



## Gastropods from the Carboniferous of Nötsch (Carinthia/Austria)

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With 2 Text-Figures and 2 Plates

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Österreich  
Kärnten  
Karbon von Nötsch  
Gastropoden

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### Gastropoden aus dem Karbon von Nötsch (Kärnten/Österreich)

#### Zusammenfassung

Aus den fossilreichen Ablagerungen des „Karbons von Nötsch“ westlich der Villacher Alpe wird eine kleine Gastropoden-Fauna beschrieben und abgebildet. Sie ist in Form von Schalenabdrücken und als Steinkern überliefert und trägt dementsprechend nur wenig zur Kenntnisausweitung paläozoischer Gastropoden bei. Auf der anderen Seite unterstreicht sie die Vorstellung von hoher Diversität von Gastropoden in einer von Brachiopoden dominierten Faunengesellschaft des Paläozoikums. Für stratigraphische Aussagen erscheint die kleine Fauna offenbar nicht geeignet.

#### Abstract

From the fossiliferous deposits of the famous "Carboniferous of Nötsch" located north of the Gail Valley and west of the town of Villach (Carinthia) a small number of gastropods are described and illustrated. They are preserved as molds and steinkern and hence add only little to the knowledge of gastropod evolution during the Paleozoic. On the other side they confirm the common feature of a relatively large diversity among few specimens in a brachiopod dominated facies. Stratigraphically, this fauna seems of only limited value.

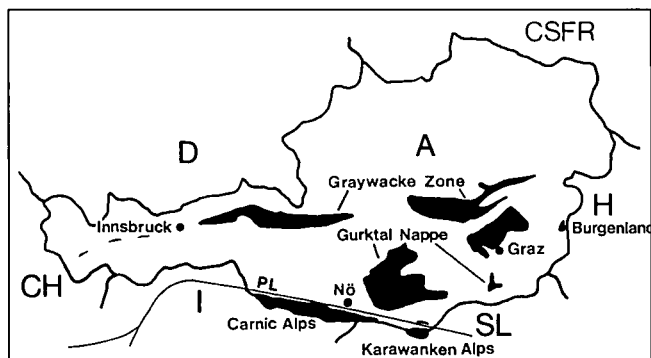
### 1. Introduction

This note is concerned with a tiny number of gastropods from the fossiliferous deposits well known as the famous "Carboniferous of Nötsch" (Text-Fig. 1). The fossils are derived from the locality "O3" on the southeastern slope of Badstuben mountain at an altitude of 1090 m (Text-Fig. 2). The lithology comprises arenaceous shales and siltstones which yielded a rich fossil assemblage consisting mainly of brachiopods, bivalves, trilobites, echi- noderms and gastropods and less abundantly of nauti-

loids, ostracods, scaphopods and plants. Yet, only the smaller part of the whole fauna has been described in detail (see H.P. SCHÖNLAUB, 1985; G. & R. HAHN 1987; G. SCHRAUT, 1990; H.W.J. VAN AMEROM & H.P. SCHÖNLAUB, 1992).

Up to the year 1984 when a new forest road was constructed locality O3 has not yielded any gastropods. For a long time, however, they have been known from other localities, for example, Oberhöher (presumably "O1"),

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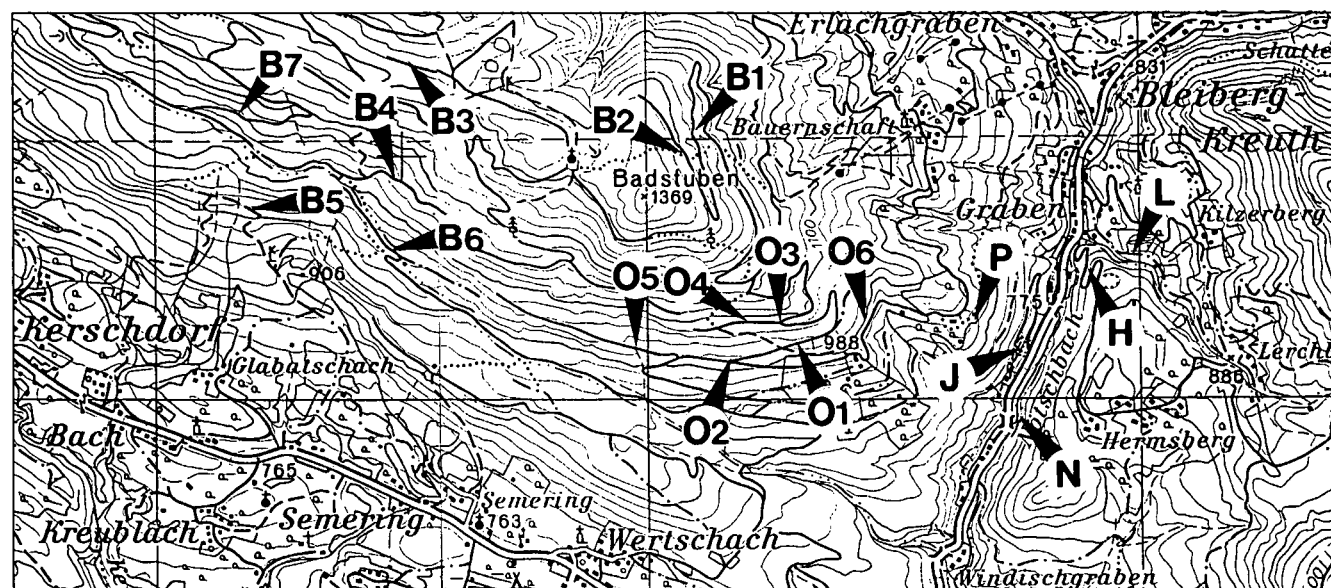


Text-Fig. 1. Main occurrences of fossiliferous Paleozoic rocks in the Eastern and Southern Alps of Austria. Nö = Carboniferous deposits north of Nötsch village in the Gail valley; PL = Periadriatic Line, the major fault zone separating the Southern and the Central Alps of Austria.

Hermsberg ("H") and Nötschbach ("N") but were never thoroughly described and illustrated (L.G. DE KONINCK, 1873; F. FRECH, 1894; F. HERITSCH, 1943). None of the specimens reported in this paper are particularly well preserved and they do not contribute significantly to advancement of gastropod systematics. E.L. YOCHELSON (1984) proposed sweeping modifications of the classification of Paleozoic gastropods, but our studied material is hardly the place in which to put such changes into practice. Consequently, in this report conventional superfamilies in conventional arrangement are used.

The faunule does, however, contribute in supplying one more spot of occurrence for the future plotting of distributional maps to infer biogeographic patterns for the Carboniferous. It also adds another example of the relatively large diversity found among few specimens in brachiopod-rich facies. This seems to be a persistent feature of such facies throughout the Paleozoic.

Our small gastropod fauna does not provide any precise information on the age of the fossil locality. Based on the accompanying fossil groups, such as conodonts, trilobites and plants, an uppermost Visean or earliest Namurian age has recently been inferred for the fossil-bearing strata of locality Oberhöher "O 3" (see refs. above).



Text-Fig. 2. Map showing fossil localities in the eastern part of the Carboniferous deposits of Nötsch. Occurrence of gastropods described in this report is named O3 (= Oberhöher 3). For other fossil localities see Fig. 2 in H.W.J. VAN AMEROM & H.P. SCHÖNLAUB (1992).

## 2. Taxonomy

### Superfamily Bellerophontacea Genus *Retispira* sp. indet.

Plate 2, Figures 1,2

Remarks: A single fragment of an external mold, and a distorted steinkern are assigned to this taxon. The fragment is not crushed and shows a well-rounded whorl profile. There is a suggestion that narrow umbilici are present but that area is not clearly preserved. The selenizone is narrow and raised in a convex, welt-like manner. Growth lines are closely spaced and are orthocline, except for a slight bending immediately adjacent to the selenizone. Lunulae are distinct, well-formed and also closely spaced on the selenizone; they are almost connected to the growth lines. The growth lines are crossed by spiral lirae, also closely spaced, the two combining to form a block pattern of ornament in which the individual blocks are nearly square. It is this ornament which allows assignment of the specimen to *Retispira* without question. However, the material is too incomplete to be placed in a species.

A steinkern distorted by crushing can be assigned to this genus only because a scarp of adhering shell preserves the characteristic ornament. This does show part of the apertural margin and demonstrates that the margin does not flare, at least at this growth stage.

### Superfamily Euomphalacea Genus *Straparollus*

#### Subgenus ? *Straparollus* sp. indet.

Plate 2, Figures 3-5 (2-4)

Remarks: This is the single most abundant group of gastropods, in all seven specimens being identified. They have relatively narrow whorls around a large umbilicus. All show a well-rounded whorl profile and simple, crowded, orthocline growth lines. However, euomphalaceans are notorious for loss of an outer shell layer and

almost certainly several of these specimens have been similarly affected. Growth lines appear to be identical on the inner and outer shell layers. In *S. (Euomphalus)* a shoulder is present on the upper whorl surface and in some species on the lower surface as well. It is possible that this feature is present on the outer shell surface, but that seems unlikely from what can be observed on the better specimens of this group. None are in life position, for on two pieces adjacent specimens are preserved with the spire upward and the umbilicus upward, respectively.

Several of the specimens show evidence of crushing, a rare feature among gastropods, but probably related to the relatively coarse nature of the matrix. One partial distinction between *Straparollus* sensu stricto and *S. (Euomphalus)* is that the former invariably has a distinct low spire, whereas the latter may have the upper surface lying in one plane. The single specimen which shows the upper surface clearly has it in one plane, but this seems to be a combination of the effects of crushing on the side and, perhaps the top and loss of part of the upper surface. Three other specimens show the upper surface, but all are definitely crushed. Thus, question of subgenus assignment cannot be resolved and no specific identification is possible for our material of this quality of preservation.

### ? Superfamily Pleurotomariacea

#### ? Genus *Agnesia* sp. indet.

Plate 2, Figures 3, 4, 6, 7

Remarks: Six specimens constitute an unexpected element of this gastropod fauna. They are sinistrally coiled shells, bearing coarse widely spaced growth lines. All specimens have been crushed apically or laterally, or have only part of the whorl preserved. In none is the periphery available. The early whorls are flattened so that the restored shape must have been similar to that of an old-fashioned beehive. The more mature whorls seem to be well rounded. Growth lines curve smoothly prosocline from upper suture to as far down the whorl as they can be observed.

The general shape, the ornament and the direction of coiling all suggest *Agnesia*, an uncommon gastropod. Because *Agnesia* is a pleurotomariacean, it has a selenizone. In the type species this feature occurs just above the periphery and above the suture. That area does not bear a selenizone on the material at hand, yet the other features are so similar that one is strongly tempted to remove the query from the identification. Should additional material show that a selenizone is present on or below the periphery, this will constitute a new species.

### ? Genus indeterminate

Plate 2, Figure 8

Remarks: A single incomplete specimen may be a pleurotomariacean but it is too badly preserved to allow an assignment. The illustrated specimen is trochiform and has four carina on the whorl profile. Growth lines between the lower one and the suture are straight, inclined toward the aperture. No other details are to be observed.

### Superfamily Murchisoniacea

#### Genus *Aclisina* sp. indet.

Plate 2, Figure 9

Remarks: One extremely high-spined, multiwhorled gastropod occurs in the faunule. The sutures are impressed and the whorl profile is smoothly curved, but not greatly inflated. Each whorl bears five spiral lirae, with the interspaces being only about twice the width of the lirae. It is these abundant lirae which are most suggestive of the generic identification. No growth lines are preserved. The youngest whorl to be seen appears to lack ornament and this in turn is surmounted by what appears to be a flattened area, but preservation is not good enough to be certain that these are really features of the shell rather than preservation phenomenon. About half of the whorls are slightly flattened by crushing.

### Superfamily Loxonematacea

#### Genus *Loxonema* sp. indet.

Plate 2, Figures 10, 11

Remarks: Two small high-spined gastropods complement each other in that one lacks the early whorls, whereas the other has the body whorl broken; a third specimen is less well preserved. The individuals have relatively few whorls and a steep inclination to the suture. The whorl profile is like that of a teardrop in that it bulges outward low on the whorl. Just below the suture a flattened vertical band is conspicuous and it is this extra element of the whorl profile which confirms the generic identification. No growth lines are preserved.

### Phylum Uncertain

Plate 1, Figure 2

Remarks: Associated with the gastropods and bivalves on the portions of the unit studied are several tubes. It is conventional to suggest that such tubes may be scaphopods and therefore mollusks. These tubes show relatively fine, very closely spaced growth lines. Within the length of tube preserved there is no evidence of any tapering. Like many other elements of the fauna these tubes are partially flattened, but they appear to have had a circular cross-section. The shell appears to be exceedingly thin and it is this last feature which suggests that these may be the tubes of some worm-like creature rather than remains of a mollusk.

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Plate 1

Fig. 1: **Rock slab, covered with bivalves, gastropods and crinoid stems.**

On centre part occurrence of ? *Straparollus* sp. indet.(St) and *Aclisina* sp. (Ac) to the right, accompanied by two specimens of ? *Agnesia* sp. (Ag) on upper right and left sides.  
Locality Oberhöher O 3; × 2.

Fig. 2: **Tube of uncertain affinities (scaphopods ?).**

The external impression is present above the flattened tube. Same slab as Fig. 1.  
Locality Oberhöher O 3; × 2.

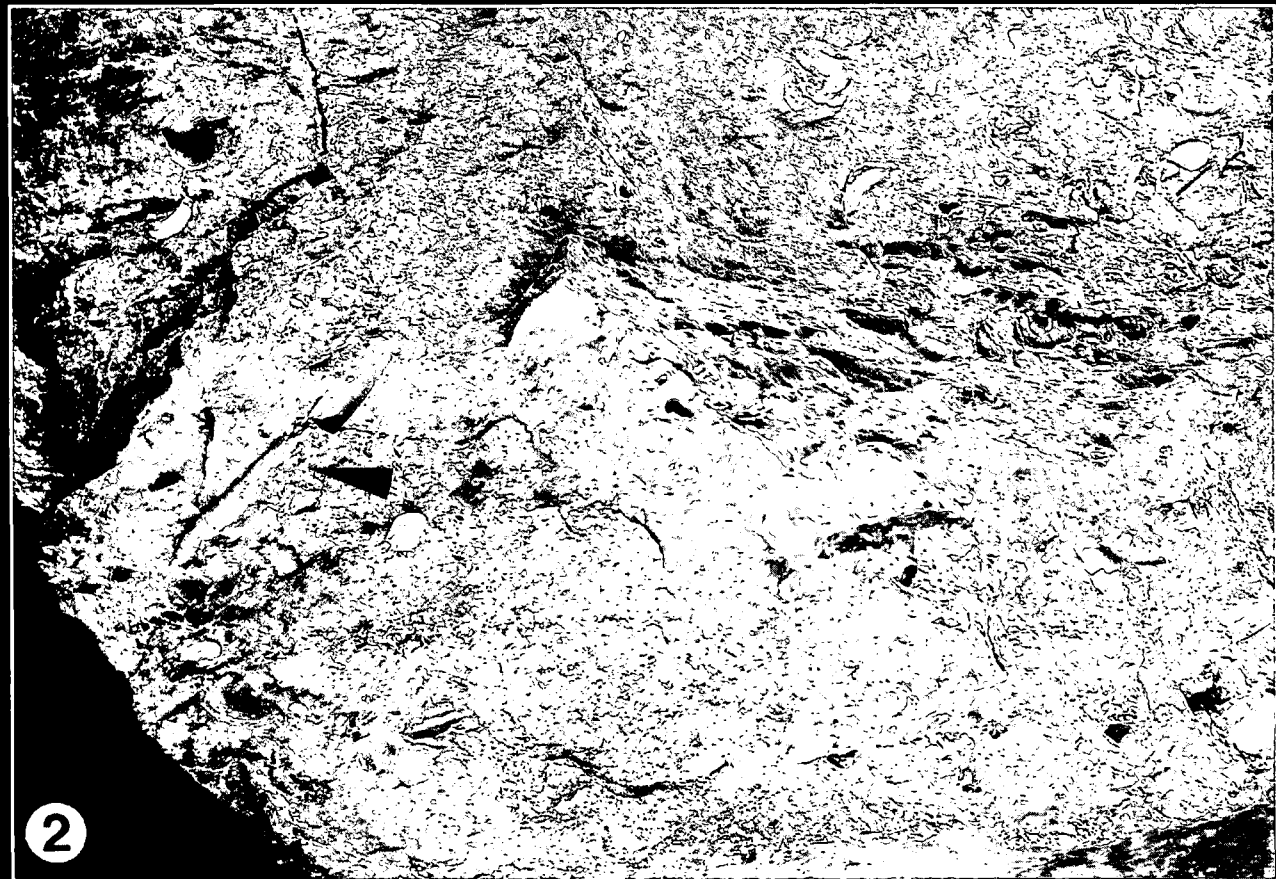
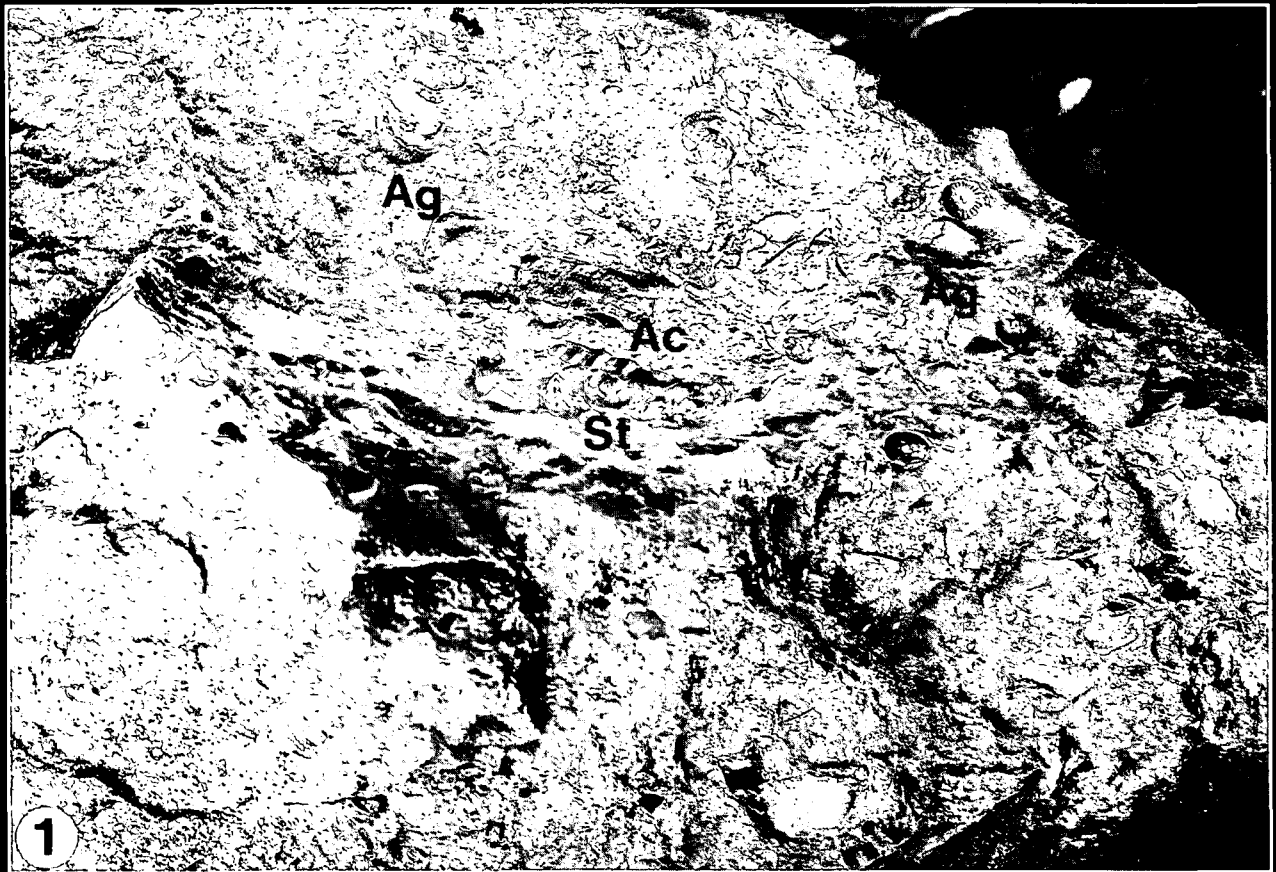
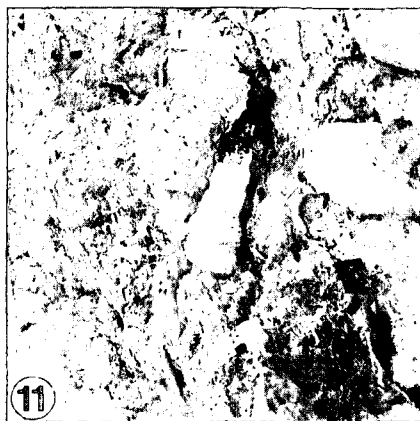
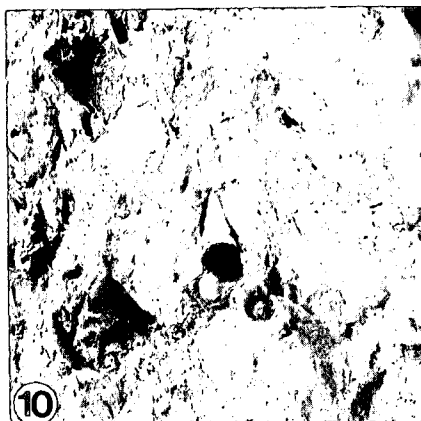
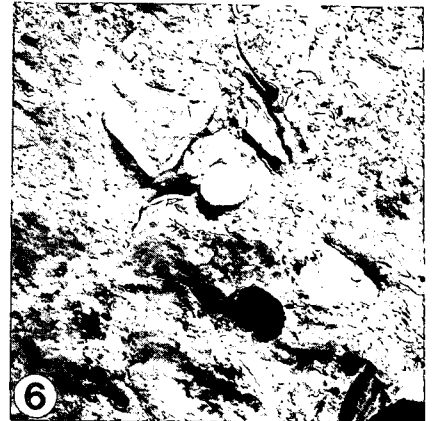
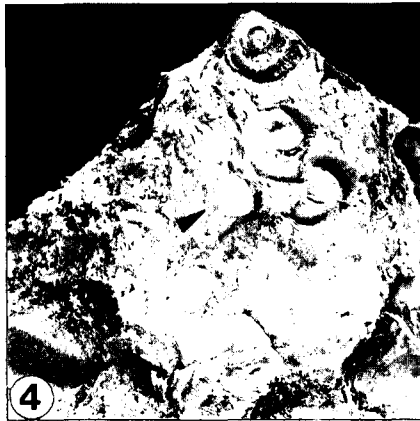
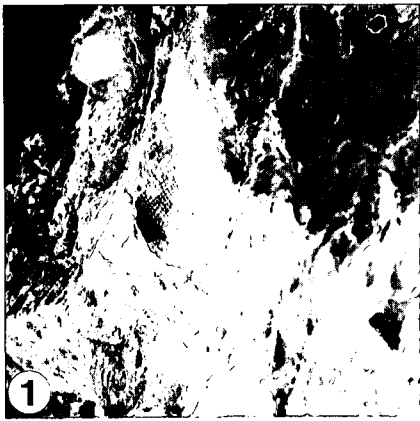


Plate 2

- Fig. 1: **View of external mold of *Retispira* sp. indet., oblique in the rock.**  
Near the top of the mold the selenizone forms a shallow depression.  
Locality Oberhöher O3; × 4.
- Fig. 2: **A poorly preserved specimen of *Retispira* sp. indet. (see arrow).**  
In addition, in the centre part of the slab a representative of ? *Straparollus* sp. indet. occurs.  
Locality Oberhöher O3; × 4.
- Fig. 3: **On left side of the slab two specimens of ? *Straparollus* sp. indet. are preserved, the top one with the spire upward and the bottom one with the umbilicus.**  
Also, ? *Agnesia* sp. is shown on the slab (arrows) which occurs as an internal impression (above) and as shell preservation (below). Note shallow early whorls in this specimen.  
Locality Oberhöher O3; × 4.
- Fig. 4: **Three individuals of ? *Straparollus* sp. indet..**  
The bottom one is preserved with the spire upward and shows the rounded base and the large umbilicus; the other two are preserved with the spire down. Each is crushed to some extent. Beside representatives of ? *Straparollus* sp. indet. on the slab two specimens of ? *Agnesia* sp. with distinct growth lines can be seen (arrows). They are crushed apically and occur in an oblique position in the rock. Only part of the whorl is preserved.  
Locality Oberhöher O3; × 4.
- Fig. 5: ***Straparollus* sp. indet. in an oblique position.**  
Partly crushed specimen. The growth lines are on the inner shell surface.  
Locality Oberhöher O3; × 4.
- Fig. 6: **? *Agnesia* sp., crushed from above with early flattened whorls.**  
Locality Oberhöher O3; ? *Agnesia* sp., compressed laterally which gives some idea of the tectonism of the region. The specimen is partially a steinkern and the early whorls are not well preserved.  
Locality Oberhöher; × 4.
- Fig. 8: **Undeterminable trochiform specimen belonging probably to the pleurotomariaceans.**  
Note four carina on the whorl profile.  
Locality Oberhöher O3; × 4.
- Fig. 9: ***Aclisina* sp. indet. in side view with about half the whorls slightly flattened.**  
The specimen is slightly more suggestive of a flattened protoconch.  
Locality Oberhöher O3; × 4.
- Fig. 10: ***Loxonema* sp. indet., showing early whorls.**  
Locality Oberhöher O3; × 4.
- Fig. 11: ***Loxonema* sp. indet., with the characteristic teardrop shaped profile of the more mature shell.**  
Locality Oberhöher O3; × 4.



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