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Abstracts of contributions to the Bryozoan-Workshop published elsewhere

Permian Bryozoa of Iran (Andrej Ernst, Baba Senowbari-Daryan & Al Hamedani, Institut für Geowissenschaften der Christian-Albrechts-Universität Kiel, Germany)

Permian marine sediments belonging to the Tethyan realm contain rich marine faunas including bryozoans. Permian Bryozoa from Iran, however, are still scarcely investigated. The studied material comes from three different localities in Iran. Some few specimens were collected from the undetermined Lower Permian rocks of Shotori Mountains, eastern Iran. The Upper Permian bryozoans come from the Jamal Formation in Lakaftara and from the Abadeh region, both central Iran.

The Lower Permian bryozoans from Shotori Mountains are represented by two fistuliporid species, undetermined girtyporid, two rhabdomesids and one fenestellid species. They show connections to the Lower Permian of the Urals and Australia. The majority of the 31 species from Upper Permian localities were previously reported from the Gnishik horizon of Caucasus, which is regarded as Murghabian in age. Otherwise, connections with the Uralian Sea and Russian plate are obvious.

The absolutely dominating group under bryozoan fauna from the Permian of Iran are fenestellids. They are also the largest and most abundant bryozoans exceeding sometimes 20 cm in height. Only one trepostome bryozoan has been identified among 41 species. A new genus belongs to the family Chainodictyonidae, Suborder Phylloporinina.

Lower Sarmatian bryozoans of the Medobory region (Paratethys, Western Ukraine): a review (Urszula Hara, Polish Geological Institute, Warsaw, Poland)

The bryozoan fauna which has been recognized in the Lower Sarmatian (Volynian) carbonate buildups, also called "serpula reefs" in the Medobory Ridge of the western Ukraine, provide new data on taxonomical and biogeographical connections within the Paratethys. The distribution pattern of the bryozoans is very differentiated, but also the diversity of the bryozoans through the Sarmatian buildups, is generally low. In the Polpanivka locality, where bryozoans construct erect, branched and unilamellar, encrusting colonies, the fauna is restricted to a few species dominated by *Tubulipora flabellaris*, *T. dimidiata*, *Cryptosula terebrata* and an unidentified tubuliporine cyclostome. Elsewhere, the bryozoans build either the extensive multilamellar colonies or small dome-shaped structures. The most conspicuous of these are erect, massive, lamellar colonies recognized in Maksymiwka and Nowosilka (north-central part of Medobory Ridge) which are composed of hundreds of laminae, and are topographically widespread through tens of kilometers. The majority of colonies, which evidentially belong to *Schizoporella tetragona*, is composed of many growth layers (e.g. one colony is composed of about 100). Within the colonies there are a few sequences of laminae 1.4-0.36 cm in length which may mark the diastems (sedimentological cycles), probably connected with the fluctuations in the sedimentary environment of the Sarmatian basin. Schizoporellids in the Medobory ecosystem perform the main constructional role together with the other associated frame-building organisms, such as serpulids, and vermetids, as well as the calcareous algae which act as a baffler and binder. Morphologically, two morphotypes have been distinguished among the multilamellar colonies, such as c- and s-laminae, where the latter one evidentially belongs to *S. tetragona*. In the internal structure the horizontal, superposed, slightly bent laminar sheets are seen but also the sequences of loosely packed concentric sheets with rather rare, associated organisms confined to the interlaminar spaces, can be observed. The small, dome-shaped colonies of *S. tetragona* up to 1-2 cm in length, were mainly recognized in Werbka in the southern part of the Medobory reefs. These low, dome-shaped structures belonging to globstone type, have a flat underside. Similar dome-shaped and multilamellar structures have been described

in a wide range of fossil and recent cheilostomes known from such regions as Mediterranean Europe (Spain, France, Italy), North Africa, South Australia, the Red Sea, Thailand and Antarctica. Among these the celleporarid and schizoporellid multilayered, vertical structures have a potential for paleonvironmental interpretation. The morphology of bryozoan colonies (laminar, peat-shaped, mushroom-shaped, plate-like) seems to depend on their location in the Sarmatian basin and the hydrodynamic regime where the colonies grew. The main environmental factors which appear to have been important in determining both bryozoan morphotypes are current velocity and availability of substrate.

The aspect of the bryozoan paleobiology, related to the multilamellar, probably seasonal and cyclic growth, represented by the celleporarid and schizoporellid morphotypes, will be helpful in defining a hypothetical model for the colonisation of the Sarmatian basin of the Paratethys by the bryozoans, taking into account a number of parameters classified as a local, regional and global.

Paleonvironmentally, massive nodular and multilamellar bryozoan colonies, together with the associated biota of foraminifers, gastropods, crabs, bivalves suggest warm to temperate conditions during the Early Sarmatian. In summary, the studied assemblages of the bryozoan fauna are biogeographically related to the Sarmatian fauna of Moldavia.

A bryozoological by-product of tourism: first record of *Fredericella sultana* (BLUMENBACH 1779) in Crete (Jos A. Massard & Gaby Geimer, Musée national d'histoire naturelle, Luxembourg)

At Lake Kourna (Limni Kourna), the only natural freshwater lake of Crete, numerous colonies of *Fredericella sultana* were found on stones and on branches lying in the water. Moreover, some colonies of *F. sultana* were collected in the artificial lake (reservoir) of Agia (Limni Agia) related to the Keritis river system. Both lakes are resting areas for migratory birds and well known by ornithologists for their rich avifauna. It is possible that the occurrence of *F. sultana*, whose sessoblasts can survive in the guts of waterfowl, may be linked to this rich avifauna, and especially to the migratory species.

Doederlein, Doflein, Haberer, and the first collections of bryozoans in Japan in the 19th and early 20th century (Joachim Scholz, Senckenberg Research Institute, Frankfurt, Germany; Shunshuke F. Mawatari, Division of Biological Sciences, Graduate School of Science, Hokkaido University, Sapporo, Japan; Bernhard Ruthensteiner, Zoological State Collection Munich, München, Germany)

The Sagami Bay south of Tokyo is a world-famous area for rich marine fauna and discovery of rare and unique marine animals. Ludwig Doederlein (1855-1936) initiated the tradition of Sagami Bay research when he stayed in Japan for about two years as a "yatoi" (= foreign employee) professor of natural history in the preparatory course of the Medical Department, University of Tokyo. Most of his collections from Japan, thought to be destroyed during Second World War, have been re-discovered in good condition in the Musée Zoologique in Strasbourg by one of the authors (S.M.). Doederlein, who is considered the pioneer of marine biology in Japan, inspired his younger colleague and friend Franz Doflein (1873-1924) to continue marine biology studies in Japan.

Today, the importance of the Doederlein legay has been well established thanks to the Monbusho grant "Taxonomic and historical Studies on Prof. Ludwig Doederlein´s collection of Japanese animals" (1997-2003). In contrast, the true relevance of the Franz Doflein collection is poorly known. We still do not know how much of the types and specimens have been destroyed during the disastrous bomb raids of the Second World War on Freiburg and Munich, were Doflein had once been working. Accordingly, types need to be validated, and lectotypes to be chosen for the lost ones.

Doflein was able to make good use of the Doederlein experience in Japan, but there was more than that. Almost certainly, Doflein was able to study specimens collected by his contemporary colleague in Munich, A. Haberer, who had visited the Sagami Bay in 1900, and 1903/04 to collect sponges and bryozoans. While the expedition diaries of Doflein have probably been destroyed during WW II (although some informations survived in his book "Ostasienfahrt" and in his scientific output), some of the correspondence of Haberer survived and studies are under way.

In the month of July 2005, a Japanese-German team visited the Bavarian State Collection of Zoology in Munich, a journey funded by the COE Center of Excellence of the Hokkaido University, to borrow specimens for an exhibition in Japan, and to initiate studies on the marine invertebrates and fishes kept there.

We were very lucky to find rich collections of bryozoans (and other organisms) by Haberer (1903/1904) and Doflein (1904/1905) from the Sagami Bay, and from other localities in Japan. The samples have been examined by Buchner about two decades later. He selected certain species of Phidoloporidae to write his important contribution "Anatomische und systematische Untersuchungen an japanischen Reteporiden" (Zoologische Jahrbücher 48, 1924). Few additional samples have been identified by Borg, and in total, we found 60 labelled samples (in alcohol) from Doflein/Haberer, and two additional samples (dried material) from the earlier journey of Doederlein in 1880/81. Whereas the identified specimens have been included in the catalogue of the Bavarian State Collection, about 70 samples do not have species labels and thus have not been inventarised. Aside from that, many of the larger, erect or multilaminar specimens show smaller, secondary encrusting bryozoan species. Finally, we expect to find some bryozoans in nearly 40 sample containers of sponges, some of them large from the Sagami Bay, which have likewise been re-discovered among the collections made by Doflein some hundred years ago.

Why are these bryozoans so important? In the decades that followed the times of Doederlein, Haberer and Doflein, his Majesty the Showa Emperor started a long-time regional research and collection activity (The Biological Laboratory, Imperial Household, Tokyo (BLIH), ca. 1928-1988). His Majesty the Showa Emperor was a hydrozoan taxonomist, a subject not too far away from bryozoology, and he considered bryozoans in his collection activities.

Nowadays, the Sagami Bay research is continued by the Showa Mémorial Institute of the National Science Museum, Tokyo, in collaboration with other national institutes, and international researchers. The Sagami Bay belongs to one of the few regions in the Western Pacific with a continued history of collection for more than 100 years. Re-discovering historical collections in museums offers us rich opportunities to reconstruct the environmental state of this part of the world some 100 years ago, a region that is today close to one of the largest coastal urban and industrial concentrations in the world. At the end of the study, we will know which bryozoan species became regionally extinct, and which species possibly invaded the area as marine fouling organisms. The same applies for sponges, crustaceans, fishes and other organisms represented in Munich, and elsewhere.

Cheilostome bryozoans from the Lower Oligocene of the Mainz Tertiary Basin (Joachim Scholz, Senckenberg Research Institute, Frankfurt am Main, Germany; Norbert Vavra, Institut für Paläontologie, Geozentrum, Wien, Austria)

The so-called Middle Pechelbronn Formation (MPF; Lower Oligocene) of the Mainz Tertiary Basin documents the early beginning of marine conditions. From these strata, we discuss the very first regional occurrence of bryozoans. Fluctuating salinity, being indicated by other taxa already, have probably influenced some remarkable morphological variations in bryozoan skeletons. Nearly all specimens represent the flexible erect (cellariiform) mode of growth. A species which is very abundant probably belongs to the Quadricellariidae (*Nellia* sp.), yet, the fragmented zoaria do not allow species identification. A new species of *Penemia*, belonging to the Candidae, documents zoogeographical links to the Southern hemisphere, and to the Tethyan realm.

Faunistic inventory of bryozoans in the Carinthian region (Austria) (Johanna Troyer-Mildner, Kärtner Institut für Seenforschung – Verein für angewandte Gewässerökologie, Klagenfurt, Austria)

Carinthia with its various running waters, hundreds of lakes and ponds offers ideal living conditions to freshwater bryozoans. Nine species out of ten reported for Austria could be found in Carinthia. *Fredericella sultana*, *Plumatella fruticosa*, *P. emarginata*, *P. casmiana*, *P. repens*, *P. fungosa*, *Hyalinella punctata* und *Cristatella mucedo* belong to the phylactolaemate, *Paludicella articulata* to the gymnolaemate bryozoans. Some aspects to their habitats and their threats are discussed.