Földtani Közlöny 123/4, 503—510 (1993) Budapest

Mesozoic Brachiopods of Alpine Europe: Essay review

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PÁLFY, József & VÖRÖS, Attila (eds.) (1993): *Mesozoic Brachiopods of Alpine Europe.* Proceedings of the Regional Field Symposium on Mesozoic Brachiopods, Vörösberény, Hungary, 6-11 September, 1992. Hungarian Geological Society, Budapest, 187 p. ISBN 963 8221 14 3.

Available from: Hungarian Geological Society, H—1027 Budapest, Fő u. 68., Hungary. $25.00 + $4.00 shipping and handling for first copy, $2.00 for each additional copy.

"Mesozoic Brachiopods of Alpine Europe" comprises 21 papers arranged in alphabetical order by author, with, in addition, a foreword by Attila VÖRÖS, a farewell to the late Derek AGER by Miguel MANCEÑIDO and a preface by Derek AGER. The papers represent the proceedings of a symposium held in September 1992. The Regional Field Symposium provided a forum for recent brachiopod research; an alternative to recent and planned non-European based International Brachiopod Congresses (1990 New Zealand, 1995 Canada) for East-Central European palaeontologists; in addition the symposium honoured Derek AGER, the Honorary Chairman of the symposium. AGER had been influential in the careers of many present at the meeting. These are reasons enough to justify the symposium. VÖRÖS points out that the contributions encompass the Alpine mountain ranges although some of the papers extend beyond the "European" of the volume title. Papers deal with a number of aspects of brachiopod studies including basic taxonomy and shell structure, palaeobiogeography, palaeoenvironments, palaeoecology and evolution. A number of works appear for the first time in English. This certainly is useful and helps the current reviewer!

In the first paper AGER adds the habitat of seamounts into the framework of his classic 1965 paper which dealt with the environmental distribution of Mesozoic brachiopods. The addition of seamounts is put forward to explain the disjunct distributions of a number of brachiopods. In relation to the discussion of the Cretaceous rhynchonellid *Peregrinella* it is not clear to me if Châtillon-en-Diois in southern France is therefore considered an obducted seamount. The *Peregrinella*-bearing beds at Rottier, southern France, have been fairly recently interpreted as possible hydrothermal deposits (LEMOINE et al. 1982). Certainly a number of brachiopods with disjunct distributions and "unusual" palaeoecology could be reasonably interpreted as associated with chemosynthetic cold seep communities. Such an interpretation has been made for *Peregrinella* and *"Rhynchonella" schucherti* (Late Jurassic) in California, (CAMPBELL et al., 1993; SANDY and CAMPBELL, in press). Palaeozoic and Mesozoic cold seep communities with brachiopods associated are probably fairly well represented in the fossil record by the occurrences of some enigmatic taxa. Cold seep environments could be considered an addition to AGER's (1965 and Mesozoic Brachiopods of Alpine Europe) list of habitats, occurring in a

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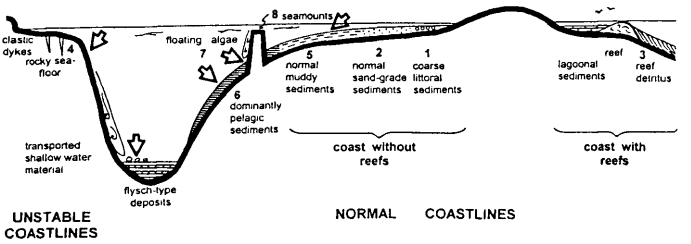

Fig. 1. The different habitats of Mesozoic brachiopods modified from AGER (in Mesozoic Brachiopods of Alpine Europe, his Text-fig. 1) to include cold seep chemosynthetic communities (i.e. non-hydrothermal vent). Arrows are used to indicate schematically some likely locations of cold seep communities in the Mesozoic. Modern cold seep communities have been identified in a range of marine environments and tectonic settings (e.g., subduction zones in active continental margins, brine seeps in passive margins, petroleum seeps in active and passive margins and submarine fans, references in CALLENDER et al., 1992) from depths between 75 to 3,850 m in several oceans (references in BEAUCHAMP et al., 1989; VON BITTNER et al., 1992). Brachiopods have not yet been identified as components of modern chemosynthetic communities. High-temperature hydrothermal vents, not under consideration, occur on oceanic rises.

range of marine/tectonic settings (Fig. 1). These communities can be very localised in area, representing an overprint or addition to more extensive environments. Younger (Cenozoic-Recent) chemosynthetic communities with which brachiopods are associated await discovery.

Two papers deal specifically with brachiopods from Romania. IORDAN reviews the stratigraphical distribution of Triassic brachiopods, noting that Spathian brachiopods from North Dobrogea have Himalayan affinities (but this may be the result of a lack of knowledge of such faunas, cf. DAGYS, 1993), while Middle to Late Triassic assemblages are very similar to the Alpine-Carpathian subprovince of Tethys. The paper is illustrated with three plates of brachiopods. The Jurassic brachiopods of Romania are listed by GEORGESCU and their paleobiogeography briefly discussed. The typically Norian-Rhaetian terebratulid brachiopod *Rhaetina gregaria* is recorded from the Lower Hettangian of the Eastern Carpathians. Elsewhere other authors have not been convinced of the validity of Jurassic reports of this species (e.g. MICHALÍK et al., 1991).

TÖRÖK has two papers dealing with aspects of brachiopods from the Muschelkalk (Anisian, Middle Triassic) Coenothyris beds of southern Hungary. In the first paper, parautochthonous and allochthonous storm-generated *Coenothyris*-dominated coquinas are distinguished on the basis of sedimentology. In mid-ramp settings transported shell-beds were generated, whereas in deeper ramp zones parautochthonous *Coenothyris* deposits formed as the brachiopods were buried by influxes of suspended carbonate mud. The low diversity brachiopod fauna is dominated by the high-stress tolerant *Coenothyris*. TÖRÖK points out that the external morphology of *Coenothyris vulgaris* is very variable, and the southern Hungarian specimens differ from west-central (Balaton Highland) and Polish specimens by lacking dental lamellae in the pedicle valve. In his second paper TÖRÖK records the trace fossil *Podichnus centrifugalis* on (and produced by) *Coenothyris vulgaris*. He points out that the trace is known from the Triassic, Cretaceous and Recent. I am aware of at least one published record on Jurassic terebratulid brachiopods (*'Terebratula'* aff. *semifarcinata* ETALLON, Oxfordian of France (BOULLIER, 1976); in addition, on *Gallienithyris? equestris* (D'ORBIGNY), 'Corallien', France, Fig. 2; *Epithyris* sp. from the Bathonian of England, Paul TAYLOR, pers. comm.). Pub-

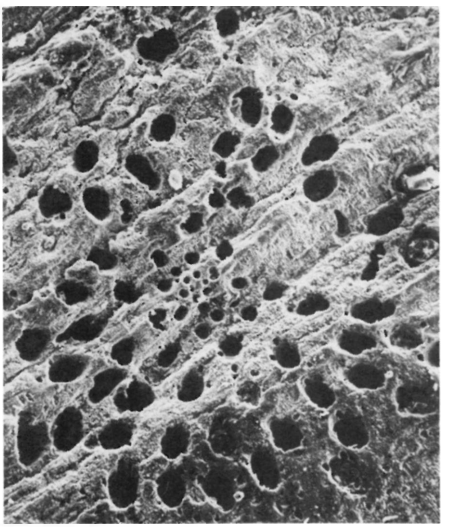

Fig. 2. An example of the trace fossil *Podichnus centrifugalis* BROMLEY and SURLYK from the Jurassic. Located on the lateral part of the pedicle valve of a specimen of the terebratulid brachiopod *Gallienithyris? equestris* (D'ORBIGNY) from the 'Corallien' of Vieil St. Remy, Ardennes, France, Natural History Museum Brachiopod Collection, London, B 32765. Magnification: 65×.

lished records so far indicate that *Podichnus centrifugalis* is the product of the etching of calcareous substrates by the pedicle of representatives of the Terebratulidina. BROMLEY (1981) considered it possible that such traces could be discovered in the Palaeozoic. The presence of carbonate etching pedicles and epithelium (on their own shells) is present in some Palaeozoic orders (SCHUMANN, 1969; GRANT, 1980). GRANT comments that koskinoid perforations in the muscle area of *Derbyia* do not penetrate the inner shell layer. Is it possible that such perforations were generated by another attaching epifaunal brachiopod?

Two papers deal with investigations of earliest Jurassic faunas. DULAI lists macrofauna and discusses palaeoecology, depositional environment and palaeogeography during the Hettangian in the Bakony Mountains of Hungary. He concludes that tectonic collapse of the Tethyan shelf had probably started in this region during the Hettangian. In a review of earliest Jurassic (Hettangian) brachiopods from the Northern Calcareous Alps of Austria, SIBLIK points out the generally neglected state of brachiopods from this stage and indicates, like DULAI, that the faunas are rather diverse. Two plates of brachiopods accompany SIBLIK's paper. Such studies on earliest Jurassic faunas have the potential to contribute to a better understanding of the post-Triassic re-radiation of the Brachiopoda.

TCHOUMATCHENCO extends an earlier classic study (1972) to encompass an analysis of the lateral distribution of brachiopods across Bulgaria during the Early Jurassic (Zeilleria quadrifida Zone, Late Carixian—Early Domerian). His earlier observations are borne out, with rhynchonellids (on a percentage scale) dominating the shallower water, higher energy

biotopes/environments, and the Spiriferida and Terebratulida (Terebratulidina and Terebratellidina) increasing in abundance with greater water depth and decreasing water turbulence. TCHOUMATCHENCO comments that similar studies from other countries are desirable to see if such distributions are typical. Certainly such types of analysis will be invaluable in helping to indentify potential examples of niche replacement during the evolution of the Brachiopoda.

A Liassic brachiopod zonation for the Middle Atlas Mountains of Morocco is established by ALMÉRAS. During the Early Lias and Early Carixian faunal exchange between the northern and southern margins of western Tethys was limited, although subsequent break up of carbonate platforms in the Late Carixian and Domerian enhanced exchange. By the Toarcian the brachiopod zonation for both regions is identical in its specific composition.

Late Jurassic-Early Cretaceous brachiopod faunas are discussed in three papers. KÁZMÉR reviews the distribution of the perforate pygopids, the *Pygope janitor* + *Pygites diphyoides* group (with perforation centrally placed) and the *Pygope diphya* + *Pygope catulloi* group (with perforation posteriorly placed). Interestingly, palaeobiogeographical analysis and palaeobiological interpretation suggest that the *diphya* + *catulloi* group is confined to low diversity faunas inhabiting deeper waters with lower nutrient supply of the southern, Apulian margin of Tethys, whereas the *janitor* + *diphyoides* group is more widespread in shallower water environments (occurring also as a component of higher diversity faunas) of the northern margin of Tethys. Members of the *janitor* + *diphyoides* group are unable to survive in the restricted environment occupied by the posteriorly perforated *diphya* + *catulloi* group.

Focusing on Tithonian-Berriasian brachiopods from the Polish Carpathians, KROBICKI analysed the composition of brachiopod faunas through bathymetrically-controlled facies changes. *Pygope* occurred in all carbonate facies and is interpreted as an opportunistic (r-selected) brachiopod tolerant of a wide range of environments and water depths. Mass occurrences of brachiopods on the intra-oceanic ridge of the Czorsztyn Succession are thought to result from upwelling nutrient-rich ocean currents.

PROSOROVSKAYA discusses the distribution of certain brachiopods either side of the Jurassic-Cretaceous boundary from the Ukrainian Carpathians, Crimea, Caucasus, the Transcaspian region and other parts of southern Europe. A number of species are widespread, although PROSOROVSKAYA points out that further study might modify such patterns. The abundance of brachiopods during the Tithonian in particular certainly marks one of a number of intervals of post-Palaeozoic brachiopod diversification. In this instance, reefal and reef-like environments of Tethys appear to have provided a revival of VÖRÖS' "lost Eden" (1993, p. 139, admittedly referring to the closed western end of Tethys in the Triassic-Jurassic), and a brief return to the "Garden of Eden".

A number of papers present faunal lists or revisions of taxonomic work. DETRE provides an analysis of Late Triassic (Carnian) brachiopods from Hungary, commenting that they are of biostratigraphic importance in subdividing the Carnian stage. BENETTI and PEZZONI give a short overview of a recently discovered Early to Middle Jurassic brachiopod fauna from the central Lessinian Alps (Verona), Italy. GARCÍA JORAL reports on a revision of Middle Jurassic (Aalenian) brachiopods originally described by ROTHPLETZ from the Northern Calcareous Alps, Austria. MANCEÑIDO reviews Early Jurassic brachiopods from Greece, based mainly on RENZ's collection in the Basel Natural History Museum. Selected brachiopods are illustrated on two plates. This diverse fauna has Mediterranean affinities, intermediate in position and relationship between Apennino-Transdanubian and Carpatho-Sicilian subprovinces. RADULOVIĆ and RABRENOVIĆ describe Middle Jurassic brachiopods from the "Klaus Beds" of eastern Serbia. This includes brachiopods from one 70 cm bed that contains over 30 species of ammonites, including reworked species ranging from Late Bajocian (Parkinsoni Zone) to Bathonian (Zigzag to Discus Zones). TADDEI RUGGIERO unites two nominal species of *Zeilleria* (one slightly indented, the other a strongly indented form) from the Early Jurassic (Sinemurian) of southern Italy into one species. Derek AGER would (and probably did judging by the acknowledgements) approve!

Two papers are concerned primarily with shell structure. MICHALÍK illustrates aspects of Late Triassic (Rhaetian) rhynchonellids using Scanning Electron Microscopy. It is useful to have observations on the cardinalium and brachidium of Jurassic Terebratulida by TKHORZHEVSKIY published in English. Perhaps many of the illustrations are taken from previous publications by TKHORZHEVSKIY where further information is available, but it would have been useful to have the generic names provided for the taxa from which internal structures are illustrated, such as in text-figures 5 and 17. However, the use of new genus and species names in text-figure captions (4, 6, 7), in which illustrations are only given of crura from serial sections and locality information given such as "Upper Jurassic, Pamir" (text-fig. 6) cannot be considered valid, if this represents their first published appearance.

In the final paper of the volume, Attila VÖRÖS provides a synopsis of Jurassic brachiopod diversity in the Bakony Mountains of Hungary, relating changes in diversity to global and local effects. Global and Bakony Mountain brachiopod diversity mirror each other during the Hettangian to Pliensbachian. The Toarcian anoxic event ended this period of diversity. Subsequently the lack of brachiopods in the Bakony area is related to local subsidence and deepening of the sea floor, although Bajocian and Tithonian peaks of diversity are related to extensional tectonics resulting in the development of diverse niches and the availability of hard substrates.

The symposium volume contains a wide range of papers that provide a good overview of some aspects of recent research on Mesozoic brachiopods, mainly by Central and Eastern European palaeontologists and also with representation by one of AGER's former research students (MANCEÑIDO). "Mesozoic Brachiopods of Alpine Europe" will be of interest not only to brachiopod workers, but also to those interested in marine invertebrate palaeoecology, evolution and palaeobiogeography. The papers are generally of a good to very high standard, some representing major contributions to the field of Mesozoic brachiopod studies. Many of the contributions present the results of recent field-based research. Of this Derek AGER would have approved. Considering the international, non-native English speaking backgrounds of the contributors, the quality of the English in the volume is generally impeccable, with few literals or ambiguous statements. In terms of production, the plates are generally disappointing and I am not sure the binding on my review copy will last through my (hopefully) next few years of brachiopod-related research. All in all though, József PÁLFY and Attila VÖRÖS are to be heartily congratulated on putting this fine compendium of papers together, and PÁLFY especially for tackling in addition the design, layout and typesetting!

The symposium was organised by József PÁLFY and Attila VÖRÖS as well as the associated fieldtrip which also included participants such as Csaba DETRE, Alfréd DULAI and Ákos TÖRÖK as locality guides. A review of the symposium and fieldtrip was written by Miguel MANCEÑIDO (1993). A high proportion of those who presented papers and posters at the symposium have contributed to this volume. To Miguel's account I can add that the bottle of wine competition in his article was won, appropriately enough considering the phylum under consideration, by Frank MIDDLEMISS, Queen Mary and Westfield College, University of London. I understand from Frank that the aforementioned bottle was presented to him by Ellis OWEN at the Natural History Museum, London, while Miguel was visiting, working on part of the brachiopod treatise revision.

"Mesozoic Brachiopods of Alpine Europe" is dedicated to the late Professor AGER. Earlier in 1993 volume 100 (parts 1 and 2) of *Palaeogeography, Palaeoclimatology, Palaeoecology* "Brachiopod and molluscan biogeography, palaeoecology and stratigraphy — A tribute to Derek Ager" had been published, edited by Miguel MANCEÑIDO. Six of the contributors to that volume also contributed to this symposium volume. In addition to the dedications in these two volumes, informal (ROBINSON, 1993) and more formal obituary notices have recently appeared (PUGH, 1993). Perhaps in Ageresque style, an obituary notice written by Derek himself is also scheduled to appear in Geologists' Association Circular 903 for May, 1994 (ROBINSON, pers. comm.).

My first opportunity to meet Derek AGER for an extended period was during the viva for my Ph.D. thesis. He was my external exami-

ner. I was enamoured with Derek's straightforward style, telling me immediately that I'd passed (the Ph.D. was up to scratch), but then I remember spending the next three hours in an extended discussion on brachiopods on a hot June, London afternoon! We have continued correspondence over the years. In the last letter I received from Derek (dated 14th December 1992) he said "I seem to have spent much of my professional life trying to escape the "brachiopod specialist" label. Fortunately I managed to turn to palaeoecology, regional geology and stratigraphical theory as well and now, I think my chief fame or notoriety lies in the last of those." Certainly there are a large number of geologists and palaeontologists who have been strongly influenced by his writings and his teaching. Derek would question, and where he felt it appropriate, challenge the accepted dogma. However, he could also be stubborn in accepting another point of view when he was convinced he was right. A small example of this can be seen in his contribution to this symposium volume by the continued use of the genus name *Eoperegrinella*, a rhynchonellid described by him from the Devonian of Morocco. The type and only species of *Eoperegrinella* is a junior synonym of *Dzieduszyckia* SIEMIRADZKI (BIERNAT, 1967).

With the passing of Derek AGER, we have lost a talented, prolific geologist. For those interested in "Mesozoic Brachiopods of Alpine Europe", it will be mostly for his work on brachiopods, their palaeoecology, palaeobiogeography and biostratigraphy that we will most likely remember him. The contributions to this volume show that Mesozoic brachiopod studies in East-Central Europe and beyond are apparently in a vigorous state. It would be gratifying if this were also the legacy left in Derek AGER's wake in the British Isles. The past decade has been witness to the professional retirement of Derek AGER, Frank MIDDLEMISS and Ellis OWEN. All have made important contributions to the study of Mesozoic brachiopods in Britain and beyond. As I write, the future of Mesozoic brachiopod studies in the British Isles has an uncertain future. Clearly Derek AGER, as strongly as any geologist can do, showed the applied side of palaeontology, and the contributions and spin-offs into other areas of geology that can result from palaeontological study. We must live in hope for the "Age of Enlightenment".

Acknowledgement

This review was written during the tenure of an Alexander von Humboldt Research Fellowship at the Paläontologische-Geologische Institut, Technische Hochschule Darmstadt. Also, thanks to Eric ROBINSON (Geologists' Association, London) for sharing information.

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