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Triassic of the Tethys Realm

Austriellula robusta n. sp. (Brachiopoda)
from the Upper Carnian Hallstatt limestone of Timor (Indonesia)

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With 4 figs. and 1 plate

Zusammenfassung

Aus einem durch Ammoniten belegten oberkarnischen Hallstätterkalk — Block von Timor (Indonesien) wird der Brachiopode *Austriellula robusta* n. sp. beschrieben. Die in zahlreichen Exemplaren vorliegende neue Art ist relativ groß und gekennzeichnet durch bemerkenswert verschiedene Konvexität der Klappen, sowie durch eine hohe und breit subangulare Plikation.

Summary

From an ammonite controlled Upper Hallstatt limestone of Timor (Indonesia) the brachiopod *Austriellula robusta* n. sp. is being described. The new species, existing in a large number of specimens, reaches relatively large dimensions and it is characterized by a remarkable difference in the convexity between pedicle and brachial valves and by high and subangular plication.

Introduction (L. K.)

During an expedition to the island of Timor, in spring 1975, large Triassic invertebrate collections were obtained. Part of this material has already been studied, so the Middle Norian ammonites by F. TATZREITER (1978; 1980) and gastropodes by G. TICHY (1979). In this further contribution the new brachiopod species *Austriellula robusta* n. sp. is being described, which was found in a Hallstatt limestone-block near the village Baun.

Triassic rocks, which were recognized as Hallstatt limestones and became soon famous because of their richness in cephalopodes, in Timor have been known for more than 80 years (ROTHPLETZ 1892; WELTER 1914; DIENER 1923).

The purpose of the above mentioned expedition was the geological and detailed stratigraphical study of these occurrences. The investigations were started in the surroundings of Baun, a village situated about 20 km SE of the capital of Timor, Kupang (fig. 1). In a distributary of the Oe Bihati, which has its origin in a spring near Baun and which discharges some km to the southeast into the Kasimuti (see TATZREITER 1978, fig. 1), various isolated Hallstatt limestone blocks were found, rich in ammonites. Part of these blocks in the meantime became studied in detail by TATZREITER (1978; 1980), the investigation of the rest of them is in progress.

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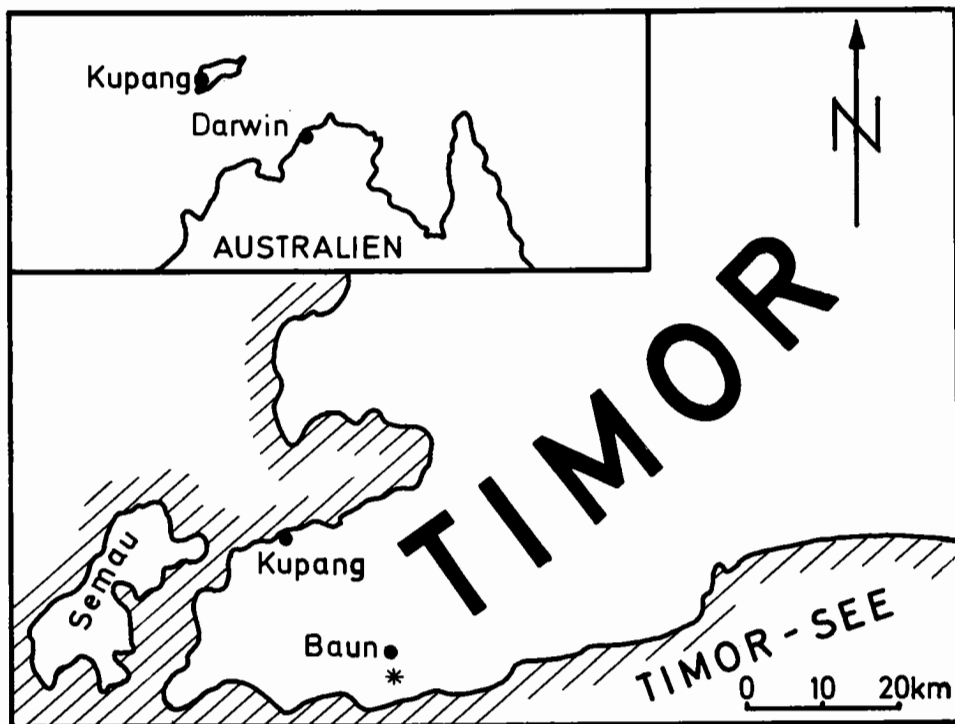


Fig. 1. Sketch of the southwestern part of Timor island with sampling place of *Austriellula robusta* n. sp. (indicated by asterisk) near Baun.

According to the geological observation the blocks form part of a large, probably young Tertiary olisthostrom, which is scattered about wide parts of the island of Timor. Previous records in geological literature refer to it by the term "Fatu-Klippen" (GAGEONNET & LEMOINE 1958; van BEMMELN 1949). Their age ranges from Upper Palaeozoic (Permian reef limestone) to the Eocene (nummulite limestone) with a facies of typical alpine (= tropical Tethyan) character. The size of the blocks varies considerably; whereas for instance the compact Permian and Triassic reef limestones reach the size of a house and sometimes even that of a hill, otherwise the bedded pelagic rocks (e. g. Hallstatt limestone) are at max. 4 cbm mostly however less than 1 cbm large. Also the light red Hallstatt limestone block M as described below, was with a border length of $70 \times 80 \times 60$ cm comparatively small.

The about 70 cm thick block M is distinguished from almost all other studied Hallstatt limestone blocks by its density and hardness. It was built by two different types of sediment, which by means of geopetal fabrics ("fossile Wasserwaagen" within ammonites and brachiopodes) could become orientated in "bottom" and "top". The basal layer M1 was 20 cm thick and consisted of a lumachelle of broken ammonite shells rarely containing complete specimens. The 50 cm thick upper layer M2 consisted of a biomicrite rich in crinoids and small shell fragments with corroded and broken ammonites scattered irregularly within the matrix. The brachiopods described herewith all originate from M1.

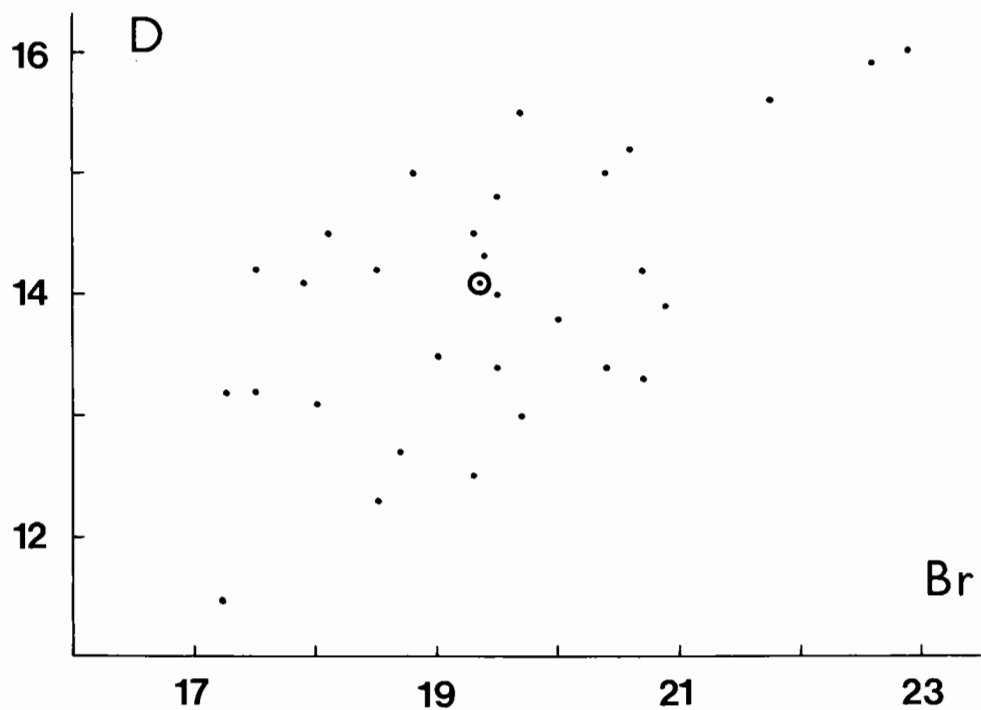
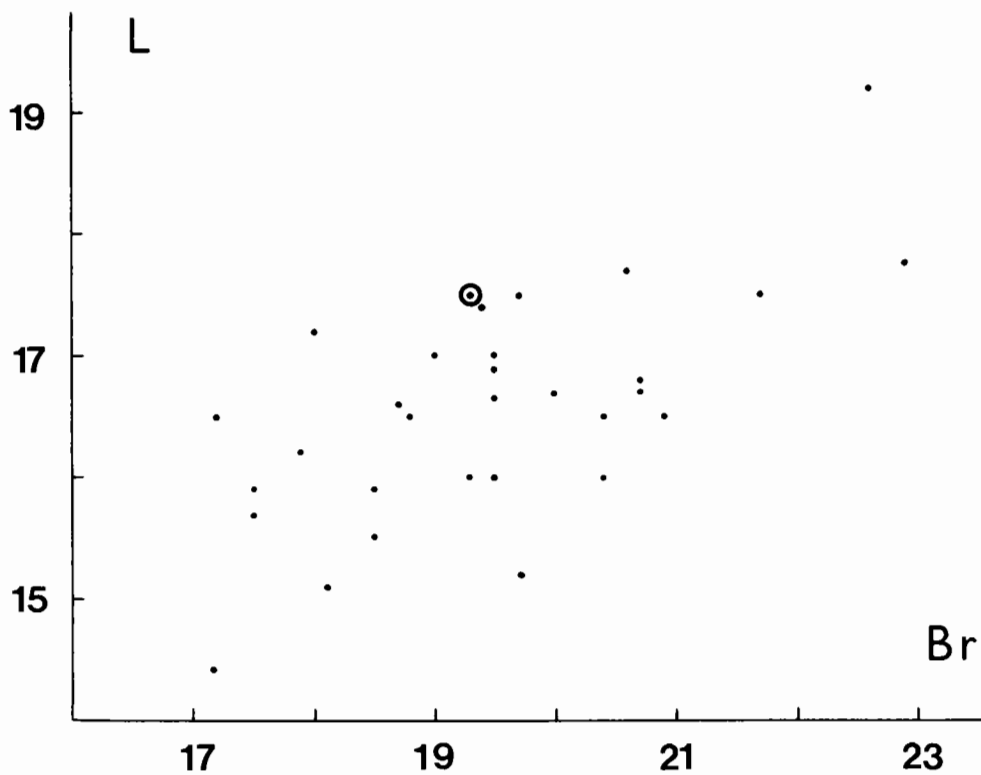


Fig. 2. *Austriellula robusta* n. sp. Timor. Scatter diagram: L — length, Br — width, D — thickness; in mm. ○ Holotype.

By faunistic analysis it turned out that block M exactly corresponds with the Carnian/Norian boundary, with M1 representing the topmost Tuvalian and M2 the lowermost Norian. The identified fauna is as follows:

M1: *Anatropites* cf. *spinus* MOJS., *Gonionotites* cf. *italicus* GEMM., *Projuvavites* sp. s.l. (= new projuvavitid genus with marginal nodes on the body chamber), *Tropicellites* cf. *ceciliae* MOJS., *Placites placodes* (MOJS.), *Eupinacoceras* cf. *rex* (MOJS.), *Sphingites* sp., *Arcestes* div. sp., *Discophyllites* cf. *patens* (MOJS.).

Bivalvia div.

Austriellula robusta n. sp.

A conodont sample yielded about 400 specimens of *Metapolygnathus communisti* HAYASHI, *Epigondolella primitia* MOSHER and *E. abneptis* (HUCKRIEDE).

The sample with the new brachiopod species can clearly be attributed to the *Italicus* subzone of the *Anatropites*-Bereich. This is not only proven by *Anatropites* cf. *spinus* and the new projuvavitid genus, but particularly by the presence of the index species *Gonionotites* cf. *italicus* itself. The conodont fauna proves the same age (see KRYSZYN 1980, 79).

M2: *Griesbachites medleyanus* (STOLICZKA), *Gonionotites* cf. *waldthauseni* WELTER, *Dimorphites* sp., *Placites peractus* (MOJS.), *Arcestes* div. sp., *Discophyllites patens* (MOJS.), *Rhacophyllites zitteli* MOJS.

All three trachyostracean forms indicate a Norian age which by *Griesbachites medleyanus* can be established more precisely. According to KRYSZYN 1981 this species is a guide to the lower part of the lower Norian (= Lac 1).

The investigations on Timor were carried out within the scope of IGCP Project 4 "Triassic of the Tethys Realm" and financed by the Fonds zur Förderung der wissenschaftlichen Forschung in Österreich (Proj. 2695) for which we express our sincere thanks. The brachiopod material was collected by L. KRYSZYN and later on forwarded to M. SIBLIK for description. The photographs were taken by Mrs. M. PARALOVA, Praha.

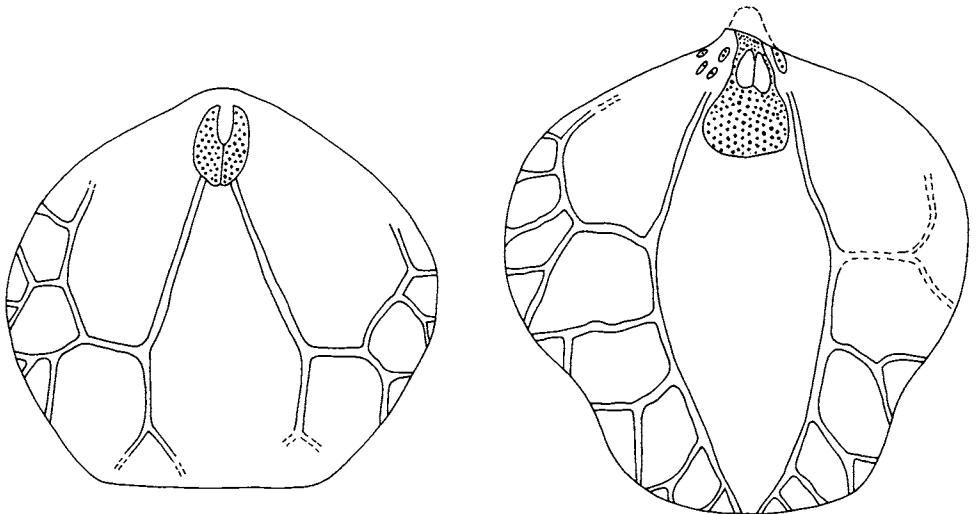


Fig. 3. *Austriellula robusta* n. sp. Timor. Mantle canals — left brachial valve, right pedicle valve of another specimen. Magnif. 3 ×.

Paleontological description (M. S.)

Family Norellidae AGER, 1959
Subfamily Norellinae AGER, 1959
Genus *Austriellula* STRAND, 1928
Austriellula robusta n. sp.

Pl. 1, Figs. 1—3

Holotype: The specimen figured on plate 1, fig. 2 and deposited in the collections of the Paleontological Institute of Vienna University under number PIW 2426/1.

Locus typicus: unnamed distributary of Oe Bihati creek, 1 km southwest of Bann, Timor (Indonesia).

Stratum typicum: red pink Hallstatt limestone block of uppermost Karnian age (Tuval 3/II sensu KRYSZYN 1980).

Material: 32 mostly well-preserved specimens (see text-fig. 2)

Dimensions of the holotype: 17,6 mm × 19,3 mm × 14,1 mm.

Description: Medium sized smooth shells up to 19,2 mm long and 22,9 wide (length measured parallel to the lateral commissure), with relatively thick shell wall. They are subpentagonal in outline and unequally biconvex with the brachial valve always much more convex than the pedicle one. The maximum — width of shell lies usually near the middle of the length of the brachial valve. There is a low fold developed in the anterior third of the brachial valve and the shallow sulcus on the corresponding part of the pedicle valve. Anterior commissure highly uniplicate. The linguiform extension is rather long, its sides steeply turn from the commissure at an angle about 80 to 90°. The same angle is formed by lateral and anterior commissures (as seen in the lateral view). The suberect — to erect beak is low, with subangular beak — ridges. The small foramen is submesothyrid in position. The apical angle ranges from 95 to 125°. A blunt costation irregularly developed in the fold of one specimen was ascertained (pl. 1, fig. 1). The muscle scars and mantle canals are figured in text-fig. 3.

Internal characters: The short dental lamellae are nearly parallel near the umbo; later they converge ventrally. The lateral umbonal cavities relatively narrow and subtrigonal in transverse section. Posteriorly they are hardly distinguishable due to the secondary thickening. The teeth are strongly developed and not crenulated. Denticula were not observed. The muscle attachment areas well discernible. There is a very short dorsal septum present, forming a minute septalium near the posterior end of the valve (another specimen showed a little higher septum than the specimen sectioned in text-fig. 4). The hinge-plates are either horizontal or slightly deflected ventrally, with the crural bases well-delimited at their inner ends. The sockets large and crenulated. The crura distally concave, projecting into the pedicle valve, with their concave surface directed almost laterally or dorsolaterally. They are reported to be arcuifer but they do not differ much from the radulifer crura of some other genera.

Remarks: The only till today known *Austriellula* from Timor is *A. pirum* (BITTNER, 1890) which was reported by AUDLEY-CHARLES 1968 from Karnian conglomerates of the Aitutu Formation. The new *Austriellula* here described is characterized by its relatively great dimensions and noticeable thickening of the shell wall, by a subpentagonal outline with concave anterolateral margins (on dorsal

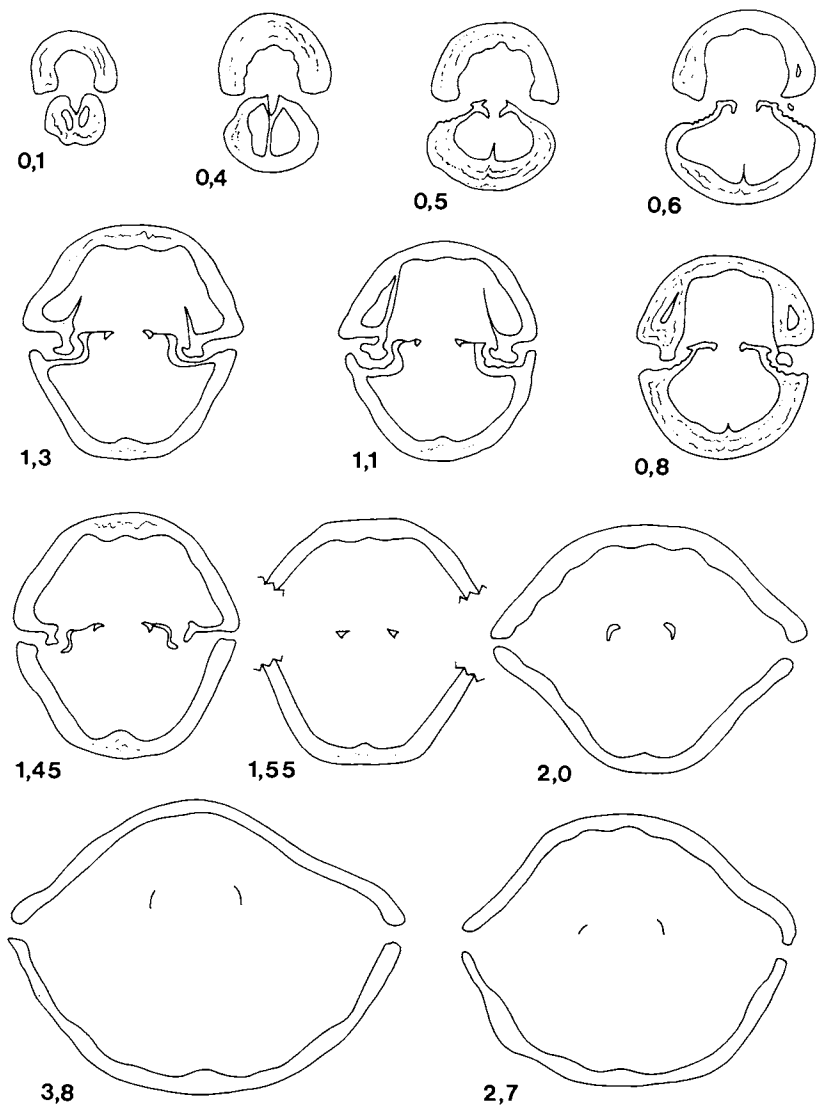


Fig. 4. *Austriellula robusta* n. sp. Timor. Transverse sections through the posterior part of the shell. Original length cca 17,0 mm. Numbers indicate the distance from the beak of the brachial valve. The crura dissappeared at 4,0 mm. 4 × .

view), by remarkable difference in the convexity between pedicle and brachial valves and by high and wide subangular plication. These joint characters can distinguish the new species from a series of similar smooth forms described originally from the Hallstatt limestones of the Alps. *Austriellula* — like rhyntonellids described from Timor by KRUMBECK 1924 as *Rhynchonella subregilla* and *R.*

subangulifrons differ externally from *A. robusta* sp. n. Their internal characters have not been known.

Considerable resemblance is shown by *A. gomorensis* (BALOGH, 1940) from Slovakia and by *A. fuchsi* SIBLÍK, 1976 from Nepal. Both these species differ by their much lesser dimensions and by their higher and less curved beak from the new species described here. Moreover, the former species shows lesser globosity and lower plication when compared with the new species.

Occurrence: Hallstatt limestone (block M) of Timor, Indonesia; together with ammonoids (*Anatropites* cf. *spinusos*).

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pl. 1 fig. 1—3 *Austriellula robusta* n. sp. Timor (fig. 2: Holotype). All specimens were coated with ammonium chloride before photographing. Magnification 2,5 ×. Photographs by M. PÁRALOVÁ.