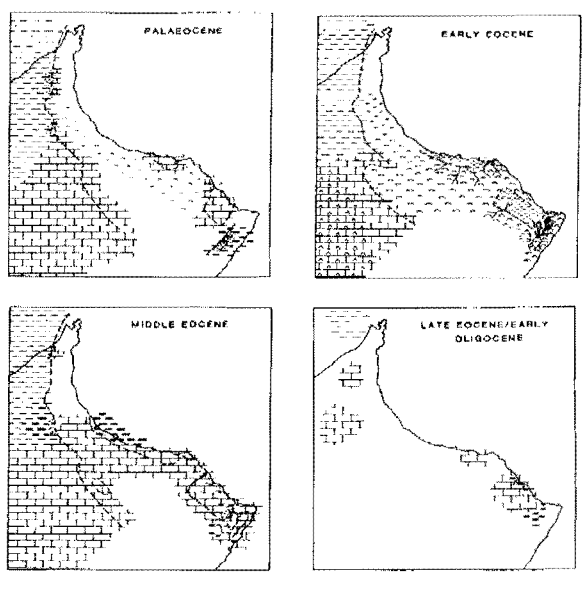

Abb.: Paläogeographische Rekonstuktion des Nord- und Zentralomans während des frühen Tertiärs (nach Nolan et al. 1990).

Karbonate repräsentiert, überlagert von verschiedenen obereozänen Einheiten. An der Batinah Küste östlich des Oman Gebirges macht sich die Regression im unteren Eozän durch die eingeschränkte Fazies der Rusayl Formation bemerkbar. Diese wird von der offen-marinen, karbonatischen Schelffazies der Seeb Formation überlagert, die eine reichhaltige Alveolinen- und Nummulitenfauna beinhaltet. Westlich des Oman Gebirges ist die Rusayl Formation nicht entwickelt; die Jifnain Formation wird hier direkt von der Seeb Formation überlagert oder durch die faunistisch eingeschränkten Kalke und Mergel der Fahud Schichten.

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Ophiodetritic flysch sediments in the Central-Carpathian Paleogene Basin (Eastern Slovakia): petrofacial composition, clay diagenesis and plate-tectonic provenance

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Ophiodetritic sediments usually mark the zones of lithospheric subduction. Their occurrence is therefore important for geotectonic interpretation of orogenic belts, especially when the suture zones disappeared during the collision.

The flysch sediments in the northern side of the Central-Carpathian Paleogene Basin are significantly enriched in ophiolitic detritus. They even contain sediments, which represent the serpentinitic graywackes or detrital serpentinites. Serpentinitic sandstones occur as Zebra-type turbidites in the Upper Oligocene formations. Serpentinites form a colourless to olive green grains showing a typical mesh and loop structures. Among serpentinite fragments there are the coarse-flaky lizardites and fibrous chrysotiles as well.

In petrofacial classifications, the serpentinites are attributed to the ophiolitic lithics (CRITELLI & INGERSOLL 1994) or to the volcanic-metavolcanic grain type category Lv (VALLONI 1985). Sandstones also contain a glassy shards and volcanic fragments with vitritic and vitrophyric structure. The proportions $Q_{25}F_8L_{67}$ express the average modal composition of the sandstones. The high content of detrital serpentinites and glassy clasts causes a prevalence of unstable lithic components (Lv = 62 %). Interstitial material of sandstones corresponds mainly to clay cement with minor pseudomatrix (crushed and altered lithic grains). Two distinct cement assemblages were observed: (1) saponite ± calcite ± dolomite ± opal-CT ± pyrite, which are restricted to quartz-rich graywackes, and (2) ordered mixed-layered chlorite/smectite + saponite ± calcite ± dolomite ± opal-CT ± pyrite characteristic for serpentinite-rich graywackes. Textural as well as compositional evidences suggest that both saponite and C/S originated by the interaction of the sediment with pore-fluids during burial as direct precipitates. It is inferred that a different bulk rock composition (Al content), and consequently, a different chemistry of pore-fluids played an important role during authigenesis.

In diagrams for determination of arenite provenances, the projection points of serpentinitic sandstones are concentrated in the field of magmatic-arc related sandstones (DICKINSON et al. 1983) or oceanic-arc related sandstones (VALLONI 1985). The oceanic-arc sources are also recorded by geochemical signals in mudrocks, providing a significantly elevated concentrations of Cr and Ni (Cr~150 ppm, Ni>100 ppm) and the high correlation in Cr/Ni ratios (r = 0.90). Such high values in mudrocks indicate the sutures after lithotectonic collision (GARVER et al. 1996). Serpentinitic sandstones are generally also very rich in spinel detritus (up to 80 % in heavy mineral fraction), having apparently the same origin.

The provenance of serpentinitic sandstones should be related to ophiolitic sources, which were dragged out on the collisional edge of the Central Carpathian plate above the zone of subduction. Their occurrence indicates a suture zone of the Tertiary collision between the Central Carpathian Paleogene Basin and the Klippen Belt. The preservation of fragile clasts of serpentinites reveals the deposition from dilute turbidity currents. In high-density currents with dispersive pressure and grain collisions the serpentinites should be almost destroyed. Accumulation of these clasts could also resulted from flow-stripping processes and hydrodynamic separation, when the elevated fluid mass was able to concentrate the lighter serpentinite grains.

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Organic matter distribution and variations of isotopic composition of organic carbon in Cambrian siliciclastic rocks in Baltic region

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Cambrian rocks are widely represented on the territory of East Baltic region except some local positive structures and south-east part of Lithuania. Geology and lithology of Cambrian deposits were studied very detail. In the structural plan the studied area is subdivided into three regions: Northern, Eastern and Western (PASKEVICIUS 1997). The Cambrian rocks are presented by main types of siliciclastic rocks (sandstones, siltstones, claystones and argillites). These deposits were formed during some sedimentary cycles in the shallow water marine basins. The thickness of Cambrian rocks varies in wide limits depending on the dislocation in structural facies zones on the studied territory. In Northern Region the thickness of deposits is up to 80-100 m, in Eastern region ranges from 60 to 130 m and the highest thickness reaches up 250 m in Western region.

100 rock samples from main stratigraphical units from Lower and Middle Cambrian successions were studied in order to estimate the variations of organic matter concentrations and isotope composition of organic carbon. Rocks were sampled from 21 boreholes located on the territory of the Baltic States (12 boreholes located in Estonia, 5 boreholes in Latvia and 4 boreholes in Lithuania). The studied Cambrian rocks from Estonian successions were represented mostly by siltstones and claystones, from Latvia by clayey siltstones and in rare causes by sandstones and from Lithuania