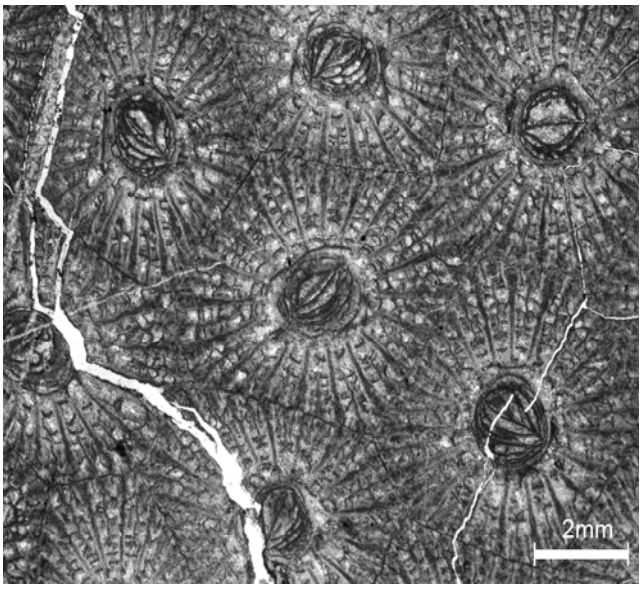
Fossil
Cnidaria & Porifera



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Front Cover: *Ipciphyllum* sp. from the Changhsingian (Upper Permian) of southwestern Xizang (Tibet). Unpublished specimen.

LETTER FROM THE EDITORS

Dear Friends and Colleagues,

First of all let us acknowledge here your kind coperation, which is the first prerequisite of any activity of the Editors and of our Association. Then please accept our apologies for rather slow flow of data, caused by so many duties of your Editors. Due to these difficulties we are able to present in 2006 only a single number of the **34**th volume of our Newsletter. Anyway we hope that although slowly, the necessary data will rather sooner than later get to you, with as much care of ours as possible. We think that the upcoming Symposium of our Association in St. Petersburg in 2007 will be an occasion of more detailed discussion of the matters of the *FC&P*.

With Best Wishes,

Tomasz Wrzołek Xiangdong Wang

INSTRUCTIONS TO CORRESPONDENTS

Help the editors of *FC&P* and try to adopt these few simple rules:

1) RTF format, please – try to make it as simple as possible!
2) Times New Roman, 12 points, single space;
3) **boldface** for authors, **dates** of publication and volume **numbers**;
4) *italics* for *journal titles* (do not abbreviate!);
5) no extra formatting, please!
6) the editors give the final touch and make the layout decisions; your reports may be fragmented according to chapters as presented in current *FC&P* volumes (**34**) or as at **http://kse.wnoz.us.edu.pl/iascp.htm**; this may change from volume to volume, as necessity dicates, i.e. changing data volume in various fields of our research;
7) the results of editorial work are presented promptly on-line at **http://kse.wnoz.us.edu.pl/iascp.htm** and then the correspondents are expected to make their corrections and return them to the editors prior to printing…
8) the editors indicate authorship of contributions either at headlines or after particular entry;
9) [square brackets] are used to do this in the latter case, also in case of non-original remarks and comments;
10) please have a look at the entries of the other authors and consider what can be improved in your reports; send if possible abstract and keywords to accompany your bibliographic entries; please abbreviate lengthy entries especially if they do not concern our fossil groups directly …

[editors]

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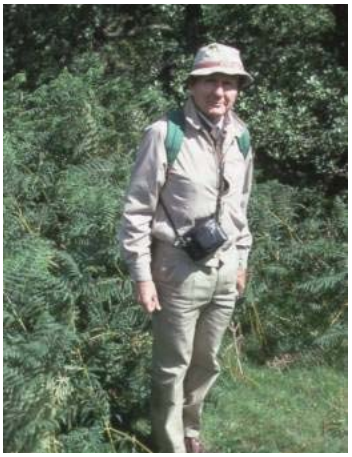
OBITUARIES

William A. Oliver, Jr. (1926 – 2005), a brief memorial

by James Sorauf and Jerzy Fedorowski,
May 2006



William A. Oliver Jr. died on October 8, 2005, in the evening, shortly after being struck by an automobile while crossing a darkened street in Rockford, Illinois, where he was visiting the family of his deceased wife Jo. This was a shock to all who knew Bill, and his friends around the world are saddened by their loss, and continue to miss him, a prominent coral paleontologist who was their colleague and their friend.

Bill was born in 1926, in Columbus, Ohio, and grew up in Champaign, Illinois, as his father taught in the Department of Civil Engineering at The University of Illinois. Bill was schooled at the University High School in Champaign, and served in the United States Armed Forces at the end of World War II, where he was trained to be an air gunner, but the war ended before he was in combat. Bill attended the University of Illinois and received the Bachelor of Science in geology in 1949. Bill (and his wife Johanna, or Jo) moved to Ithaca, New York, where he became a graduate student in geology at Cornell University. Bill received the Master of Science degree in 1950, and Ph.D. in Geology in 1952. Both his MSc thesis (Middle Devonian coral beds of central New York, *American Journal of Science*, October 1951, 23 pp), and his Ph.D. dissertation were published (Stratigraphy of the Onondaga Limestone (Devonian) in central New York, *Bulletin of the Geological Society of America*, 1954, vol. **65**, 31 pp; and: Stratigraphy of the Onondaga Limestone (Devonian) in eastern New York, *Bulletin of the Geological Society of America*, 1956, vol. **67**, 33 pp). At Cornell, John Wells served as Bill's graduate advisor and

inspired him to become a first-class student of fossil corals, lover of antiquariat bookstores, and long time researcher on Devonian strata and faunas of New York, especially the rugose coral fauna.

Bill was Instructor and Assistant Professor at Brown University from 1952 to 1957, and continued New York research during summer months with the support of the New York State Geological Survey. He began his long association with the United States Geological Survey in 1957, and this association continued until (and after) his "retirement" in 1993, when he became Scientist Emeritus. He was a Research Associate in the Department of Paleobiology at the Smithsonian Institution from 1967 until his death.

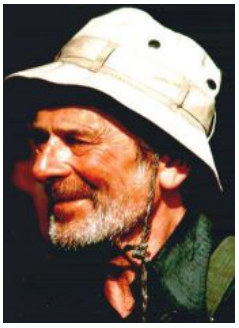
Bill's career with the U.S.G.S. was a rich one, and by no means restricted to work for the geological survey. While employed at the Paleontology and Stratigraphy Branch of the survey, Bill served the Paleontological Society as co-editor (with P. Kier) of the Journal of Paleontology (1964–1969). He was president of the Association of Earth Science Editors, (1966–1968), president of the Paleontological Society (1974–1975), president of the American Geological Institute (1976–1977), editor (with J. Sorauf) of Fossil Cnidaria (1976–1980), president of the International Association for the Study of Fossil Cnidaria and Porifera (1983–1988), long time trustee of The Paleontological Research Institution in Ithaca, and president of PRI (1984–1986), secretary-general of the International Palaeontological Association (1984–1989), and chairman of the Subcommission on Devonian Stratigraphy (of the International Commission on Stratigraphy) (1984–1989) after serving on the subcommission as a titular member for a number of years.

Additionally, Bill received other honors, including a National Science Foundation – National Academy of Science Award for Study and Research in Europe (1969–1970). He received the Meritorious Service Award from the U.S. Department of the Interior (1993), and the Gilbert Harris Award for Excellence in Systematic Paleontology from the Paleontological Research Institution (1994).

Bill was one of the founders of the international association and attended each of the nine international symposia, beginning with the first one, in Novosibirsk, U.S.S.R., and ending with the latest, in Graz,

Austria. He published at least one paper in the proceedings volume for each symposium, the only person to do so. Ten papers have already been published and the eleventh one waits for the publication of the proceedings volume for the Graz Symposium.
Bill Oliver left behind numerous publications that contain his ideas on taxonomy, paleogeography, paleobiology, the relationship of the Rugosa to other Anthozoa, and on other fields, particularly Devonian stratigraphy. His scientific achievements are an inspiration, and his numerous meticulously produced publications and work habits were exemplary. His published works comprise a legacy that will remain a source of inspiration for coral workers for many years to come. In this brief memoir we do not discuss his legacy in detail, leaving that to a more comprehensive treatment to be presented at the Oliver Memorial Session in St. Petersburg, to be published with the symposium proceedings. For the same reason we do not here enclose a list of his more than 80 publications and two post-mortem papers s ubmitted for publication, but which have not yet appeared in print.

Günter Tidten



Born 21. 12. 1922 in Mülheim / Ruhr, died 27. 12. 2005 in Düsseldorf-Hubbelrath / Tidten's biography & corals' bibliography by Klemens Oekentorp, Münster, 25th March 2006

Immediately after matriculation at the Burggymnasium in Essen in 1939 Tidten was called up to serve in the army during World War II. Returning home in August 1945 he started to study dramatic art at the Folkwang-School in Essen and later in Düsseldorf where he was supervised by his father Karl Tidten and – afterwards – after his father's death – by the famous Gustaf Gründgens. Following examination, he was employed for one year at the theatre in Wilhelmshaven, which was unfortunately closed soon after.
Following a second great bent of his versatile scientific and artistic spheres of interests, he studied Geology and Palaeontology in Bonn (R.

Brinkmann, H. K. Erben) and Münster (Fr. Lotze, A. von Schouppé). In 1960 and 1961 he organized two expeditions to Spitsbergen – accompanied by H. J. Schweitzer, Bonn (palaeobotanist), Dr. D. Botsch, Münster (zoologist), C. Samtleben, Kiel (geologist) and others, which were financially supported by the Deutsche Forschungs-Gemeinschaft. In the following years he worked on his huge collections of Permian-Carboniferous corals from Central Spitsbergen and from the Brögger-Peninsula considering modern morphogenetic analysis. This main field of work was established by Prof. A. von Schouppé at the Research Department of Coral-Palaeozoology at the Geological Institute of the Münster University. The investigation of the Spitsbergen corals was particularly focused on axial calicular structures in corallites posessing an elongated counter septum, the development of a fossula and, especially, the secondary but biologically developed skeletal thickenings ("Stereoplasma"). In Palaeozoic corals, these thickenings are often characterized by a so-called zigzag microstructure. For the first time, G. Tidten developed an interpretation for the "zigzags", which he explained by soft tissue motions of the polyp (e.g. by thrust- and tension-motion). By this conception he became a pioneer in the search for an understanding of this peculiar microstructure and was actively pushing forward critical investigation. Meanwhile, other controversial interpretations (diagenetic or a biocrystallogenetic origin) prevailed over his biomechanical explanation. Moreover, the concept that skeleton-formation was controlled by jerky upwards-growing of the soft tissue contradicted modern knowledge of continuous growth restricted to the top of the skeleton and to tie up the lower parts by centripetal growing of basal skeletal elements. Nevertheless, scientists are endeavoured answering questions raised by nature, but often following in the way like a zigzag-course. Accordingly, G. Tidten's explanation were the first step in solving the problem – a pioneer work.
Parts of his collection from Spitsbergen he donated to the Department of Geology and Palaeontology of the National Science Museum in Tokyo. In 1968, after finishing the studies on the Rugose corals from Spitsbergen (published in 1972), he devoted himself again to other spheres of interest, like education, humanities and arts. His particular concern was to finish the life work of his father in law, Dr. P. Girkon –

a monograph on the "Development of Human Spirit". His death denied its completion.
Günter Tidten was not only a colleague of versatile abilities, but also a friend to many people.

Coral bibliography of Günter Tidten

Tidten G. (1962) 1963. Ungewöhnliche Steinblock-Migration unter besonderen Bedingungen beim Björnhamn, Eisfjord, Spitzbergen. *Polarforschung* (5) **32** (1/2); pp 155–158, 3 Abb.; Kiel.

Tidten G. 1972. Morphogenetisch-ontogenetische Untersuchungen an Pterocorallia aus dem Permo-Karbon von Spitzbergen. [Morphogenetic-ontogenetic study of Pterocorallia from the Permo-Carboniferous of Spitsbergen]. *Palaeontographica* A **139** (Liefg. 1–3); pp 1–63, 4 figs., 2 tabs., 1 app., 15 pls.; Stuttgart.
On the occasion of two stays in Spitsbergen during the summers of 1960 an 1961, a rich coral-fauna from the Permo-Carboniferous deposits was collected. They were studied with the aim of revising and completing previous explorations. >From the large amount of thin sections material, only those specimens were selected, in which modern morphogenetic analysis had led to new results. This analysis includes particularly:
1. the axial structure of corallites belonging to genera characterized by a permanently or temporarily elongated counter septum,
2. the secondary thickening of the structural elements (previously called "stereoplasm"), particularly considering the reason for its formation and degeneration during the course of ontogeny and
3. the development of fossulae.
Work was possible only due to newly developed methods for preparing thin sections, etching and preparation using chisels This led to additional knowledge, presented in the systematics section, and to a more reliable way of identification of the characteristics and consequently to a more sophisticated classification. The genus *Sassendalia* with the species *Sassendalia turgidiseptata* as well as the species *Pseudotimania latifossulata* are new. Furthermore, the following species were analysed: *Bothrophylumm conicum* Trautschold

1879 sensu Dobrolyubova 1937, *B. conicum robustum* Dobrolyubova 1940, *B. pseudoconicum* Dobrolyubova 1937, *Gshelia rouilleri* Stuckenberg 1888 sensu Dobrolyubova 1940, *Timania schmidti* Stuckenberg 1895, *Pseudotimania mosquensis* (Dobrolyubova 1937), *Caninophyllum calophylloides* (Holtedahl 1913), *Yuanophyllum* sp., *Campophyllum kiaeri* Holtedahl 1913, *Lithostrotion* (*Siphonodendron*) *affine* (Martin 1908). [original summary]

Björn Neuman In Memoriam

By Dr. J. Fredrik Bockelie, Norwegian petroleum Advisory Company, Sagex

Bjorn Neuman died on May 17th 2006 in Karlstad, Sweden, after some time of illness.

Björn was born in Skövde in Sweden, but grew up on the island of Lidingö at Stockholm. He studied and graduated at the University of Uppsala. After his graduation he was employed at the Palaeobiological Institute in Uppsala for some years until he was employed as a Lecturer at the University of Bergen, Norway in 1972 at the age of 37. The Bergen University was very pleased to have a well qualified and recognized palaeontologist. However, he was the only palaeontologist at that university. Consequently contacts with fellow researchers world wide was a necessity.

He taught historical geology and palaeontology both at undergraduate and graduate level. Throughout his years at the Bergen University he supervised and brought many students through their thesis work to their graduation. He also had one phD student whom he guided through his work. He was very popular amongst his students and drew large numbers of students to his classes.

Björn Neuman was an internationally recognized palaeontologist. His most important contributions were within macropalaeontology with the main emphasis on Palaeozoic rugose corals, in particular from the Upper Ordovician and Silurian from Sweden (Dalarna and Gotland),

from the Oslo Region of Norway and from Estonia. His coral studies are of high quality and with a methodology which he developed using series of thin sections. Björn studied the ontogeny, growth related to palaeoenvironments and not the least was his interest towards understanding the morphology and systematics of the rugose corals. He had an integrated approach to this study, and his studies were leading amongst many palaeontologists. Consequently he established a lot of international contacts with research environments in Europe, USA and China and gave many talks at international conferences. Even after his retirement he continued his work with other well known reasearchers right until the end. Björn had a very healthy attitude to research and always clearly separated observations from interpretations. This type of working will show that his studies will remain important contributions to the scientific community for many years to come.

His interest in museum work and sharing knowledge with the public resulted in his appointment as head of the museum council for the geological collections and exhibitions in conjunction with the 75 years anniversary for Bergen Museum in 1975. He continued in this position afterwards and was responsible for the modernisation of the museum. He became honourable member of the Bergen and Adjacent areas geological Association, and association for amateur geologists which he initiated. His enthusiasm for geology was highly appreciated both within the association and amongst the general public.

Björn Neuman was elected as Head of the Geological Institute, Department A for the year 1988-89.

NEWS & VIEWS

Canada / news & views by Graham Young

Geological Survey of Canada
Wayne Bamber has recently completed a large monograph on Permian colonial rugose corals from western and northwestern Pangaea, in collaboration with **Jerzy Federowski** and **Cal Stevens**. This will be

published in January, 2007 by NRC (National Research Council of Canada) Research Press under their monograph publishing program. It is a taxonomic revision and biostratigraphic and paleogeographic analysis of all Lower Permian colonial rugose corals occurring along the former margins of Pangaea, from the present day Urals, through the Arctic, western North America, central America and western South America.

University of Saskatchewan
Brian Pratt is progressing on: (1) *Bonnia-Olenellus* Zone archaeocyaths from the southern Rocky Mountains; (2) *Nevadella* Zone archaeocyaths from the Northern Rocky Mountians; and (3) Lower Cambrian and Lower Ordovician coral material from the southern Rocky Mountains and western Newfoundland, respectively. A previous graduate student found some small *Syringopora*-like forms in the uppermost Famennian of the Rocky Mountains and he hopes that this material will be written up soon. Forthcoming is a Geological Association of Canada special publication on epeiric seas, edited by **Brian** and **Chris Holmden**, and this will contain Brian's paper on small Upper Ordovician microbial patch reefs from the Saskatchewan subsurface. Locally they contain calcisponge-like framebuilders which he hopes to describe in more detail later.

University of Manitoba and Manitoba Museum
Bob Elias welcomes **Boo-Young Bae** (from Andong National University, Korea) as a Postdoctoral Fellow. **Boo-Young**, **Bob**, and **Dong-Jin Lee** (Andong National University) are completing morphometric and paleobiologic studies of cateniform tabulates, including *Manipora*, from the Ordovician of Manitoba. Multivariate analysis is being applied for differentiation of closely related species, and life-history strategies in response to environmental conditions are being examined in detail. Together with **Mari-Ann Motus** (Tallinn University of Technology), similar work has been started on *Eofletcheria* and *Catenipora* from the Ordovician of Estonia.
Bob, **Dong-Jin**, and **Sung-Kyu Woo** (Andong National University) are preparing a publication on corallite increase and mural pores in two

species of *Lichenaria* from the Ordovician of Tennessee. The degree of paleobiologic complexity and level of colony integration are surprisingly high for a tabulate coral that is considered to be primitive.
Adam Melzak's Ph.D. dissertation on rugose corals of the Late Ordovician to earliest Silurian Vauréal, Ellis Bay, and Becscie formations of Anticosti Island, Québec, is being prepared for publication.
Raegan Porter completed her M.Sc. thesis in 2005, supervised by **Bob Elias** and **Graham Young**, on paleoenvironmental and paleoecological reconstruction of a stromatoporoid/coral-rich Silurian unit in southern Manitoba.
Lori Stewart completed her B.Sc. thesis in 2006, on borings and their occupants in colonial corals and stromatoporoids from an Ordovician unit in Manitoba. This is the earliest known occurrence of lingulid brachiopods nestled within *Trypanites* borings.
Graham is studying two newly identified Ordovician Konservat-Lagerstätten in north-central Manitoba. These sites represent shoreline and nearshore depositional environments. They lack corals, but their biotas include a variety of unusual invertebrate fossils. Graham is currently examining three-dimensional hydrozoan medusae from one of the sites. **Sean Robson** (research associate at the Manitoba Museum) is beginning a project on beautifully preserved Ordovician conularids from a site on the west shore of Lake Winnipeg.
Both **Bob Elias** (University of Manitoba) and **Graham Young** (Manitoba Museum, adjunct professor at U of M) continue their invitation for inquiries and applications from students interested in graduate studies on Paleozoic corals.
[http://www.umanitoba.ca/science/geological_sciences/people/faculty/elias/elias.html see also "announcements"]

China / news & views by Xiangdong Wang

Xiangdong WANG was very busy on organizing the IPC held in June 2006 in Beijing and organizing the ICCP2007 in June in Nanjing.
Xiaojuan WANG has finished her Ph'D thesis and gone to Korea for 6 months with Prof. Dongjin LEE. Other graduate students are still on the way to do their thesis, Feng ZHANG (for Ph'D) on Ordovician

tabulatan corals with help of supervision by Prof. Dr. Dongjin LEE (Korea), Yuping QI (for Ph'D) on Carboniferous and Permian conodonts with help of supervision by Zhihao WANG (Nanjing, China), Yeqiang ZHANG (for Ph'D) on carbonate sedimentology and microbial reefs, Bo CHEN (for Master) on stable isotope geochemistry based on fossil materials.

France / news & views by Bernard Lathuiliere

Shaahin Zaman begins his phD thesis at Nancy with **Bernard Lathuiliere**, on the controls of the shape in Jurassic plocoid stylinid-like corals.
Cédric Carpentier and **Bertrand Martin-Garin** are working on publications that follow their thesis on Jurassic carbonate platforms and reefs.
Bernard Lathuiliere is mainly working at a pluridisciplinary study on a coral-rich Upper Jurassic sediments of Bure (Lorraine, France). His next long term target is the participation in the revision of Ttreatise, for the Jurassic scleractinians.

Germany / news & views by Klemens Oekentorp

Olga L. Kossovaya (VSEGEI, St.-Petersburg) and **Dieter Weyer** (Berlin) visited **Oekentorp** in Münster from 17. to 18. of August 2006. They studied the famous collection of Upper Permian rugose corals from Timor/Indonesia and other localities, stored at the Branch of coral research (Forschungsstelle für Korallen-Palaeozoologie) of the Geologisch-Paläontologisches Institut, University of Münster. Their current research concerns especially biostratigraphy of the Upper Paleozoic corals, but also evolutional events and crises, their biotic and abiotic reasons as well as the microstructural problems. The following days they continued their studies visiting **Stefan Schröder** at the Institute of Palaeontolgy of the University of Cologne.

Poland / news & views by Tomasz Wrzolek & Mikołaj Zapalski

Two M.Sc. students of **Wrzołek**, **Monika Jasińska** and **Jarosław Krupa**, continued their work on some Devonian Rugosa from the Holy Cross Mts. They have visited Poznań in early 2006, where they were taught to mount specimens with epoxy resins and then they used their knowledge in Sosnowiec – mechanical resistance of epoxy resins is much better than of the Canada balm; also impregnation of clayey fillings by resins allows for much better adhesion of mounted specimens to glass.

Jarosław Krupa cut some mostly solitary corals from the Givetian strata of Kostomłoty area; his new thin sections and some of older peels and sections of Wrzołek were used to study representatives of *Stringophyllum* among these corals, with comparative material available from the other outcrops in the Holy Cross Mts and from the paleontological literature. Jarek Krupa (now J. Krupa M.Sc.) has already finished his M.Sc. Thesis and plans to prepare a paper.

Monika Jasińska sectioned the newly collected *Hexagonaria hexagona* from the Kowala quarry, also the comparative material of "*Hexagonaria davidsoni*" from the Jaźwica quarry. She is expected to present her M. Sc. Thesis in the days to come (December 2006); I still hope that she will also present a MS on results of her study.

There is also a group of no less than five B. Sc. and M. Sc. students of **Wrzołek**, so potentially a strong working group, but they will be presented only if and when they make significant progress in their projects. [Wrzołek]

Mikołaj Zapalski is currently working on his Ph. D. Thesis on the Devonian tabulate corals from the Middle/Upper Devonian of the Central (Kielce) Region of the Holy Cross Mts., Poland. Besides that he co-authored two papers about biodiversity of benthic animals in the Devonian of Ardennes (co-authored with **D. Brice**, **B. Hubert**, **B. Mistiaen** and **J.-P. Nicollin**). The papers have been submitted, one to *Acta Geologica Polonica*, the other to the *Bulletin de la Société Géologique de France*. The first one presents the database for the distribution of over 700 species of stromatoporoids, tabulates and brachiopods, the second paper analyses their vertical distribution. The

same authors plan to prepare the third article, concerning biogeographical affinities of these faunas. [Zapalski]

Romania / news & views by Daniel Ungureanu

name: Daniel Ungureanu
studies: M.S. in Geology, Ph.D. scholarship in Paleontology (Upper Jurassic Romanian sponges) within Faculty of Geology and Geophysics in the University of Bucharest
specialty: Systematic Paleontology and Taxonomy of Porifera
current work: Middle and Upper Oxfordian (Upper Jurassic) sponges, Upper Ladinian and Carnian (Middle and Upper Triassic) sponges. These studies are made within Romania: Dobrogea region (Jurassic), Brasov (Trias), Mt. Rarau (Upper Ladinian and Carnian), Popina Island (Upper Ladinian). The subject of study are Hexactinellida, Lithistida and Calcarea
general interest: Romanian fossil sponges - Triassic, Jurassic, Cretaceous and Neogene Porifera, Chaetetids and Stromatoporoids
[see also in "new / changed addresses"]

USA / news & views by Rosemarie Baron-Szabo

George Stanley's research projects focused on corals, cnidarians and reef invertebrates, especially those of Triassic age. He studied silicified sponges, corals, mollusks and other reef organisms from the Alexander and Wrangellian terranes of Alaska and the use of these faunas in reconstruction of the ancient paleogeography of western North America. Other research (with collaborators) was on Upper Triassic corals of Timor and Triassic-Jurassic strata and fossils in Sonora, Mexico also on a newly discovered Lower Jurassic reef mound.
He is currently engaged in work on the Lower Cambrian Chengjiang biota of southeastern China. These include the first soft-bodied anemone which may be the ancestor of scleractinians, jellyfish-like hydrozoans and ctenophores. [Baron-Szabo]
The **Third International Symposium on Deep-Sea Corals** was held at the Rosenstiel School of Marine and Atmospheric Science, University of Miami November 28 – December 2, 2005. It was organized by **Robert George** (George Institute for Biodiversity and Sustainability)

and **Robert Brock** (NOAA). There were 260 participants from 29 countries at this meeting, which was almost double the number from the second symposium held in Erlangen (2003) and triple that of the first in Halifax (2000). There were 102 oral presentations and 88 posters. Session themes included: Systematics and Zoogeography of Deep-Sea Corals; Paleontology of Deep-Sea Corals; Habitat Mapping, Sampling, and Characterization; Coral Biology, and Climate Change. By my count, at least 23 of these presentations dealt with some aspect of fossil corals. Some of the topics covered in the meeting included: recent advances in molecular taxonomy, mapping regions of high deep-water coral biodiversity, age determination, community structure, the fluctuating aragonite saturation horizon, coral growth and reproduction (especially of *Lophelia pertusa*), conservation of deep coral banks, and studies using ancient DNA markers. The results of the symposium will be published in the *Bulletin of Marine Science* as volume **80** (2) in March 2007. [Stephen Cairns, 9 December 2005]

BIBLIOGRAPHY
Sponges

Brückner, A. & Janussen, D. 2005. The first entirely preserved fossil sponge species of the genus *Rossella (Hexactinellida)* from the Upper Cretaceous of Bornholm, Denmark. *Journal of Paleontology* **79** (1), pp 21–28.
A new lyssacinosan hexactinellid, *Rossella bromleyi* n. sp., is described from the Upper Cretaceous of Arnager Pynt, Bornholm (Denmark). The sponge shows a cup-shaped form with a broad, moderately dense root tuft, which contains three- and four-rayed, orthotropal anchors characteristic for *Rossella*. The skeleton is composed of bundles of diactines, hexactines of two orders, and pentactines. Diactine bundles are mainly in the growth direction or diagonal to it. Hypodermalia are pentactines with the paratangential rays protruding beyond the outer surface of the sponge body. [original abstract; Janussen]

Deng Zhan-qiu 2005. Middle Triassic sponges from Qingyan, Guizhou. *Acta Palaeontologica Sinica* **44**, 2; pp 283-295, 2 tabs., 1 pl. [in Chinese with English abstract]
Middle Triassic sponges were studied in this paper. Three new genera and their species were described and they are *Cohartmanina bangtoupoensis* (Stiller), *Micraulospongia leidapoesnis* gen. et sp. nov. and *Parahexactinoderma qingyanensis* gen. et sp. nov. from the Qingyan Formation. [original abstract; Oekentorp]

Fallon, S. J., M. T. McCulloch & T. P. Guilderson, 2005. Interpreting environmental signals from the coralline sponge Astrosclera willeyana. *Palaeogeography, Paleoclimatology, Palaeoecology* **228** (1–2), pp 58–69.
[Variations in ratios between elements as the sponge skeleton is secreted were compared with thickening cycles on the outer edge that correspond to 2–3 year intervals. Sr/Ca ratio showed weak correlation with the temperature records. Signal smoothing due to thickening or other control on Sr skeletal partitioning limits the use of this ratio as an indicator of water temperature – Stearn].

Rigby, J. K., G. A. Linder, & C. H. Stevens, 2004. A new occurrence of the "hydrozoan" *Radiotrabeculopora reticulata* Fan, Rigby and Zhang, 1991, in the Permian of California. *Journal of Paleontology* **78**, pp 410–413. [Stearn]

Rosenheim, B. E, P. K. Swart & S. R. Thorrold, 2005. Minor trace elements in sclerosponge *Ceratoporella nicholsoni*: Biogenic aragonite near the inorganic endmember. *Palaeogeography, Palaeoclimatology, Palaeoecology* **228**, (1–2), pp 109–129.
[Ba/Ca, Mg/Ca, Pb/Ca ratios were compared with Sr/Ca ratios which have been shown to reliably record seasonal-scale temperature changes in sclerosponges. Sclerosponge aragonite incorporates trace elements with less vital effects than other organisms. Mg/Ca ratios show an inverse correlation to temperature. Mg/Ca and Ba/Ca show strong positive correlation and U/Ca values are 2.5x higher in sclerosponges than corals and show an insignificant correlation with temperature-dependent Sr/Ca ratios – Stearn].

Schmid, D. U. & W. Werner, 2004. *Sobralispongia densespiculata*, une nouvelle "coralline sponge" dans le Jurassique supérieur du Portugal. *Geobios* **38** (5), pp 653–666.
[Crustose habit, primary spicule skeleton of very densely packed styles and subtylostyles arranged in a plumose architecture, microscleres of possibly aster-type and microgranular to fibrous secondary calcareous skeleton probably originally were of high-Mg calcite. Order Axinellida is proposed – Stearn].

Schöne, B. R., E. Dunca, J. Fiebig, & M. Pfeiffer, 2005. Mutvie's solution: an ideal agent for resolving microgrowth structures of biogenic carbonates. *Palaeogeography, Palaeoclimatology, Palaeoecology* **228** (1–2), pp 149–166.
[Annual and subannual growth structures in skeletons are resolved by Mutvie's solution which etches biogenic carbonates and calcium phosphates, fixates the soluble and insoluble organic matrices and fibers, and stains mucopolysaccharides. Growth lines are stained blue. A

sclerosponge specimen, among others, is used to illustrate the technique – Stearn].

Wen Wu, Ai-Hua Yang, Dorte Janussen, Michael Steiner & Mao-Yan Zhu 2005. Hexactinellide Sponges from the Early Cambrian Black Shale of South Anhui, China. *Journal of Paleontology* **79** (6), pp 1043–1051.

4 new and completely preserved Hexactinellida sponges are described from the Early Cambrian black shale in South Anhui Province, China. These sponges occur in the middle part of the Huangboling Formation which belongs to the Early Canglangpuian Stage according to trilobite biostratigraphy. *Metaxyspongia skelidata* n. gen. et n. sp. and *Hexatractiella dongzhiensis* n. sp. both are subcylindrical thin-walled sponges. The former species has the delicate skeleton with at least 3 arrays parallel to the axis constructed by hexactins or its derivatives, whereas the latter has a skeletal network consisting of diagonally oriented, rectangularly or rhomboidally spaced stauracts or stauract-based and diactin spicules and the special spicules whose vertical rays are markedly elongate in comparison to short, lateral rays. These two new sponges are included into the Protospongiidae. *Ratcliffespongia distinctostia* n. sp. is a conical-cylindrical sponge with numerous large parietal openings through the thin wall which is composed of irregularly oriented coarse stauractins and derivatives of hexactins, and assigned to the Hintzespongiidae. *Phormospongia dongzhiana* n. gen. et n. sp. has a skeletal network composed of large diactins and stauractins arranged in bundles which cross each other to form the rectangular or rhomboidal nets. With these new sponges, the first occurrences of the families Protospongiidae and Hintzespongiidae and of the genus *Hexatractiella* can be traced back to the Early Cambrian. [original abstract; Janussen]

Stromatoporoids

Adachi, N., Y Ezaki, & J.W. Pickett [in press]. Marked accumulation patterns characteristic of Lower Devonian stromatoporoid bindstone: Palaeoecological interactions between skeletal organisms and microbes. *Palaeogeography, Palaeoclimatology, Palaeoecology* – available online Nov. 2005.
[The laminar stromatoporoids "*Aculatostroma*" (the main framework builder) and *Syringodictyon* are intergrown with microbiolites in the Garra Formation of New South Wales Australia. The thin microbiolite layers suggest disruption of skeletal growth by harsh conditions. Repeated accumulations at various scales indicate antagonistic relationships within skeletal organisms and between skeletal organisms and microbes within their habitable ranges. See also Fossil Cnidaria & Porifera Symposium, Graz, 2003 – Stearn].

Begeal, C. J., W. S. F. Kidd, A. Shoonmaker, D. Bradley & A. Hams, 2004. Ripogenus Formation, northern Maine: age, sequence stratigraphy and significance of syndepositional tectonism. *Geological Society of America, Abstracts with Programs* **36** (2), p. 89.
[A prominent erosion surface cuts stromatoporoid bearing lenticular limestones of possible late Ludlow to early Lochkovian age – Stearn].

May A. 2005. Die Stromatoporen des Devons und Silurs von Zentral-Böhmen (Tschechische Republik) und ihre Kommensalen. *Zitteliana* **B25**, pp 117–250, 6 figs., 33 tabs., 43 pls., München, 15.08.2005; ISSN 1612-4138.
All stromatoporoid species described by Pocta (1894) from the Silurian and Devonian of Bohemia have been revised. Very extensive new collections of stromatoporoids are coming from quarries near the Bohemian village Konìprusy (ca. 30 km southwesterly of Prague). These stromatoporoids have been collected in the Konìprusy Limestone of Pragian age and the Acanthopyge Limestone of Eifelian to Lower Givetian age.
The Konìprusy Limestone contains a large reef complex. Most of the Koněprusy Limestone succession including all stromatoporoids and the

reef complex belong to the *kindlei* conodont zone (middle Pragian). The stromatoporoids and the other reef-building organisms show a clear dependence on the facies (resp. position within the reef complex). The stromatoporoid fauna of the Konìprusy Limestone contains 15 species, but only 7 of them have been described by Pocta (1894). The new species *Stromatoporella anamariae* n. sp. is described. The Pragian of the Barrandian was no refuge for the stromatoporoids of the Eastern Americas Realm.
Biogeographically, all stromatoporoid faunas of Bohemia belong to the Old World Realm. Nevertheless, the stromatoporoid fauna of the Acanthopyge Limestone is much more cosmopolitic than the fauna of the Konìprusy Limestone. The stromatoporoid fauna of the Acanthopyge Limestone is composed of 19 species, all of which are known from other occurrences in Europe, Asia, or Australia – except of *Actinostroma vastum* Pocta, 1894 and *Stromatoporella pertabulata preisleriensis* n. ssp.
The stromatoporoids of the Konìprusy Limestone frequently contain commensalic "worm"-like organisms and only rarely the new auloporoid tabulate coral *Syringopora praehanshanensis* n. sp. In the Acanthopyge Limestone the new species *Syringopora hladili* n. sp. and three other *Syringopora* species occur.
Possible reasons for the scarcity of stromatoporoids and reefs in the Lower Devonian may be the water temperature, the lack of branching and encrusting stromatoporoids, and the scarcity of commensalic *Syringopora* corals. [original abstract; May]

Nguyen, H. H., 2003. Upper Devonian sediments, mass extinction of macrofossils, and Frasnian / Fammenian boundary in north Viet Nam. *Journal of Geology (Viet Nam)*, Ser. B, **22** (2003), pp 19–30.
[The stratigraphy of Givetian, Frasnian and Famennian beds in Viet Nam is reviewed and the macrofossils in each of the stages are listed. Of stromatoporoids, 22 genera are reported from Givetian beds, 12 from Lower and Middle Frasnian beds and 6 genera from uppermost Famennian beds. The F/F boundary is drawn in 3 typical sections on the disappearance of several groups of macrofossils, including the

stromatoporoids, and the appearance of Famennian conodonts and forams – Stearn.]

Rugosa

Aretz M. 2005. The coral fauna of the Holkerian/Asbian boundary stratotype section (Carboniferous) at Little Asby Scar (Cumbria, England) and implications for the boundary. *Stratigraphy* **2**, issue 2, pp 167-190. [Schroeder]

Berkowski B. 2006. Vent and mound rugose coral associations from the Middle Devonian of Hamar Laghdad (Anti-Atlas, Morocco). *Geobios* **39**, pp 155–170.
[key words: Rugosa corals, vents, mud mounds, Middle Devonian, Anti-Atlas, Morocco]
Peculiar associations of small, solitary, deep-water rugose corals are described from the Middle Devonian buildups situated in the easternmost part of Hamar Laghdad area of southern Morocco. The most of them are monospecific and consist of simplified taxon "*Amplexus*" *florescens* but one is polyspecific and composed of specimens belonging to four different species representing three families. These rugosan associations form isolated nest-like aggregations where numerous densely packed specimens are arranged mostly in life position. The polyspecific and two monospecific associations are interpreted as growing in close proximity to venting fields. They reveal a unique "calice-in-calice" recolonization pattern expressed by successive settlement of juvenile specimens in the calice of dead individuals. This pattern was presumably a consequence of selective survival of coral larvae settling in extreme vent habitats. Although, the "calice-in-calice" pattern is common in both, mono- and polyspecific associations, there are differences expressed in the character of larval attachments and various types of the calice fillings. The trophic interaction between corals and ostracods is discussed.

Additionally, associations of "*Amplexus*" *florescens*, not displaying "calice-in-calice" pattern of growth have been found within the mound where polyspecific association occurs. These are interpreted as growing away from venting fields. Comparisons of *Amplexus*-type coral faunas with the other North African and European corals allow the classification of these ampleximorph rugosan taxa as characteristic biotic components of the Middle Devonian mound environments influenced by venting activity. Two new genera and species, *Weyeraia prima* and *Vesiculolasma erfoudi*, are introduced. [original abstract; Berkowski]

Boulvain F. & Coen-Aubert M. 2006. A fourth level of Frasnian carbonate mounds along the south side of the Dinant Synclinorium (Belgium). *Bulletin de l'Institut royal des Sciences naturelles de Belgique, Sciences de la Terre* **76**, pp. 31-51.
An additional level of Frasnian mounds has been recognized in the La Boverie quarry at Rochefort and in four boreholes drilled in the Nord quarry at Frasnes, on the south side of the Dinant Synclinorium. It occurs between the Arche and Lion Members belonging respectively to the Moulin Liénaux and Grands Breux Formations, in the middle part of the stage. The new name of La Boverie Member is introduced at the top of the Moulin Liénaux Formation, for the deposits lying between the Arche and Bieumont Members; the latter is the basement of the Lion mound. The same succession has been observed in the sections of Moulin Bayot close to Vodelée, in the southeastern part of the Philippeville Anticlinorium. The La Boverie Member starts with rather deep bioclastic sediments, after the collapse of the carbonate factory at the top of the Arche mound. In the upper part of the lithostratigraphic unit, there is a thin buildup characterized by relatively shallow facies. The solitary rugose corals *Macgeea boveriensis* n. sp., *M. socialis* Soshkina, 1939 and *Sinodisphyllum posterum* (Ivaniya, 1965) collected in the lower part of the La Boverie Member are described in detail whereas the revision of *S. kielcense* (Rozkowska, 1979) occurring in the Bieumont Member is also provided. [original abstract; Coen-Aubert]

Chen Jian-Qiang, He Xin-Yi & Tang Lang 2005. Early Silurian (Telychian) Rugose coral fauna of Daguan Area, Northern Yunnan. *Acta Palaeontologica Sinica* **44**, 2; pp ??

The late Early Silurian (Telychian) rugose coral fauna from Daguan area, northeast Yunnan is studied by the present authors. The Lower Silurian Series in the Daguan region may be divided into the following units:

overlaying strata: Lower Devonian Cuifengshan Formation
disconformity
Telychian-Rhuddanian, Lower Silurian:
Caitianwan Formation (mid-late Telychian)
Daluzhai Formation (mid-late Telychian)
Sifengya Formation (early Telychian)
Huanggexi Formation (mid-late Aeronian)
Longmaxi Formation (Rhuddanian-early Aeronian)
conformity
Upper Ordovician: Guannyinqiao Formation
Wufeng Formation

In the Huanggxi Formation rugose corals are scarce, but the Sifengya Formation (early Telychian) yields numerous rugosans. Up to now, 18 genera and 34 species are reported in the Sifengya Formation, while the Daluzhai Formation merely contains rugosans including 9 genera and 11 species (Table 1).

Altogether 9 species assigned to 12 genera are described in this paper, among them 1 genus and 5 species are new. They are: *Protoketophyllum daguanense* gen. et sp. nov., *Crassilasma huanggexiense* sp. nov., *Pseudophaulactis heae* sp. nov., *P. convolutus* sp. nov. and *Shensiphyllum minor* sp. nov. In addition, the coral fauna characters of the Sifengya and Duluzhai are briefly discussed. [original abstract; Oekentorp]

Chwieduk E. 2005. Late Devonian and early Carboniferous Rugosa from Western Pomerania, northern Poland. *Acta Geologica Polonica* **55** (4), pp 393-443.

[key words: Rugosa, Late Devonian, Early Carboniferous, Palaeoecology, Palaeogeography, Western Pomerania, Poland]

The taxonomic description of the Late Devonian and Early Carboniferous Rugosa from the boundary area of the Precambrian East European Craton and the Palaeozoic platform of Central Europe is presented. Palaeontological analysis and the stratigraphical distribution of the corals in Western Pomerania enabled recognition of several faunistic events, which reflect evolutionary trends in rugose corals.
The pre-crisis Frasnian coral fauna, dominated by colonial forms both massive [*Disphyllia laxa* (Gürich, 1896), *Hexagonaria hexagona kowalae* Wrzołek, 1992, ?*Frechastraea*] and branching [*Disphyllum kweihsiense* Yoh, 1937, *Peneckiella* ?*fascicularis* (Soshkina, 1952), *Thamnophyllum monozonatum* (Soshkina, 1939), *Peneckiella szulczewskii* Różkowska, 1979], developed on the carbonate platform extending along the edge of the East European Craton. The similarity of these faunas to Rugosa faunas from southern Poland is significant.
The coral fauna was reduced significantly after the Kellwasser crisis. Colonial corals disappeared altogether and solitary dissepimented forms were markedly reduced. The subsequent Late Famennian radiation caused a significant quantitative and qualitative differentiation of the coral faunas. In addition to the well-known '*Cyathaxonia* fauna', warm and shallow-water solitary corals appeared in the latest Famennian. The stratigraphically important taxa of the latest Famennian include: *Campophyllum* Milne-Edwards & Haime, 1850, ?*Palaeosmilia aquisgranense* (Frech, 1885), *Bounophyllum pomeranicum* sp. nov. and *Guerichiphyllum kowalense* Różkowska, 1969.
The latest Famennian regression caused subdivision of the Pomeranian area into at least two sedimentary basins, separated by shallows, with peculiar ecological conditions, and the appearance of numerous endemic taxa. This regressive interval contains, however, numerous levels yielding less restricted faunas, which suggest the intermittent appearance of more open-sea conditions. [original abstract; Chwieduk]

Cózar, P. & Somerville, I.D.. 2005. Stratigraphy of Upper Viséan rocks in the Carlow area, southeast Ireland. *Geological Journal* **40** (1), pp 35-64.
[includes description of the distribution of rugose corals from the Upper

Visean Ballyadams and Clogrenan Formations in SE Ireland, with one plate of illustrated rugose corals; Somerville]

Cózar P. 2005. Foraminifera, calcareous algae and rugose corals in Brigantian (late Visean) limestones in NE Ireland. *Proceedings of the Yorkshire Geological Society* 55, pt 4, pp 287-300. [Schroeder]

Cózar, P., Somerville, I.D., Aretz, M. & Herbig, H.-G., 2005. Biostratigraphical dating of Upper Viséan limestones (NW Ireland) using foraminiferans, calcareous algae and rugose corals. *Irish Journal of Earth Sciences* **23**, pp 1-23.
[includes description of the distribution of rugose corals from the Upper Visean Bricklieve, Glencar and Dartry Limestone Formations in NW Ireland, with one plate of illustrated rugose corals; Somerville]

Ezaki Y. & Yasuhara Y. 2005. Regular mode of increase, and constrained but variable growth, in the Silurian rugose coral *Stauria favosa*. *Lethaia* **38**, (4), pp. 297-303. [Coen-Aubert]

Fall L.M. 2005. Famennian rugose corals live it up; increased longevity of rugose corals following the end-Frasnian extinction. *In*: Abstracts with Programs: *Geological Society of America* 37, issue 7, p. 384. [Schroeder]

Fedorowski, J., Bamber, E. W. and Stevens, C. H., [in press]. Lower Permian colonial rugose corals, western and northwestern Pangaea: taxonomy and distribution. NRC Research Press, Ottawa.[Young]

Gomez-Herguedas A. & Rodríguez S. 2005. Estudio de los corales rugosos con dissepimentos del Serpujoviense (Mississippiense) de la seccíon de La Cornuda (Córdoba, Espana). [Serpukhovian (Mississippian) rugose corals with dissepiments from the La Cornuda section (Córdoba, Spain)]. *Coloquios de Paleontología* **55**; pp 51-101. [in Spanish]
[key words: Rugosa, Taxonomy, Serpukhovian, Guadiati Area, Sierra Morena]

This paper deals with the dissepimented rugose corals from La Cornuda (Córdoba, Spain). The section is composed of terrigenous and carbonate sediments, Serpukhovian in age (Early Namurian). Rugose corals have been identified only in units 1 and 7; 23 species that correspond to 13 genera belonging to 4 suborders, have been identified. A new genus and two new species included in the subfamily Amygdalopyllinae are decribed here, *Amygdalophyllum cornudensis* sp. nov. and *Guadiatia pseudocoloniale* gen. nov., sp. nov. Two endemic genera belonging to the Lithostrotionidae and the Axophyllidae are maintained in open nomenclature owing to the scarcity of the material. [original abstract; Oekentorp]

Liao Weihua 2006. Biodiversity of Devonian Rugose Corals from South China. *In*: **Rong Jiayu et al.** (eds), Originations, Radiations and Biodiversity Changes - Evidences from the Chinese Fossil Record. pp 417-428 + 889-890. Beijing Science Press. [Schroeder]

Liao Weihua and Hubmann B. 2006. Comparison of the Givetian Rugose Coral *Argutastraea* of Dushan (South China) and Graz (Austria). *Acta Palaeontologica Sinica* **45** (1), pp 52-59. [Schroeder]

Liao Weihua, Ma Xueping and Sun Yuanlin 2006. Some Devonian rugose corals from Panxi (=Poshi), Huaning County, Yunnan Province. *Earth Science Frontiers* **13** (6), pp 234-246. [Schroeder]

May A. 2006. *Radiastraea* (Anthozoa, Rugosa) from the Emsian and Eifelian (Devonian) of Aviados, northern Spain. *Bulletin of Geosciences* **81** (3), pp 151-162.
[key words: Anthozoa, biogeography, Devonian, systematics, rugose corals, Spain]
This paper describes a colonial rugose coral from the upper Emsian or lower Eifelian of Aviados (Provincia León, northern Spain). This colony, which has been figured as *Phillipsastrea torreana* (Milne-Edwards & Haime, 1851) by Almela & Revilla (1950), belongs in fact to *Radiastraea arachne* Stumm, 1937. It is the first reported occurrence

of the genus *Radiastraea* from Europe, and an example of close palaeobiogeographical relationships between the Cantabrian Mountains and North America during the Emsian. *Cantabriastraea* Schröder & Soto, 2003 is probably only a marginal case of *Radiastraea* Stumm, 1937. The lectotype of *Phillipsastrea torreana* var. *minuta* Almela & Revilla, 1950 from the upper Emsian to lower Eifelian or upper Givetian of Aviados (Provincia León, northern Spain) is designated and described in detail. It is a subspecies of *Phillipsastrea torreana* (Milne-Edwards & Haime, 1851) with 10-12 major septa and a tabularium diameter of 1.9-2.1 mm. [original abstract; May; recent papers of this journal and some abstracts of its older papers are available on-line at: http://nts2.cgu.cz/servlet/page?_pageid=245,247,732&_dad=portal30&_schema=PORTAL30]

McLean, R. A., [in press]. Kyphophyllid rugose corals from the Frasnian (Upper Devonian) of Canada and their biostratigraphic significance. *Palaeontographica Canadiana*. [Young]

Plusquellec, Y., 2005. *Hadrophyllum asturicum* n.sp., Rugosa du Dévonien de la Chaine Cantabrique / Espagne): seul représentant du genre hors l´Amérique du Nord. *Neues Jahrbruch f. Geologie u. Paläontologie, Monatshefte* **2005 (1)**, pp 46–64, 7 figs, 1 tab.
[key words: Hadrophyllidae, *Hadrophyllum*, Dévonien, Espagne, Amérique du Nord, nouvelle espece]
The examination of the rugose corals assigned to *Hadrophyllum orbignyi* (Middle Devonian of Asturias, NW Spain), shortly described and incompletely figured by ALTEVOGT (1967), allows to confirm its generic assignment but a new species must be erected: *H. asturicum*. A critical review of the species referred to *Hadrophyllum* shows that the genus is only represented by two species, namely *H. orbignyi* and *H. asturicum*. *H. asturicum* is the only representative of the genus in North Gondwana. Palaeobiogeographic relationships between eastern North America provinces of Laurussia and North Gondwana are attested by its occurrence. [original abstract; Oekentorp]

Plusquellec Y. 2006. Révision de *Hadrophyllum orbignyi* Milne-Edwards & Haime, 1850 (Coelenterata, Rugosa) du Dévonien d´Amerique du Nord et discussion sur la systématique des Hadrophyllidae. *Geodiversitas* **28** (2), pp 199-226, 15 figs.
[key words : Coelenterata, Rugosa, *Hadrophyllum*, Devonian, North America, morphology, microstructure, systematics]
The revision of the types and "topotypes" of *Hadrophyllum orbignyi* Milne-Edwards & Haime, 1850 brings new data on this species and on the genus *Hadrophyllum*. The type species, *H. orbignyi*, is known from the Eifelian (*costatus-kokelianus* conodont zones) of Eastern Americas Realm. A lectotype is selected in the original material. A detailed study of the morphology shows important variations concerning the shape of the corallum, the length of the cardinal septum, the interseptal ridges and the fossuloids. The septal apparatus consists of costosepta, it is why the "epitheca" is lacking. The corallum is massive, no dissepiments nor tabulae, and the wall is septothecal. The fibrous nature of the septa is pointed out. The polyp enclosed widely the corallum; *H. orbignyi* was capable of automobility. The synonymy of the genus is reviewed; only two species can be referred to it, the type species and *H. asturicum*. The systematics of the "Hadrophyllidae" is revised, especially the Weyer´s one (1975) and two new sub-families, the Hadrophyllinae and the Microcyclinae n. subfam., are erected. [original abstract; Oekentorp]

Rodriguez, S., Hernando, J. M. & Rodriguez-Curt, L., 2004. Estudio de los corales cyathópsidos (Rugosa) del Viseense superior de la Unidad de la Sierra del Castillo (Córdoba, Espana). *Coloquios de Paleontologia* **54**, pp 69–82. [Study on the upper Viséan cyathopsids (Rugosa) from the Sierra del Castillo Unit (Córdoba, Spain)]
Dissepimented rugose corals are frequent in the Sierra del Castillo Unit (Guadiato Area, Ossa Morena) which is composed mainly of Viséan limestones. Cyathopsid corals from Sierra del Castillo, Sierra de la Estrella (both near Espiel, Córdoba) and Antolin (near Penarroya, Córdoba) have been studied. Seven species belonging to the genera *Siphonophyllia*, *Caninia*, *Pseudozaphrentoides*, *Haplolasma* and *Caninophyllum* have been described. [original abstract; Oekentorp]

Schröder St. 2005. Solitary Phillipsastreidae (Rugosa) from the Late Devonian of Europe and North Africa. *Journal of Paleontology* **79** (5), pp 871–883.
Macgeea is a cosmopolitan genus of Devonian rugose corals that includes numerous, generally highly variable, species. Because of its wide skeletal variation and additional trabecular dilation it is difficult to recognize taxonomically relevant characters and to separate those from ecologically induced modifications. The high variability is probably related to radiations following phases of sea level rise and is connected to bioevents. Length of major septa in ontogenetic stages allows a separation of different populations within the *Macgeea dubia* species group. However, it remains questionable if septal length is a reliable taxonomic character, indicating a phylogenetic trend, or if it is subject to large individual variability. By revising *Macgeea dubia*, we reveal its synonymy with *Macgeea heterophylloides* sensu Birenheide. In addition, *Macgeea recta* (type species of *Pexiphyllum* Walther, 1929) is discussed as an insufficiently defined taxon of problematic status. *Macgeea crassiseptata* n. sp. is also described from the Late Givetian of Morocco. The erection of the new pseudocolumellate genus *Baculophyllum* with type species *Pexiphyllum ultimum* Walther, 1929 requires a comparison with *Protomacgeea* from Poland and Australia as well as a phylogenetic discussion of the solitary Phillipsastreidae. The new genus most probably belongs to a separate lineage of the Upper Devonian *Macgeea* group but could also be considered as a descendant of the Australian Lower Devonian columellate solitary phillipsastreid species group, that has not yet been recorded from the Middle Devonian. Because of large stratigraphic gaps between the occurrences of both genera, preference is given to the interpretation of a development of polycronomorph taxa (homeomorphic taxa living at a different time) not belonging to a single lineage. This shows again the significance of stratigraphic age when comparing similar-looking taxa, which should be considered in any phylogenetic reconstruction. [original abstract; Oekentorp]

Schröder St. 2005. Stratigraphie und Systematik rugoser Korallen aus dem hohen Givetium und tiefen Frasnium des Rheinischen Schiefergebirges (Devon; Sauerland/ Bergisches Land). *Zitteliana* **B25**,

pp 39–116, 10 Abb., 14 Taf.; München. [in German, with English summary]

Recent investigations in the eastern part of the Rheinisches Schiefergebirge indicate the existence of stratigraphically significant rugose coral assemblages which can in part also be used for inter-regional stratigraphic correlations (Belgium, France, Poland), as they display always a typical faunal succession. Accordingly, six coral associations at the genus level are established, which can be used for biostratigraphic correlation of coral bearing sequences. The composition of these faunas allow assignment of ages to reef complexes where conodonts or shelly faunas are virtually absent. Although some "index species" are useful to refine these correlations, it is not possible to establish true "coral-biozones" based on current data.

Generally, the Lower Givetian fauna is characterized by a rather low diversity and is typically composed of cystimorph Rugosa (*Mesophyllum* s.l.), small charactophyllids (*Glossophyllum* sp.) and morphologically simple species of the genus *Hunanophrentis*. Obviously, these faunas show a close affinity to lower Givetian communities of the Eifel Hills, allowing a definite correlation with the well known *Mesophyllum-Glossophyllum-Hunanophrentis*-fauna of the latter (compare the "*Schlueteriphyllum-Glossophyllum*-Gemeinschaft" sensu Lütte 1993). This fauna is present in the lower to midde part of the *hemiansatus* zone.

The occurrence of stratigraphically reliable taxa in the Middle Givetian suggests the establishment of a *Grypophyllum-Spinophyllum-Dendrostella* – association which is well characterized by *Grypophyllum denckmanni*, *G. postprimum postprimum*, *Spinophyllum spongiosum* and *Dendrostella trigemme*. This association reaches from the upper part of the *hemainsatus* to the middle *varcus* zone and has close affinities with contemporaneous faunas of the Ardennes and northern France.

In the higher Middle-Givetian there is a decrease in faunal diversity, probably related to the effects of the Taghanic event, and the stratigraphical sequence between the higher middle *varcus* and upper *varcus* zone is difficult to characterize by means of rugose coral faunas. In addition, there are indications for a gradual change of faunal

composition during that time where typical Givetian faunas are increasingly replaced by faunas showing already a Frasnian aspect. The exact position of that faunal overturn is not yet known, but appears to have affected already the fauna of the higher *varcus* zone.
According to current distributional data there are no "index-fossils" which can be used to define the Givetian-Frasnian boundary exactly. The Upper Givetian of the Sauerland is characterized by a *Temnophyllum-Tabulophyllum-Macgeea*-association, laterally replaced by a *Phillipsastrea-Kuangxiastraea-Freachastraea*-association in reef-complexes. Although biostratigraphic ranges of these taxa cross the Middle/Upper Devonian boundary, at the least they can indicate an Upper Givetian minimum age which corresponds to the situation in South England. The lower boundary of the first appearance of these associations is not yet defined, but most probably it will be within the upper *varcus*- or the *hermanni*/*cristatus*-zone.
Reliable index species for the Upper Devonian in the Schiefergebirge are *Hexagonaria hexagona* Goldfuss and species of the genus *Mixogonaria* Kong. Generally, coral faunas show a close affinity to those of Western Europe but it is remarkable that they do not correspond very well with coral zones established in the Devonian of Poland. Although there are some faunal similarities near the Givetian/Frasnian boundary in the occurrence of "*Macgeea*" *ultima* and *Scruttonia sanctacrucenis*, some *Temnophyllum*-species show a close resemblance to species from the Holy Cross Mtns., it is not possible to apply the coral assemblage-zones sensu Wrzolek (1988, 1993). The latter are defined mostly on the basis of colonial forms, which probably represent (sustained) relatively shallower water environments. On the contrary, the recorded species of *Temnophyllum* show a close relationship with species known from NW Canada. A *Frechastraea*, *Phillipsastrea* and *Tabulophyllum*-fauna belonging to the Middle Frasnian can be confidently correlated with species known from the Ardennes. This association corresponds well to the *jaimiae* zone. Contrary to this, the middle Frasnian (*punctata* zone) of the Bergisch Gladbach-Paffrather Mulde is developed quite differently concerning facies as well as faunal composition, that is dominated by a typical association of abundant *Macgeea*, *Disphyllum* and *Hexagonaria*, which

are associated with the characteristic *Wapitiphyllum scaphense* n.sp. As has been expected, numerous species proved to have rather long biostratigraphical ranges. Especially species of the Middle Devonian are long ranging and single records of such taxa are not very useful for stratigraphical purposes. However, the composition of such faunas allows an age determination of all investigated localities. It can be proved that several associations of rugose corals in the Rhenish Mountains are useful for overregional correlations in the "Ardenno Rhenish Basin" sensu Tsien 1988 as well, as faunal composition shows a similar succession in the Ardennes and northern France. [original summary; Schroeder; taxonomic description covers 35 species, including 2 new species and one new subspecies: *Hunanophrentis abnormis* n.sp., *Wapitiphyllum scaphense* n.sp. and *Phillipsastrea hennahi perforata* n. ssp.]

Trotter J.A. & Talent J.A. 2005. Early Devonian (mid-Lochkovian) brachiopod, coral and conodont faunas from Manildra, New South Wales, Australia. *Palaeontographica* **273**, (1-2), pp 1-54. [Coen-Aubert]

Wang, X. D., Sugiyama, T., Kido, E., and Wang, X. J., 2006, Permian rugose coral faunas of Inner Mongolia-Northeast China and Japan: Paleobiogeographical implications. *Journal of Asian Earth Sciences*, **26**: 369-379.
The faunal characteristics, successions and geographical distribution of the Permian rugose corals in Inner Mongolia–Northeast China and Japan are reviewed using current coral taxonomy and the recently revised Permian global time scale. The co-occurrences of Cathaysian compound corals, abundant non-dissepimented solitary corals, and endemic corals indicate that Inner Mongolia and Northeast China represent an independent biogeographical entity, quite separate from South China and the Japanese terranes. However, the common occurrence in South China of Permian taxa such as Wentzellophyllum, Lonsdaleiastraea, Yatsengia, Ipciphyllum, and Waagenophyllum indicates, in a broad sense, a Tethyan affinity for the Akiyoshi and Mino terranes in Japan. Rocks from the Asselian to the Artinskian in the South Kitakami Terrane of Japan contain eleven large dissepimented

solitary and compound genera, including Huangia, Iranophyllum, Laophyllum, Polythecalis, Sestrophyllum, Wentzelella, Wentzellophyllum and Yatsengia. These genera are all typical of, and common in, South China, but are absent from coeval strata in Northeast China. Middle Permian rocks in the South Kitakami Terrane also contain rugose corals that are abundant in South China, in some cases the same species, such as Parawentzelella regularis, Waagenophyllum indicum, Waagenophyllum virgalense and Yatsengia kiangsuensis. Thus, the coral faunas from the South Kitakami Terrane indicate a close paleobiogeographical affinity with those from South China, which is consistent with the paleobiogeography based on ammonoids and bivalves. [Original abstract]

Wang X.D., Wang X.J., Zhang F. and Zhang H., 2006. Diversity patterns of Carboniferous and Permian rugose corals in South China. *Geological Journal* **41**: 329-343.
The diversity and changing patterns of rugose corals in the Carboniferous and Permian of South China are analysed by statistical analyses of 45 families, 284 genera, and 1979 species from 14 consecutive time intervals. The ancestors of Carboniferous rugose corals originated early and underwent preliminary radiation in the late Famennian, but were eliminated by the Hangenberg global regressive event, which marks the Devonian—Carboniferous boundary. Radiation of typical Carboniferous rugose corals began in the late Tournaisian, when they were represented by an abundance of columellate taxa such as Kueichouphyllum and a significant diversification of Keyserlingophyllum. A decrease in the diversity of rugose genera occurred in the Serpukhovian, followed by a change in the composition of the rugose coral assemblages at the Mid-Carboniferous Serpukhovian—Bashkirian boundary, where large dissepimented taxa with complex axial structures disappeared. In the Bashkirian the Serpukhovian taxa were replaced by compound rugosan taxa of the Geyerophyllidae, Kepingophyllidae and Waagenophyllidae. This compositional change was associated with a global regressive event, recognized in South China by the absence of upper Serpukhovian strata in many places and by several erosional surfaces in carbonate sequences

in the Lower Yangtze region. This regressive event was probably caused by an episode of glaciation in Gondwana. Subsequent transgression occurred in South China during the early Bashkirian, where a wide, uniform shallow-water platform developed in South China, on which were deposited tidal-flat dolostone and pure limestone containing compound rugose corals. Another change in the rugose coral assemblages, at the Sakmarian-Artinskian boundary, resulted in the absence from the Artinskian of representatives of typical Pennsylvanian and Early Permian families such as the Bothrophyllidae, Lithostrotionidae, Cyathopsidae, and Petalaxidae. Families uniquely typical of the Permian, characterized byWaagenophyllidae and Kepingophyllidae, dominate post-Sakmarian strata. This faunal change may be related to a major, worldwide regression, recognized at the end of the Sakmarian. Extinction of rugose corals at the end of the Permian occurred in two phases in South China. The first phase occurred at the end of the Capitanian and eliminated 47% of the families and 45% of the genera. Extrusion of the Omeishan Basalt, which is widely distributed in the western part of South China, and/or a global regression at the end of the Guadalupian could be the principal causes of this first phase of mass extinction. The second phase, which occurred at the end of the Changhsingian and is the largest extinction event in Earth's history, eliminated all remaining rugose corals.[Original abstract]

Weyer D. 2005. *Antilacca*, ein neues Rugosa-Genus aus dem mitteleuropaeischen Unterdevon. *Abhandlungen und Berichte fuer Naturkunde* **28**, pp 5-21; Magdeburg.
The new genus *Antilacca* and ist type species *Antilacca arnosti* are described from the Upper Emsian of Czechia (Suchomasty Limestone from the the Barandiann area) and Germany (olistolithic Herzynian Limestones from the Harz Mts., Greifenstein Limestone of Upper Emsian to basal Eifelian from the Rhenish Mts.). By its unusual prolongated antiseptum, the taxon enters a phylogenetic lineage *Laccophyllum*/*Hamarophyllum* > *Antilacca* > *Columnaxon* (subfamily Columnaxoninae, family Cyathaxoniidae), representing the first trend to produce a solely antiseptal columella. [original English summary; paper in German; Wrzolek]

Weyer D. 2005. Ueber *Tetralasma* Schindewolf 1942 (Anthozoa, Rugosa; Unternarbon). *Abhandlungen und Berichte fuer Naturkunde* **28**, pp 23-35; Magdeburg.
The taxon *Tetralasma* Schindewolf, 1942 (proposed as a subgenus of *Polycoelia* King, 1849) is evaluated as a clear subjective synonym of *Calophyllum* Dana, 1846. There exists only the not well preserved holotype of its type species *Calophyllum quadriseptatum* (Schindewolf, 1942) from the late Upper Tournaisian Erdbach Limestone of the Rhenish Mountains. Two further records from the same formation in the Harz Mountains (Germany) and from the upper Moscovian of the Buekk Mountains (Hungary) are misidentifications. The original subgeneric diagnosis violated the principles of homology when comparing an unfinished phase of the primary calyx ontogenesis in *Tetralasma* with final phases of the secondary postcalyx ontogenesis in *Calophyllum*. Both structures are nothing but successive growth stages within one coral specimen. [original English summary; paper in German; Wrzolek]

Wrzołek T. 2005. Devonian rugose corals of the *Phillipsastrea hennahii* species group. *Acta Geologica Polonica* **55** (2), pp 163–185. [keywords: Rugosa, Phillipsastreidae, *Phillipsastrea hennahii*, Species groups, Devonian, Givetian, Variability, Holy Cross Mts, Poland]
Massive phillipsastreid tetracorals similar to *Phillipsastrea hennahii*, defined as a *Ph. hennahii* species group, are characterized by reduced intercorallite walls (thamnasterioid or subthamnasterioid habit), by variable but generally good development of horseshoe dissepiments at the tabularium/dissepimentarium boundary, and by strongly deflected peripheral platforms at corallite margins. Seven species of the *Ph. hennahii* species group, mostly from the Givetian of southern Euramerica, Iberia and northern Gondwana, are reviewed. Two species, the Middle Givetian *Phillipsastrea sobolewi* (Różkowska 1956) and the Late Givetian *Phillipsastrea jachowiczi*, a new species described herein, both from the Holy Cross Mountains (Poland) are described and illustrated. Also described from that area is *Phillipsastrea falsa* Coen-Aubert 1987 from the Upper Frasnian. [original abstract, Wrzolek; see

also http://www.rugosa.wnoz.us.edu.pl/przegladaje6.php/ for more detailed numerical and graphical data on these corals]

Tabulata

Bae Boo-Young, Lee Dong-Jin & Elias R.J. 2006. Life-history strategies of a species of *Catenipora* (Tabulata; Upper Ordovician; southern Manitoba, Canada). *Lethaia* **39**, pp 141-156.
[key-words: Corals, cyclomorphic variation, modes of corallites increase, paleobiology]
Detailed study of coralla by transverse serial sections permits the determination and evaluation of life-history strategies (survival and growth characteristics) in response to different physical environments, for *Catenipora foersteri* Nelson, 1836 from the Selkirk Member, Red River Formation, in Manitoba. We recognize various modes of corallite increase: one type of axial increase, four types of lateral increase, and agglutinated patches of corallites in association with normal, undamaged corallites; and one type of axial increase, one type of lateral increase, and temporary agglutinated patches from the recovery processes of corallites damaged by sediment or bioclast influx. In addition, the formation of new ranks by lateral increase is the most effective method for rapid growth of a corallum or for reconstructing part of a corallum damaged by physical disturbances. Fluctuations in the tabularial area of corallites occur in cycles over vertical intervals ranging from 3.20 - 7.90 mm. We consider each cycle to represent annual growth. Average annual growth of three coralla ranges from 4.20 - 6.27 mm. According to correlations between annual growth cycles and other growth characteristics, a high frequency of offsetting is associated with rapid vertical growth. Specifically, annual growth is relatively high in association with episodes of sediment or bioclast influx, probably generated by storms. In some coralla, however, annual growth is highest in the cycle characterized by few new corallites or by extraordinarily high rates of offsetting by normal, undamaged corallites as well as damaged corallites. This suggests that the vertical growth could also be

affected by factors other than storm-related disturbances. [original abstract; Oekentorp]

Fernández-Martínez, E., Plusquellec, Y. & Tourneur, F., 2002. Revisión de *Favosites argentinus* Thomas, 1905, especie tipo de *Argentinella* nov. gen., coral tabulado del Devónico inferior de Argentina. *Revista Espanola de Paleontologia* **17** (1), pp 101–116, 8 figs, 3 tabs.
[key words: Anthozoa, Tabulata, sistemática, Devónico Inferior, Argentina]
The type material of *Favosites argentinus* Thomas, 1905, from the Lochkovian of Cerro del Fuerte (Argentine Precordillera), along with various topotypical material belonging to the same collection, is described and figured. The study of this material serves as a basis for establishing the new genus *Argentinella*. This genus is characterized by branching colonies, with a marked development of the septal elements, especially pronounced in the calices which present 12 spiny septal ridges, peripheral thickening of the walls and tabulae, and a wall microstructure where microlamellae prevail but coexist with lamellae. [original abstract; Oekentorp]

Hicks M. 2006. A new genus of Early Cambrian coral in Esmeralda County, southwestern Nevada. *Journal of Paleontology* **80** (4): 609-615, 5 figs., 1 tab.
Numerous Early Cambrian corals or "coralomorphs", as they are often classified, are recorded from North America, Australia, and Siberia. A new Early Cambrian coral, *Harklessia yuenglingensis* n. gen. et sp., is found in conjunction with archaeocyathan-microbial reef in Esmeralda County, southwestern Nevada. The coral-bearing reefs are within quartzic, trilobite-rich packstone beds in the upper portion of the Harkless Formation (*Bonnia-Olenellus* Zone). Coralla are constructed by subpolygonal to polygonal, cerioid, close-packed corallite tubes. Coralla average 12 cm in height by 18 cm in diameter with individual corallite tubes ranging from 1.2 to 3.2 mm in diameter. Corallites are greater than 25 mm in length. Septa and tabulae are not present.
Many of the Early Cambrian corals previously described have attributes

of the class Anthozoa and subclass Zoantharia, with some specific similarities to tabulate corals. *Harklessia yuenglinggenis* is placed confidently within the class Anthozoa, subclass Zoantharia because its morphological characteristics indicate an affinity to true corals, but whether *H. yuenglingernis* is a tabulate coral remains uncertain. [original abstract; Oekentorp]

Hubert B. & Zapalski M. K. 2005. Distribution of tabulae in favositids as a potential tool for analysis of periodical environmental changes. *In*: **J.-J. Alvaro** *et al.* [eds]: Climatic and evolutionary controls on Palaeozoic reefs and bioaccumulations. Paris. p. 30. [Zapalski]

Lukin V.Yu. 2006. Novye vidy syringoporid iz Eyfel´skikh otlozheniy pripolyarnogo Urala. *Paleontologicheskiy Zhurnal* **2006** (4), pp 20-24, 2 figs., 1 pl.
[New species of Syringoporids from Eifelian deposits of the Subpolar Ural Mountains]
A high diversity of tabulate corals in Eifelian deposits of the Syv'yu River basin (Subpolar Urals) is reported for the first time. Most of the corals are represented by colonies of syringoporids. Five new species: *Syringopora parva* sp. nov., *S. insueta* sp. nov., *S. indecora* sp. nov., *Tetraporina syvjuensis* sp. nov., and *Armalites serotinus* sp. nov. are described. [in Russian; original abstract, Oekentorp]

May A. 2005. A new *Parastriatopora* species (Anthozoa, Tabulata) from the Lower Devonian of Colle (Spain, Cantabrian Mountains). *Bulletin of Geosciences* **80**, 4; pp 287-290, 1 Abb.; Praha.
The paleontological collection of the Museo Geominero (Madrid) houses a new species of the tabulate coral *Parastriatopora*. It comes from the Lower Devonian of Colle (Prov. Léon) and probably originates from one of the biostromal levels in the upper part of the Valporquero Formation and the Lower part of the Coladilla Formation (Upper Emsian). The new species, described under open nomenclature as *Parastriatopora* sp., is characterized primarily by its large corallites and calices: the 5- to 7-cornered calices are 3.5-6.9mm in diameter (mostly 5.5-6.0mm). Furthermore, it shows very interesting

paleobiogeographical relationships, because the morphologically closest related species is *Parastriatopora gigantea* (Knod 1908) from the Lower Devonian of Bolivia. *Parastriatopora* sp. could be an example of a close relationship between the Cantabrian Mountains and America during the Emsian. [original abstract; Oekentorp]

May A. 2006. Micheliniidae and Cleistoporidae (Anthozoa, Tabulata) from the Devonian of Spain. *Bulletin of Geosciences* **81** (3), pp 163-172 (1 figure).
[key words: Anthozoa, biogeography, Devonian, systematics, tabulate corals, Spain]
The present article describes five different tabulate coral species of the families Micheliniidae and Cleistoporidae from the Emsian and Eifelian of various localities in northern and central Spain. The species *Pleurodictyum elisabetae* sp. nov. is erected. *Michelinia guerangeri* (Milne-Edwards & Haime, 1851) and *Cleistopora smythi* Le Maître, 1952 are described for the first time from Spain. The Spanish fauna's biogeographical relationships to France, Germany and northern Africa are very close. The Spanish fauna belongs to the Ibarmaghian Domain of the North Gondwana Province.
The biostratigraphical value of the species found is very limited.
[original abstract; May; recent papers of this journal and some abstracts of its older papers are available on-line at:
http://nts2.cgu.cz/servlet/page?_pageid=245,247,732&_dad=portal30&_schema=PORTAL30]

Mistiaen B., Zapalski M. K. & Brice D. 2006. Primary and secondary factors in substrate selection of auloporid tabulates. *Second International Palaeontological Congress, Beijing. Abstracts.* p. 211. [Zapalski]

Niko, S., 2005, Devonian pachyporoidean tabulate corals from the Fukuji Formation, Gifu Prefecture, *Bull. Natn. Sci. Mus., Tokyo, Ser. C*, 31, 13-29. [T. Sugiyama]

Niko, S., 2005, Wuchiapingian (Late Permian) tabulate corals from the Maizuru Group in the Yakuno Area, Kyoko Prefecture. *Bull. Natn. Sci. Mus., Tokyo, Ser. C*, 31, 31-38. [T. Sugiyama]

Niko, S., 2006, Multithecopora hiratai, a new species of Tournaisian (Early Carboniferous) tabulate coral from the Akiyoshi Limestone Group, Yamaguchi Prefecture. *Bull. Akiyoshi-dai Mus. Nat. Hist.*, 41, 1-4, 1pl. [T. Sugiyama]

Niikawa I. 2006. Lower Carboniferous coral biostratigraphy and discovery of tabulate coral *Vaughania* in Shahmirzad, north Iran. *Chikyu Kagaku* (= *Earth Science*) 60, issue 2, pp 85-92. [Schroeder]

Plusquellec, Y., Fernández-Martínez, E., Mistiaen, B. & Tourneur, F., 2004. Révision de *Crenulipora difformis* Le Maitre, 1956, (Tabulata, Dévonien du Nord Gondwana): morphologie, structure et microstructure. *Revue de Paléontologia* **23** (1), pp 181–208, 17 figs, 1 pl.; Geneve. [key words: Tabulata, operculum, Devonian, North Gondwana, Hamar Laghdad, Morocco, systematics, palaeobiogeography]
A revision of *Crenulipora difformis* Le Maitre, 1956, type species of the genus, is presented and its attribution to a new subfamily of Favositids is proposed. The revision includes the examination of type specimens and numerous topotypes. The geographical and stratigraphical data are as follows: Morocco, Hamar Laghdad, top of the Kess-Kess Formation and basis of Amerboh, Upper Emsian. A revised diagnosis of the genus is given and the type species described herein in detail; its variations are extremely important and unusual in Tabulata. The main features of *C. difformis* are: more or less flat branches, calices bearing from 12 (usual) to only a few rows of spines showing a bilateral or axial symmetry, operculum frequent, wall sinuous in transverse sections, without peripheral thickening, spiny, tabulae numerous or not, very often "forked", some vertical, pores of P1 and P2 type. Microlamellar microstructure. An accurate biometric analysis allows to recognize two opposite forms, one called "weak" and the other "strong" with between a group of "composite" specimens, but no new taxonomic units have been defined. The genus is recorded in Ougarta (Algeria), Armorican

Massif (France) and probably in the Cantabrian Mountains (Spain). [original abstract; Oekentorp]

Tsukada, K., 2005, Tabulate corals from the Devonian Fukuji formation, Hida Gaien belt, central Japan. Part 1. *Bull. Nagoya Univ. Museum*, 21, 57-125. [T. Sugiyama]

Stadelmaier, M., Nose, M., May, A., Salerno, C., Schröder, St. & Leinfelder, R. 2005. Ästige tabulate Korallen-Gemeinschaften aus dem Mitteldevon der Sötenicher Mulde (Eifel): Faunenzusammensetzung und fazielles Umfeld. *Zitteliana* **B25**, pp 5–38, 9 figs., 1 tab., 10 pls.; München, 15.08.2005; ISSN 1612-4138.
[This paper decribes the fauna and the facies of thamnoporoid-rich reef horizons in the Lower Givetian (Cürten Formation to Rodert Formation) of the Sötenich Syncline (Eifel Hills, Germany). The following branched tabulate corals are described: *Alveolites (Alveolitella) fecundus* (Lecompte 1939), *Alveolites (Alveolitella) crassus* (Schlueter 1885), *Scoliopora* cf. *denticulata* (Milne-Edwards & Haime 1851), *Scoliopora* cf. *serpentina* Janet 1972, *Celechopora devonica* (Schlueter 1885), *Pachyfavosites polymorphus* (Goldfuss 1829), *Pachyfavosites tumulosus* (Janet 1965)?, *Thamnopora cervicornis* (Blainville 1830), *Thamnopora irregularis* (Lecompte 1939), *Thamnopora reticulata* (Blainville 1830), *Roemerolites brevis* (Schlueter 1889) and *Roemerolites tenuis* (Schlueter 1885); May.]

Zapalski, M. K., 2005. A new species of Tabulata from the Emsian of the Holy Cross Mts., Poland. *Neues Jahrbuch f. Geologie u. Paläontologie, Monatshefte* **2005 (4)**, pp 248–256, 2 figs.
[key words: Tabulata, Auloporida, Devonian, Holy Cross Mts., endemism]
A new species of a tabulate coral, *Aulopora hacqueti*, from the Upper Emsian (*serrotinus-partitus* zones) of the Grzegorzowice Formation (Holy Cross Mts., Poland) is proposed. The discussion of the taxonomic composition and palaeogeographic distribution of the tabulate faunas occurring in this Formation permits to conclude that the auloporid and syringoporid faunas of the Grzegowice Fm. are endemic, while

favositids are widespread. The herein described new species underlines the observation on auloporid endemicity. [original abstract; Zapalski, Oekentorp]

Zapalski M. K. 2005. Palaeoecology of Auloporida: an example from the Devonian of the Holy Cross Mts., Poland. *Géobios* **38** (5), pp 677-683. [Zapalski]

Zapalski M. K. & Nowiński A. 2005. *Maksymilianites*, a new name for *Syringella* Nowiński, 1970 (Anthozoa, Tabulata) preoccupied by *Syringella* Schmidt, 1868 (Porifera). *Paläontologische Zeitschrift* **79** (4), pp 507-508. [Zapalski]

Zapalski M. K. (in press). Parasitism versus commensalism - the case of tabulate endobionts. *Palaeontology*.
Tube-like traces of organisms belonging to ichnogenus *Chaetosalpinx* Sokolov have been considered in the literature as commensal endobiontic organisms of tabulate corals. Their position between the corallites (or sometimes within the septa), perforation of the host's skeleton and soft tissue, modification of its phenotype and a possible inhibition of its growth show that the relationship between these organisms and tabulate corals can best be interpreted as parasitism rather than commensalism, as previously suggested. Such an interpretation may be extended to ichnogenera *Helicosalpinx* Oekentorp and *Actinosalpinx* Sokolov that show identical placement within the host colony and similar features, such as absence of wall of their own. [abstract; Zapalski]

Zapalski M. K., Hubert B. & Mistiaen B. (in press). Estimation of palaeoenvironmental changes: can analysis of distribution of tabulae in tabulates be a tool? *Geological Society of London, Special Publication*.
Growth periodicity (cyclomorphic variation) in corals is expressed by various features, among them changes in the distribution of tabulae. A method potentially useful in analysis of periodical environmental changes is proposed herein. Measurement of spaces between tabulae space-by-space and preparation of a histogram converted into a trend

curve may show relative periodical fluctuations of the environment. Such an analysis, exemplified here on Givetian *Pachyfavosites* sp. from the Avesnois (northern France), shows that this method may be used as a tool for estimation of environmental changes. [abstract; Zapalski]

Heterocorallia

Sobhy M. & Ezaki Y. 2006. First record of Heterocorallia (*Hexaphyllia* Stuckenberg 1904) from the Lower Carboniferous (Viséan), west-central Sinai, Egypt. *Senckenbergiana lethaea* **86** (1), pp 1-21, 8 figs, 3 tabs, 5 pls.
[key-words: Carboniferous, Viséan, Um Bogma Formation, Heterocorallia, Egypt]
The first record of Heterocorallia anywhere in Egypt is in Early Carboniferous (Viséan) shallow-marine carbonates of the UM Bogma Formation in west-central Sinai. These strata contain the small, single heterocoral species *Hexaphyllia marginata* (Fleming), for which we statistically document marked intraspecific morphological variations. *Hexaphyllia marginata* has a global geographical distribution longitudinally but occurs only in the tropical and sub-tropical regions within a latitude range of about 30o N to 30o S. This first Egyptian *Hexaphyllia* occurs with a particular association of exclusively non-dissepimented, small, solitary rugose corals, brachiopods, bryozoans, and other organisms. Small-sized *Hexaphyllia marginata* might have been resistant palaeoecologically that they survived even in the unfavourable habitat conditions on an open, subtropical platform. [original abstract; Oekentorp]

Scleractinia

Baron-Szabo R. C. 2005a. Geographic and stratigraphic distributions of the Caribbean species of *Cladocora* (Scleractinia, Faviidae). *Facies* **51**, 12pp.
A complete account of the faviid genus *Cladocora* within the Caribbean

is presented. In the Caribbean this genus represents an extant group that had its earliest occurrence during the Campanian-Maastrichtian of Jamaica. Recent forms have been reported throughout the Caribbean. The following forms were found (with stratigraphic ranges in the Caribbean): *C. arbuscula* (Pliocene-Recent), *C. debilis* (Pleistocene-Recent), *C. gracilis* (Middle-Upper Maastrichtian), *C. jamaicaensis* (Campanian- Maastrichtian and Eocene), *C. johnsoni* (Pliocene), and *C. recrescens* (Middle-Upper Oligocene). The occurrence of the genus *Cladocora* in the Caribbean is largely continuous from the Campanian to Recent, during which the majority of the Caribbean species show affinities to European assemblages. For the time intervals Paleocene, Lower Oligocene, and Miocene the taxon has not been reported from the Caribbean. [original abstract; Baron-Szabo]

Baron-Szabo R. C. 2005b. Remarks on the genus *Arctangia* Wells, 1937, with the re- description of the type species *Thecocyathus nathorsti* Lindström, 1900 (Anthozoa: Scleractinia) from the Lower Cretaceous of Norway. *Proceedings of the Biological Society of Washington* **118** (3), pp 479-482.
The genus *Arctangia* Wells is a poorly known group that consists of only the type species *Thecocyathus nathorsti* Lindström, 1900. The original description is the only documentation of the species. Including the first description of the genus *Arctangia* by Wells (1937), all of the later interpretations of the species represent only adaptations of Lindström's original report. The present paper gives the re- description of the type species and also provides the first photographic images of this species based on newly discovered material. [original abstract; Baron-Szabo]

Baron-Szabo R.C. 2006. Corals of the K/T-boundary: Scleractinian corals of the Suborders Astrocoeniina, Faviina, Rhipidogyrina, and Amphiastraeina. *Journal of Systematic Palaeontology* **4**, pp 1-108.
This taxonomic review of the scleractinian corals of the Maastrichtian and Paleocene period focuses on the scleractinian suborders Astrocoeniina, Faviina, Rhipidogyrina and Amphiastraeina. This, the first extensive compilation of coral species of the K/T

(Cretaceous/Tertiary) boundary, deals with more than 2500 records of 550 nominal taxa. In addition to the re-examination and re-evaluation of described forms, this study also includes the first description of the largest Maastrichtian coral assemblage known (consisting of about 4000 specimens from Jamaica), as well as new material from the Campanian–Maastrichtian of Argentina, Lower Maastrichtian of Mexico (Cerralvo), and the Paleocene of Austria (Kambühel–Kalke). A diagnosis is provided for each species, as well as for each higher-level taxonomic category and issues concerning taxonomic assignment are discussed in detail. The descriptions are accompanied by illustrations of representatives of each species and, in many cases, include illustrations of type or original material. Also included is the first comprehensive overview of the stratigraphical and geographical ranges of each taxon. In the four suborders evaluated in this paper, 123 valid species can be reliably documented as occurring in the Maastrichtian and/or the Paleocene. The largest number of species is in the suborders Faviina and Astrocoeniina. In the Faviina 62 valid species are known from the Maastrichtian, of which 35 (56.5%) crossed the K/T-boundary, while in the Paleocene 14 new species appeared. In the Astrocoeniina 18 valid species occurred in the Maastrichtian, eight of which (44.4%) crossed the K/T-boundary and 16 new species appeared in the Paleocene. Only eight species of Rhipidogyrina and five species of Amphiastraeina occurred in the Maastrichtian and although two amphiastraeinid made it into the Paleocene, only one of the rhipidogyrinids crossed the K/T-boundary. No new species of Amphiastraeina appeared in the Paleocene. According to this revision on the genus level 44 out of the 65 genera crossed the K/T-boundary, which is 67.7% (12 genera went extinct, 9 genera have their first occurrence in the Paleocene). In comparison to previous estimates this result (generic extinction of around 32%) represents the best estimation for scleractinian corals at present and corresponds to recently reported results of other macroinvertebrate groups after taxonomic revision (e.g. echinoids). [original abstract; Loeser]

Cahuzac B. & Chaix C. 1994. La faune de coraux du Chattien de La Téoulere (Peyrehorade, Landes). Hommage a Léonard Lartigue. *Bull. Soc. Borda* 119e année, **436**, (4); pp 463-484, 3 figs, 1 tab. [Loeser]

Cairns, S.D., 2004. A new shallow-water species of *Javania* (Scleractinia: Flabellidae) from Indonesia. *The Raffles bulletin of zoology* **52**, 1: 7–10.
A new species of azooxanthellate solitary Scleractinia, *Javania erhardti*, is described from relatively shallow water in Indonesia. It differs from congenerics in having six cycles of septa (192 septa), slightly concave septal axial edges, and a rudimentary columella. To aid in its identification, both a key to the 10 known Recent species in the genus and a distribution table of the 13 fossil and Recent species are given. *Javania erhardti* often contains commensal boring sponges in its base. [original abstract; Loeser]

Chaix C. & Cahuzac B. 2005a. Le genre *Culicia* (Scléractiniaire): systématique, écologie et biogéographie au Cénozoique. *Eclogae Geologicae Helvetiae* **98**, 2; pp 169-187.
Historically, the genus *Culicia* (Anthozoa Scleractinia) was known (until Chevalier 1961) as beginning in the Burdigalian of Basse-Provence (France).
The study of new crops in Aquitaine Basin as well as works in varied collections, show that the species *Culicia parasita* (Michelin 1847) has been living in this region since the Oligocene (Chattian), which is a noticeable extension of the stratigraphical range of this genus. This species is here amply illustrated, with specimens from each concerned stage, and paleoecologic data are provided. Otherwise, a whole bibliographic review of references concerning the genus *Culicia*, added to the new collection made in the western France and Mediterranean Neogene, mainly fills the classical stratigraphic hiatus recorded in the distribution of this genus between the Middle Miocene of Eastern Atlantic and the Pliocene-Quaternary of Australia; the question of possible phyletic relations between fossil and extant *Culicia* species is set. A map of biogeographic migration is proposed, including all the taxa of this genus. [original abstract; Loeser]

Chaix C. & Cahuzac B. 2005b. Les faunes de Scléractiniaires dans les faluns du Miocene moyen d'Atlantique-Est (bassins de la Loire et d'Aquitaine): paléobiogéographie et évolution climatique. *Annales de Paléontologie* **91**; pp 33-72.

The Aquitaine and Loire basins show in the Middle Miocene numerous marine littoral deposits, often shelly or crag-type. Scleractinia are present, with a distribution and an abundance very variable according to the outcrops. A detailed study of all the available material, recently or historically cropped, allowed to draw up an accurate faunal inventory and to compare the distribution of taxa between the two basins. Out of 90 taxa in total, 62 are known in Aquitaine and 48 in Loire. In the Aquitaine Langhian, when is noted an obvious reduction of hermatypic taxa in comparison with the rich regional Burdigalian faunas, the association includes 44 species (25 reef-building ones). In the Serravallian, the reef-building taxa become significantly scarce and are residual (9 taxa out of 33 in Aquitaine, present in levels belonging to the lower sequence of the stage, and located in sheltered internal parts of the south-Aquitaine and central-Aquitaine gulfs). In the Loire basin, the corals are quite diversified in the Pontilevian facies (19 reef-building taxa out of 48), and much scarcer in the Lublean and Savignean facies. Globally, the Scleractinia are few abundant everywhere. If in the two basins hermatypic taxa persisted in the Langhian, indicating subreefal-type facies, varied factors have impeded permanently the settlement of reefs. In comparison with the Burdigalian, the thermic deterioration gradient, evidenced since the Chattian on the northeastern Atlantic frontage, had an important influence, and the Langhian waters were only subtropical. Other factors acted, at least locally, as the hydrodynamics, the bathymetry, the kind of substratum, the salinity pro parte. Moreover, a latitudinal gradient between the two basins is evidenced by the global species richness and by the ratio of hermatypicity, created here and defined as the fraction of hermatypic taxa reported to ahermatypic ones from a same basin. This ratio can be used at generic level or specific one as well. In the Serravallian, when the diversity was everywhere obviously lower, the influence of the climatic gradient went on, together with other unfavourable conditions

(often abundant detritic supplies, high hydrodynamics, spatial biocompetition). Diverse biogeographic and paleogeographic data are also reported. A vast East-Atlantic coralline bioprovince, settled as early as the Chattian with a dispersion center located in Aquitaine, was still active in the Middle Miocene, when large transgressions favoured the faunal exchanges; its history was to be completed at the end of this period. [original abstract; Loeser]

Eliasova, H., 2004. Coraux solitaires (Zoantharia, Microsolenina) du Crétacé de Boheme (Cénomanien supérieur, Republique tcheque). *Bulletin of Geosciences* **79**, 3, 157–166.
Nine solitary corals from the Late Cenomanian sediments of the Bohemian Cretaceous Basin are described and discussed in this paper. These corals are poorly known representatives of the genera *Leptophyllia*, *Leptophyllaraea*, and *Neothecoseris*, and constitute the new taxon *Leptophyllia separata* sp. n. (suborder Microsolenina, family Synastraeidae). The species *Dimorphastraea parallela* (Reuss) has been transferred to the the genus *Synastraea*. *Microphyllia gemina* sp. n., a new species of family Latomeandridae, is described. Some comments on the species *Synhelia gibbosa* (Siderastraeidae) of the Early Turonian age are added. [original abstract; Loeser]

Ezaki, Y., 2000. Palaeoecological and phylogenetic implications of a new Scleractiniamorph genus from Permian sponge reefs, south China. *Palaeontology* **43**, 2: 199–217.
Scleractinian corals are the most important constituents of modern coralgal reefs. For many years, it was thought that they first appeared in the Middle Triassic and subsequently underwent explosive radiation. However, abundant scleractinian-like corals with ancestral morphological traits have recently been recovered from Middle Permian sponge reefs in China, which not only confirms a role in Permian reef ecology but also suggests a possible Palaeozoic origin for the group. Two species of a new Permian scleractiniamorph genus from China are described herein as *Houchangoeyathus wangi* gen. et sp. nov. and *Houchangocyathus yaoi* gen. et sp. nov. Putative Palaeozoic Scleractinia may have evolved over a substantial time interval and

diverged into stern lineages by the end of the Permian. These forms evolved within both the rigid framework of their basic body plan and the morphological constraints characteristic of each lineage. The Middle Permian development of calcisponge reefs was closely related to habitat expansion, which would have provided an ideal dwelling for scleractinian-like corals and enhanced their chances of fossilization. Such scleractiniamorphs disappeared at the end-Permian extinction, but may have survived as progenitors of Triassic Scleractinia. [original abstract; Loeser]

Ezaki, Y., 2004. Paleoecological and phylogenetic implications of asexual reproduction in the Permian scleractiniamorph *Numidiaphyllum*. *Journal of Paleontology* **78**, 1: 84–97.
Numidiaphyllum is one of the Paleozoic scleractiniamorphs. The genus is characterized by a poorly integrated, uniserial fasciculate form with an epithecate wall and simple morphological traits. Parent corallites are divided into several daughter corallites using one mode of division among several theoretically possible alternatives. Bipartite increase is most common, followed by hexapartite and then tripartite increase. Daughter corallites possess relatively large diameters from the beginning, along with a robust colonial pattern. This parricidal increase caused the morphologies of both parent and daughter corallites to be greatly altered and to show high morphological variability. For ecological and structural reasons, co-occurring daughter corallites generally are equal or subequal in size. Daughter corallites initially show a bilateral symmetry in both outline and septal arrangement during the course of hystero-ontogeny. However, this symmetry results only from structural necessity and is transitory. It is not homologous with the bilaterality of body plans characteristic of anthozoan groups. The morphological simplicity, related parricidal reproduction, and resulting poorly integrated growth form as seen in *Numidiaphyllum*, all suggest conservative features that could have resulted from phylogenetic antiquity within the scleractiniamorph body plan. Those generalized features are not themselves related to immediate phylogenetic relationships with any simply constructed rugosan group, nor would

they have been due to surrounding, stressful ecologic conditions. They may have been phylogenetic-specific. [original abstract; Loeser]

Gameil M., Aly M. F. 2001. Paleontological studies on some Oligocene colonial corals from gabal Hafit (Al Ain area, UAE). *M. E. R. C. Ain Shams University, Earth Science Ser*. **15**: 156–183.
A highly fossiliferous Lower Oligocene (Rupelian) section is well exposed on the flanks of Gabal Hafit anticline near AI Ain City, United Arab Emirates. The section contains different kinds of macro- and microfossils. Corals are the most abundant faunal element in that area and are represented by colonial and solitary forms where colonial forms dominate. Colonial corals are the main target of the present work and are studied here for the first time. The present work focuses on the taxonomic and stratigraphic aspects of these colonial corals. The study includes the identification and description of 21 species of which two species are believed to be new. These are *Siderastraea osmani* and *Tarbellastraea hallitensis*. The paleoecologic aspect of the studied faunas and their relation to other Tethyan faunas are also discussed. [original abstract; Loeser]

Gameil M. 2005. Palaeoecological implications of Upper Cretaceous Solitary Corals, United Arab Emirates / Oman Borders. *Review de Paléobiologie* **24** (2); pp 515-532; Geneve.
[key words: Solitary corals, United Arab Emirates, Oman, Paleoecology, Cretaceous]
The Upper Cretaceous (Campanian-Maastrichtian) rocks that are exposed et several localities in the United Arab Emirates and the Sultanate of Oman are rich in macro- as well as microfossils. Solitary corals are found in these outcrops, associated with colonial corals, rudists, gastropods, pelycopods and echinoids. Nineteen species of solitary corals were identified from Jabal Buhays, Al Faiyah range Mountains (United Arab Emirates), Jabal El Rawdah and Jabal Huwayyah (Sultanate of Oman). Of these nineteen species ten species are described from the Qalah Formation (Upper Campanian) of Jabal Huwayyah and ten species are described from the Simsima Formation (Upper Campanian-Masstrichtian) of Jabal Buhays and Jabal El Rawdah

where one species Cunnolites profundus is common in the three localities. One species found in the Simsima Formation belongs to the new species *Cunnolites trifurcata* described herein.
Two morphotypes are observed in the studied solitary corals. Trochoid morphotypes prevailed during the deposition of the Qahlah Formation, these lived on a hard substrate in a shallow marine protected environment. Hemispherical to dome-shaped morphotypes belonging to cunnolitid corals prevailed during the deposition of the Simsima Formation. These are better adapted to a slightly higher energy environment with terrestrial supply by having elevated corallites which aided them to lie freely on the soft substrates as well as to free themselves from the fine sands and silts. The absence of costosepta at the basal part of cunnolitid corals shows that they were immobile during life. [original abstract; Oekentorp]

Gill G. A., Santantonio M. & Lathuiliere B. 2004. The depth of pelagic deposits in the Tethyan Jurassic and the use of corals: an example from the Apennines. *Sedimentary Geology* **166**, 3/4, pp 311–334.
Assessing the palaeobathymery of pelagic deposits is rather speculative, as proof through lithology or fossils significant for depth estimates is sparse. This is unfortunate as the bathymetric history of pelagic successions allows to conceive the evolution of continental margins and oceanic basins. Discoveries in coral biology bring an unexpected impact on basin analysis. Evidence strongly suggests that pennular corals, fossil and modern, constitute a zooxanthellate group with an outstanding specialization in colonizing deeper parts of the marine photic zone. This adaptation includes light amplification by autofluorescent pigmented cells, and particular feeding, witnessed by peculiar gastric ducts and skeletal features. Such corals occur in the Umbria-Marche and Sabina Apennines on top of Late Jurassic submarine highs and at basin margins. Values of palaeodepth relative to pelagic deposits are provided by corals and other environmental data. Because depth reconstruction involves classical Tethyan facies, such as Ammonitico Rosso, Aptychus limestone and radiolarian cherts, we must note that these results do not meet with actualistic models relying on carbonate dissolution for

estimating depth. Deposits viewed as bathyal to abyssal could also have accumulated within, or just below, the photic zone. Thus, a new insight opens on Mesozoic bathymetries, regarding vast areas (Middle East to Caribbean) and on subjects ranging from platform drowning to regional extension styles. New coral taxa are described *Castiglionastrea* nov. gen. and *Kobya monteneronensis* nov. sp. [Lathuiliere]

Götz S., Löser H. & Schmid D. U. 2005. Reef development on a deepening platform: two Early Cretaceous coralgal patch reefs (Catí, Llacova Formation, eastern Spain) compared. *Cretaceous Research* **26**, 6; pp 864-881.
Two coralgal patchreefs of the Hauterivian Llacova Formation (Maestrat Basin, E-Spain), subsequently exposed within one section, were investigated to reveal the taxonomical implications of changing environmental controls on reefal palaeocommunities. After taxonomical work on the coral fauna, microfacies analysis and palaeoecological interpretation, two communities could be distinguished that differ in coral taxonomical composition, microbialite formation pattern and in abundance and composition of encrusters and bioeroders. The coral fauna comprises 14 species (e.g. *Actinastrea pattoni*, *Cladophyllia* aff. *catalaunica*, *Dimorphocoenia* cf. *crassisepta*, *Dimorphocoenia rudis*, *Eocomoseris raueni*, *Eocomoseris* sp., *Holocoenia jaccardi*, *Latusastrea irregularis*, *Mesomorpha* sp., *Microsolena kugleri*, *Polyphylloseris* cf. *mammillata*, *Polyphylloseris mammillata*, *Polyphylloseris* sp., *Stylina parvistella*) and differs on the species level between the reefs. Only one coral species (*S. parvistella*) occurs in both the lower (abundant) and the upper reef (rare, occurs near the reef base). The lower reef was dominated by phototrophic fauna and coral species that show small corallites with nonperforate septa (a stylinid, thamnasteriid, heterocoeniid, actinastreid association) predominate together with a *Bacinella-Lithocodium* dominated encruster association. The upper reef had a balanced phototrophic-heterotrophic fauna that gradually passed into a heterotrophic-dominated fauna during its latest growth stage where microsolenid corals predominated. The encruster spectrum is dominated by an association of sponges, polychaets and bryozoans. Moderate deepening during a transgressive systems tract (TST)

depositional sequence and elevated nutrient supply are interpreted to represent the driving environmental parameters that caused this change in reefal palaeocommunity composition. In addition, we determined nine coral species that were only known from younger strata (Barremian, Aptian, Albian, Cenomanian) which emphasizes the importance of the Hauterivian as a time of evolutionary transition from Late Jurassic to Cretaceous coral faunas. [original abstract; Loeser]

Guerrero Kommritz, J., Hillmer, G., 2004. Die Gattungen *Parasmilia* und *Trochosmilia* (Scleractinia) aus der Schreibkreide Norddeutschlands. *Geologisches Jahrbuch*, (A: Allgemeine und regionale Geologie) **157**: 69–97, 5 pls.
The chalk quarries of Lägerdorf, Kronsmoor (southeast of Itzehoe, Holstein) and Hemmoor (northwest of Stade, Lower Saxony) expose a nearly complete section from the upper Cretaceous (Middle Coniacian to the Upper Maastrichtian) which has a thickness of 520 m. It is chalk facies. Most of the solitary corals in this section are of the genera *Parasmilia* and *Trochosmilia* (*Coelosmilia*). From 300 corals more than 50% belong to these genera. The genus *Parasmilia* can be found from the Coniacian to the Maastrichtian, *Trochosmilia* can only be found in the Maastrichtian. Material for comparison from other quarries in North-Germany were not studied. [original abstract; Loeser]

Idakieva, V., 2001. Some Scleractinian corals from Lovech Urgonian Group (Balgarene Formation) from the area of V. Tirnovo-Gabrovo (Central Fore-Balkan, Bulgaria). *Godishnik na Sofijskiya Universitet Kliment Okhridski, geologo-geografski fakultet*, (**1**: geologie) **94**, 1: 5–25, 5 pls.
In the district of the towns V. Tirnovo and Gabrovo (Central Fore-Balkan) 9 scleractinian species from the Lovech Urgonian Group are described. In the area this lithostratigraphic unit is characterized by the development of mainly carbonate/siliciclastic shallow water sequences, deposited during the Lower Barremian to Lower Aptian stages. The coral fauna is derived from the siliciclastic sediments in the lower part of the Balgarene Formation from Lovech Urgonian Group, which is of Early Barremian age. The scleractinian corals are dominated by colonial

forms. They are reported from three localities: Pushevo, Sedjankovci and Vetrovo and comprise 9 genera, belonging to four suborders. Some species are not described in Bulgaria until now. [original abstract in Bulgarian; Loeser]

Kiessling W., Aragón E., Scasso R., Aberhan M., Kriwet J., Medina F. & Fraccia D. 2005. Massive corals in Paleocene siliciclastic sediments of Chubut (Argentina). *Facies* **51**; pp 233-241.
A horizon with large, massive corals in growth position was discovered in the Paleocene, probably upper Danian, part of the Maastrichtian-Paleocene Lefipán Formation of Chubut (Patagonia, Argentina). All corals belong to one species, the cosmopolitan *Haimesiastraea conferta* Vaughan, which survived the end-Cretaceous mass extinction. The occurrence of massive corals at this site is exceptional both because of the siliciclastic depositional regime and because of the high palaeolatitude setting. An unusual autecology of this coral and strongly reduced sedimentation rates, were probably the prerequisites for coral growth, but a link to palaeoclimate is less likely. [original abstract; Loeser]

Lathuiliere, B., Gaillard, C., Habrant, N., Bodeur, A., Boullier, A., Enay, R., Hanzo, M., Marchand, D., Thierry, J., Werner, W., 2005. Coral zonation of an Oxfordian reef tract in the northern French Jura. *Facies* **50**: 545–559.
During the Middle Oxfordian, numerous coral reefs flourished on the northern margin of the Tethys Ocean. The outcrop of Bonnevaux-le-Prieur (northern French Jura mountains) provides a rare opportunity to observe a nearly complete section allowing the installation, evolution and demise of this global carbonate reef rich event to be studied. Quantitative data on coral assemblages together with sedimentological and palaeoecological observations lead to the reconstruction of a reef tract coral zonation. Starting from the outer slope, *Dimorpharaea*, *Microsolena*, *Dendraraea*, *Comoseris*, and *Stylina* ecozones are recognized. This new facies model implies a central position for an oolitic shoal in the highest energy zone, within the *Comoseris* ecozone. Applying this facies model to the sequence stratigraphic interpretation

of the vertical succession results in recognising a third-order relative sea-level fluctuation, which can be correlated at least with Lorraine (France) and Switzerland. [original abstract; Loeser]

Lathuiliere, B. & Marchal D. 2005. Crises de diversité des coraux du Trias au Dogger. Colloque l'Hettangien a Hettange, de la science au patrimoine, Hettange, 1-3 avril 2005, univ. H. Poincaré, Nancy 1, pp 27–32. [Lathuiliere]

Lathuiliere, B. & Marchal D. 2005. Diversity crises of corals from Triassic to Dogger. 5th Field workshop IGCP 458 project, Triassic-Jurassic boundary events, Tata (Hungary) Puch bei Hallein (Austria), abstracts, pp 18-19.
[Lathuiliere; see also
http://paleo.cortland.edu/IGCP458/final/Abstracts_IGCP458_2005.pdf]

Löser, H., 2005. (et al.) List of Localities. Catalogue of Cretaceous Corals **3**: 366 pp.
The volume contains a list of all 2,735 localities from which Cretaceous corals were reported. Each locality is provided with data on the stratigraphy, lithostratigraphy, additional literature, and often additional notes (exact positions are ommitted on request by the majority of co-authors). Each locality is complemented by a list of indicated coral species. Many countries and regions are profoundly checked by 29 local specialists from all over the world. The Catalogue of Localities may be an interesting handbook for everybody who is working on the Cretaceous, because numerous localities are not only known to have yielded corals but also other fossil organism groups. [Loeser]

Löser H. 2005. Stratigraphy of Cretaceous coral genera. *Neues Jahrbuch für Geologie und Paläontologie, Abhandlungen* **238**; pp 231-277.
Post-Palaeozoic coral genera are known to be long-lived. Systematic monographs define the stratigraphic distribution of the genera in general terms such as "Jurassic" or "Early Cretaceous". The usefulness of the coral genera as dating aids is restricted by imprecise data concerning

their stratigraphic distribution. More precise data could make it easier to date sediments that contain only corals or other organisms not really suited as index fossils.
To assess the stratigraphic distribution of Cretaceous coral genera, a computer database containing records of species taken from the literature was analysed and compared with available type material in museums and university collections worldwide. Cases where the specimen data did not agree with the stratigraphic distribution of a genus reported in the literature were examined in detail and are discussed here.
According to the literature a total of 705 coral genera (subclass Hexacorallia with the order Scleractinia; subclass Octocorallia with the orders Alcyonacea, Coenothecalia, and Gorgonacae) are known from the Cretaceous. Range data were determined for 394 of them. The remaining 311 genera were found to be synonyms, poorly defined, invalid, or they simply did not occur in the Cretaceous. The results of this study are restricted by the poor definition of many genera so that it was not possible to indicate their distribution because their morphological characteristics were unknown and it was not clear what species had to be assigned to them. [original abstract; Loeser]

Löser H. 2006. Morphology, taxonomy and distribution of the Cretaceous coral genus *Paronastraea* (Barremian-Cenomanian; Scleractinia). *Rivista italiana di paleontologia e stratigrafia* **112**, 1, pp 131-121, 1 pl..
The middle Cretaceous genus *Paronastraea* Beauvais, 1977 is being revised on the basis of sample material available from Italy, France, Germany, and Greece. *Paronastraea*, a plocoid and cerioid coral similar to *Pachycoenia*, is characterised by regular secondary septal apophyses arranged in pairs. Six species are distinguished by their respective numbers of septal cycles and systems, two of them in open nomenclature and one, *Paronastraea occulta* from the Early Aptian of Greece, is newly described. The genus occurred from the Barremian to the basal Cenomanian in the central and eastern Tethys. [original abstract; Loeser]

Löser H. & Ferry S. 2006. Coraux du Barrémien du Sud de la France (Ardèche et Drôme). *Geobios* **39**, 4, pp 469-489.
Corals from the Barremian of southern France (dépt. Ardèche and Drôme) are described. The rather small fauna of colonial corals encompasses 23 species belonging to 18 genera of both Hexa- and Octocorals. The assemblages from the lower as well as upper Barremian show stratigraphic relationships to those of the Hauterivian and Aptian of the Tethys and the Caribbean province. [original abstract; Loeser]

López-Pérez R.A. 2005. The Cenozoic hermatypic corals in the eastern Pacific: History of research. *Earth-Science Reviews* **72**, pp 67-87.
Studies of hermatypic corals in the eastern Pacific have mainly focused on Recent species, and relatively few of these works have studied fossil corals. The purpose of the present contribution is to provide a comprehensive synthesis on Cenozoic hermatypic coral studies that will serve: a) to identify gaps in our understanding about the Cenozoic evolution of eastern Pacific hermatypic fauna, and b) to be used as a baseline for future work in the region. Our knowledge regarding the eastern Pacific fossil coral fauna has increased gradually since 1864. A total of 151 coral species including synonyms have been recorded in the region. The species richness increases from Paleocene to Oligocene

followed by a loss of species towards the Pleistocene, though to some extent biodiversity estimates are affected by sampling intensity. Fossil-bearing units are spatially restricted to Washington-Seattle, south and central California, Gulf of California and Chiapas, and there is a lack of outcrops in western Mexico and Central America. In general, fossil coral studies have been sporadic, incidental in nature, and restricted to species descriptions, faunal lists and geographic affinities. The relative lack and nature of the hermatypic fossil studies in the region have directly affected our understanding about the origin of the modern eastern Pacific coral fauna and its evolutionary history. Studies regarding to taxonomy and systematics, and detailed spatio–temporal community dynamics, are essential for understanding the evolution of the fauna. [original abstract; Loeser]

Martin-Garin B., Lathuiliere B. & Geister J. 2003. Morphométrie, dimensions fractales et coraux. 3eme symposium "morphométrie et évolution des formes", Paris. [Lathuiliere]

Martin-Garin B., Lathuiliere B. and Geister J. 2003. Using fractals to characterize the interspecific variability of corals. International Congress on Fossil Cnidaria and Porifera, Graz, Austria, August 2nd – 4th. *Berichte des Institutes für geologie und Paläontologie der Karl-Franzens-Universität*, Graz/Austria. p.62. [Lathuiliere]

Martin-Garin B., Lathuiliere B. & Geister J. 2003. Dimensions fractales structurale et texturale pour quantifier les morphologies septales et calicinale des coraux. Réunion spécialisée SGF " une paléontologie biologique : hommage au professeur Henri Tintant " Dijon 20–21 nov. , p. 29. [Lathuiliere]

Martini R., Zaninetti L., Lathuiliere B., Cirilli, S. Cornée J.-J., Villeneuve M., 2004. Upper Triassic carbonate deposits of Seram (Indonesia): palaeogeographic and geodynamic implications. *Palaeogeography, Palaeoclimatology, Palaeoecology* **206**, pp 75–102. The Upper Triassic limestones of central and western and Seram, were deposited on an extensive carbonate platform, already identified in

various localities all around the Banda Sea: Sinta Ridge, central-east Sulawesi, Buru, Misool and the Wombat Plateau (off NW Australia). The Triassic deposits are found in the parautochthonous, as well as in the allochthonous series of Seram; the facies of the two series are of Gondwanian-Australian type in the Parautochthonous and of Laurussian-Asian type in the Allochthonous. The Asinepe Limestone (= Manusela Formation), on which this study is based, has been considered as part of the allochthonous series. The Triassic reefal lithotypes can be divided into four main facies, as follows: (1) the boundstone facies forming the buildup cores; (2) the oncolitic grainstone-rudstone facies, indicating high energy conditions; (3) foraminiferal packstone-grainstone facies, characteristic of moderate to high energy conditions; and (4) the foraminiferal-megalodont mudstone facies, inferred to have accumulated in a quiet lagoonal environment. Forming the buildup cores of about 4 m long, 2 m high; they are separated by depressions filled with reef detrital sands; The Asinepe Limestone was deposited during the Late Triassic (Carnian-Norian to Rhaetian). This range is corroborated by foraminiferal and palynological data, and the coral framebuilders give evidence for a Norian-Rhaetian age. Among Scleractinia, *Retiophyllia* sp., *Astraeomorpha crassisepta* (Reuss), *Pamiroseris meriani* (Stoppani) and *Oedalmia norica* (Frech) are figured, the chaetetetid *Blastochaetetes intabulata* (Wanner) is also figured and proposed as a senior synonym of *B. karashensis*.
There is a some consensus that Seram and the Island of Buru, located west of Seram, belong to the same tectonic block (Seram-Buru Block). According to geochemical and geodynamic interpretations, the Seram-Buru Block is derived from Irian Jaya or from Papua New Guinea. The palynological results are consistent with reconstructions that place the Seram-Buru Block in a palaeogeographic zone distinct from that of Sulawesi, and therefore from the Kolonodale Block. For these reasons, it is here proposed that, during the Upper Triassic, the Seram-Buru Block and the Kolonodale Block were two separated entities, the former located in a more tropical position than the latter. In addition, the Seram palynological association shows a composite microflora of the warm Onslow and the cold Ipswich-types, suggesting that the Seram microcontinent moved progressively to the north and crossed the

boundary between the temperate and the warm subequatorial belts at one point in the Late Triassic-Early Jurassic. [Lathuiliere]

Mermighis, A., Diacantoni-Marcopoulou, A., 2004. La faune a rudiste, poriferes et scléractiniaires du Crétacé supérieur du mont Ptoon (Béotie septentrionale, Grece continentale). *Revue de Paléobiologie* **23**: 313–353, 19 pls.
Within a deatiled description of rudists and sponges from the Santonian [Turonian is more probable] of the Ptoon Mountains [also known as iron ore mine Marmeko] three coral species are briefly decribed and depicted. [Loeser]

Mitchell, S.F., Stemann, Th.A., Blissett, D., Brown, I., O'Brien Ebanks, W., Gunter, G., Miller, D.J., Pearson, A.G.M., Wilson, B., Young, W.A., 2004. Late Maastrichtian rudist and coral assemblages from the Central Inlier, Jamaica: towards an event stratigraphy for shallow-water Caribbean limestones. *Cretaceous Research* **25**, 4: 499–507.
The lithological succession of the Guinea Corn Formation in the Slippery Rock River, central Jamaica, comprises 91 m of limestones and subsidiary mudstones. The biostratigraphic distribution of rudist bivalves and corals demonstrates that the succession of biostratigraphic markers is consistent with the previously documented standard Guinea Corn Formation succession in the Rio Minho between Grantham and Guinea Corn, central Jamaica. Additionally, the Slippery Rock River succession shows the boundary between the *Chiapasella radiolitiformis* and *C. trechmanni* zones that has not previously been documented. The marker horizons are also consistent with major facies changes within both sections, demonstrating that both lithological changes and biostratigraphic markers are synchronous within the limestone successions of central Jamaica. This may prove to be a valuable tool for stratigraphic correlation elsewhere in Jamaica and within the Antillean region. [original abstract; Loeser]

Okuda, H., Ezaki, Y., and Yao, A., 2005, Geological complexes of Sanmosan area and limestones contatining Triassic scleractinian corals in Kochi Prefecture, southwest Japan. *Earth Science (Chikyu Kagaku)*, vol. 59, 371-382. (in Japanese with English abstract) [T. Sugiyama]

Pandey D. K. & Fürsich F. T. 2003. Jurassic corals of east-central Iran. *Beringeria* **32**: 3–138, 6 text-figs., 40 pls.
92 taxa of scleractinian corals belonging to 50 genera are described from Toarcian to Kimmeridgian rocks of east-central Iran (Tabas-Kerman area). They formed, occasionally associated with calcareous sponges and microbial communities, small patch reefs or reef meadows in siliciclastic-dominated shelf enviromnents of the Tabas and Lut blocks of the Central-East Iranian Microcontinent. On the large late Middle Jurassic to early Late Jurassic Esfandiar Carbonate Platform, situated at the eastern margin of the Tabas Block, corals were surprisingly rare. One of the genera (*Irania* gen. nov.) is new as are three species: *Irania hexagonalis*, *Dimorphomeandra iranensis*, and *Thamnasteria iranensis*. [original abstract; Loeser]

Pandey D. K. & Fürsich F. T. 2005a. Jurassic corals from southern Tunisia. *Zitteliana* **A45**; pp 3-34, 4 figs., 16 tabs., 9 pls.; München.
[key words: Scleractinia, Jurassic, taxonomy, Tunisia]
The coral fauna from Middle Jurassic strata of southern Tunisia is described and figured, and complements previous records by Beauvais (1966a). Most of the corals are from the Lower Callovian Beni Oussid Member of the Tatouine Formation. The coral fauna comprises altogether 18 taxa belonging to 14 genera. [original abstract; Oekentorp]

Pandey D. K. & Fürsich F. T. 2005b. A new name for the Jurassic coral genus *Irania* Pandey & Fürsich, 2003. *Beringeria* **35**; p. 135. [Löser]

Roniewicz E., **Stanley G.D.**, **Da Costa Monteiro F. & Grant-Mackie J. 2005**. Late Triassic (Carnian) corals from Timor-Leste (East Timor): their identity, setting and biogeography. *Alcheringa* **29**, 2, pp 287-303.

Four scleractinian coral taxa are deseribed from limestones within a sandstone-shale sequence correlated with the Late Triassic Babulu Formation, Manatuto township, on the northern coast of Timor-Leste (East Timor). The coral fauna consists of three phaceloid taxa, *Paravolzeia timorica* gen. et sp. nov., *Craspedophyllia ramosa* sp. nov., *Margarosmilia confluens* (Münster), and a generically indeterminate solitary taxon attributed to the family Margarophylliidae. All four corals are related at various taxonomic levels to Carnian faunas from the Dolomites of northern Italy. Previously, only Norian coral faunas were known from the Triassic of Timor. The fauna exhibits both similarities to and differences from Carnian faunas of the Dolomites and helps confirm palaeogeographie affinities with the westem Tethys, although during Late Triassic time Timor lay in the distant southeastem portal of the Tethys. Despite isolation from the western Tethys, the presence of two species found also in the Dolomites indicates that larval dispersal occurred between the two areas. [original abstract; Loeser]

Stolarski J. & Vertino A. 2006. First Mesozoic record of the scleractinian *Madrepora* from the Maastrichtian siliceous limestones of Poland. *Facies*, **DOI 10.1007/s10347-006-0089-6**.
The objective of the present article is to document the first stratigraphic occurrence of the colonial oculinid *Madrepora*, known from the modern seas as azooxanthellate taxon that contributes to formation of deep-water coral reefs. The Upper Cretaceous specimens of *Madrepora* sp. reported herein from Poland were recovered from Upper Maastrichtian (Nasiłów and Bochotnica localities) and Lower Maastrichtian (Bliżów locality) siliceous limestones. The corals are preserved as imprints of the branch fragments and molds of the calices. Despite their moldic preservation, the coral remains exhibit key generic features of the genus *Madrepora*: (1) sympodial colony growth form with calices arranged in opposite and alternating rows in one plane of the branch, and (2) imprints of the granular coenosteum texture, occasionally showing peculiar reticulate patterns. Some features of the Cretaceous *Madrepora* sp., such as the reticulate coenosteum texture, the range of the corallite diameter (2.8-4 mm), and the arrangement of the septa in three regular cycles resemble the skeletal features of the modern, typically

constructional, species *M. oculata* (type species). The lack of any evidence of coral buildups and related debris in the whole Upper Cretaceous/Paleogene sequences from Poland and the sparse occurrence of colony fragments, suggests that the Cretaceous *Madrepora* sp. formed small, isolated colonies. [original abstract; Stolarski]

Stolarski, J., Mazur, M. 2005. Nanostructure of biogenic versus abiogenic calcium carbonate crystals. *Acta Palaeontologica Polonica* **50** (4), pp 847–865.
[see "Various topics" for abstract]

Tsarapas N. & Marcopolou-Diacantoni A. 2005. Tortonian Scleractinian Corals from the island of Gavdos (South Greece). *Revue de Paléontologie* **24** (2); pp 629-637; Geneve.
[key words: Tortonian reef-forming Scleractinian corals, Palaeoenvironment, Gavdos island (South Greece, SW part of Island Crete)]
This paper studies scleractinians collected from the localities Panagia, Korfe, Karave, Saghios Ioannis, Bo and Bardaris on the island Gavdos within Tortonian sediments. Eleven scleractinian species were determined.
The examined scleractinian species belong to shallow water corals and provide specific information on the ecological conditions such as the depth, the temperature, the salinity, the climate, etc. [original abstract; Oekentorp]

Reefs

Bellwood D. R., Hughes T. P., Folke C. & Nyström M. 2004. Confronting the coral reef crisis. *Nature* **429**; pp ??-??.
The world-wide decline of coral reefs calls for an urgent reassessment of current management practices. Confronting large-scale crisis requires a major scaling-up of management efforts based on an improved understanding of the ecological processes that underlie reef resilience. Managing for improved resilience, incorporating the role of human activity in shaping ecosystems, provides basis of coping with uncertainty, future changes and ecological surprises. Here we review the ecological roles of critical functional groups (for both corals and reef fishes) that are fundamental to understanding resilience and avoiding phase shifts from coral dominance to less desirable, degraded ecosystems. We identify striking biogeographic differences in the species richness and composition of functional groups which highlight the vulnerability of Caribbean reef ecosystems. These findings have profound implications for restoration of degraded reefs, management of fisheries, and the focus on marine protected areas and biodiversity hotspots as priorities for conservation. [original abstract; Oekentorp]

Bernecker M. 2005. Late Triassic reefs from the Northwest and South Tethys: distribution, setting, and biotic composition. *Facies* **51**; pp 442–453.
The paleolatitudinal distribution patterns during Ladinian and Carnian time are characterized by an increasing expansion of reefs from the northern to the southern hemisphere. The optimum of reef diversity and frequency in the Norian is associated with the development of extended attached or isolated carbonate platforms. Norian-Rhaetian sponge and coral reefs of the Northern Calcareous Alps developed (1) as reef belt composed of patch reefs in platform-edge positions facing the open-marine northwestern Tethys basins and (2) as patch reefs in intraplatform basins as well as in ramp positions.
Carnian and Norian-Rhaetian sponge and coral reefs of the Arabian Peninsula are formed (1) as reef complexes at the margins of carbonate platforms on the tops of volcanic seamounts in the southern Tethyan

ocean, as small biostromes on these isolated platforms, and (2) as transgressive reef complexes on the attached platform of the Gondwana margin. The Norian Gosaukamm reefal breccia of the NW Tethys is a counterpart of Jabal Wasa reefal limestone of the Gondwana margin with similarities in geological setting and biotic composition. Rhaetian coral biostromes of low diversity known from the Austrian Koessen basin resemble to the time equivalent Ala biostromes of the isolated Kawr platform in the southern Neo-Tethys by forming a discontinuous layer in shallow intraplat form basin setting. [original abstract; Loeser]

Boulvain, F., Demany, B. & Coen-Aubert, M., 2005. Frasnian carbonate buildups of Southern Belgium: the Arche and Lion Members interpreted as atolls. *Geologica Belgica* **8**, pp 69–89.
[keywords: Upper Devonian, limestone, Frasnian, Belgium, carbonate buildups, reefs, atolls; Coen-Aubert]

Cahuzac B. & Gautret P. 1993. Découverte, dans le Miocene inférieur des Landes (Bassin Aquitain, France) de constructions squelettiques flottantes attribuées aux Hydrozoaires et signalées pour la premiere fois dans le Cénozoique français. *Comptes rendus de l'Académie des Sciences* (2), **316**, 6; pp 853–860, 2 pls. [Loeser]

Cahuzac B. & Chaix C. 1996. Structural and faunal evolution of Chattian - Miocene reefs and corals in Western France and Northeastern Atlantic Ocean. In: **Franseen E., Esteban M., Ward W. et al.** (Eds.): Models for Carbonate Stratigraphy from Miocene Reefs Complexes of the Mediterranean Regions. Society of Economic Paleontologists and Mineralogists. *Concepts in Sedimentology and Paleontology* **5**; pp 105–127, 7 figs, 7 tabs. [Loeser]

Carpentier C., Martin-Garin B., Lathuiliere & B. Ferry S. 2004. L'Oxfordien de l'Est du Bassin de Paris : corrélations des épisodes récifaux entre la Lorraine et la Bourgogne. Colloque AIH "Géologie et hydrogéologie du Bassin de Paris", 16/17 nov 2004. Résu. 8p. [Lathuiliere]

Carpentier C., Lathuiliere B. & Ferry S. 2003. La plate-forme carbonatée oxfordienne de Lorraine : arguments pour une ouverture vers la Mer germanique [The Oxfordian carbonate platform of Lorraine: evidences for an opening toward the Germanic Sea]. *Comptes Rendus Geosciences* **336** (2004), pp 59–66.
The study of sedimentary facies in the quarry of Dompcevrin (Middle Oxfordian) located northwestward of St-Mihiel (Meuse department) provides evidences of high-energy depositional conditions. The occurrence of beaches associated with hurricane coral breccias containing megaclasts is characteristic of platform edge environments. The open sea was located northeastward, in the direction of Germany, as it is indicated by the direction of progradation of beaches. It is concluded that the Oxfordian carbonate platform of Lorraine was opened to the northeast toward the Germanic Sea during the Middle Oxfordian. [Lathuiliere]

Carpentier C., Lathuiliere B., Ferry S. & Sausse J. (in press). Sequence stratigraphy and tectonosedimentary history of the Lower and Middle Oxfordian of the eastern Paris Basin (Northeastern France). *Sedimentary Geology*. [Lathuiliere]

Carpentier C., Martin-Garin B. Lathuiliere B. & Ferry S. 2006. Correlation of reefal Oxfordian episodes and climatic implications in the eastern Paris Basin (France). *Terra Nova* **18** (3), pp 191-201. [Lathuiliere]

Cecca F., Martin Garin B., Marchand D., Lathuiliere B., Bartolini A., 2005. Palaeoclimatic control of biogeographic and sedimentary events in Tethyan and Peri-Tethyan areas during the Oxfordian (Late Jurassic). *Palaeogeography, Palaeoclimatology, Palaeoecology* **222**, pp 10–32.
The paleobiogeographical distribution of Oxfordian ammonites and coral reefs in northern and Central Europe, the Mediterranean area, North and East Africa, and the Middle East and Central Asia is compared with the distribution in time and space of the most important lithofacies. Interest in the Oxfordian is focused on changes in facies and

in biogeographical patterns that can be interpreted as the results of climatic events. Paleotemperature trends inferred from oxygen isotopes and paleoclimatic simulations are tested against fossil and facies data. A Late Callovian-Early Oxfordian crisis in carbonate production is indicated by the widespread absence of Lower Oxfordian reefal formations. There is a gap (hiatus) in deposition on epicontinental platforms, with Middle Oxfordian deposits resting paraconformably on Upper Callovian, while shales accumulated in adjacent intracratonic basins. Simultaneously, in Mediterranean Tethys, radiolarites accumulated in deep troughs while Rosso Ammonitico facies formed on pelagic swells. However, deposition on swells was also discontinuous with numerous gaps (hiatuses) and sequences that are much reduced in thickness. Middle Callovian deposits are generally overlain by Middle Oxfordian limestones. The dearth of carbonates is consistent with a cooling event lasting about 1 My. By the middle Oxfordian a warming, leading to "greenhouse" type conditions, is suggested on the basis of both biogeographical (mostly coral reef distribution) and geochemical data. Carbonates spread onto an extensive European platform while radiolarites reached a maximum development in the Mediterranean Tethys. Two distinct latitudinal belts, with seemingly different accumulation regimes, are therefore inferred. Similar latitudinal belts were also present in the late Oxfordian, when carbonates were widespread. The distribution of reefal facies in the late Oxfordian-early Kimmeridgian fits relatively well with GCMs simulations that imply low rainfall in the Tethyan Mediterranean area and slightly higher precipitation in central and northern Europe. Local salinity variations, reflecting more arid or humid conditions, may bias the paleotemperature signal inferred from $d^{18}O$ values. Biogeographical and facies distributions, combined with $d^{18}O$ values, unravel the ambiguity and support a Late Callovian-Early Oxfordian cooling followed by warming in the later Oxfordian. [Lathuiliere]

Díaz M. J. M. (Ed.), **2000.** Areas Coralinas de Colombia. Aq de Henry von Prahl (1949–1989). – 175 pp, 176 figs. (black & white, and colour), 4 tabs.; Santa Marta. [in Spanish]
Los investigadores que se han dedicado en los últimos anos a estudiar

los arracifes coralinos de Colombia son un ejemplo para el mundo. Hasta hace apenas unos cuantos anos era muy poco lo que se conocía acerca de este importantísimo ecosistemo en Colombia, eran contadas las publicaciones que existían al respecto, y éstas, en su mayoría, eran de la autoría de científicos extranjeros. No fue sino hasta finales de la década de 1970 que aparecieron las primeras contribuciones científicas sobre corales y arrecifes coralinos realizadas por inveswtyigadores colombianos. Ahora, 20 anos más tarde, al inicio del siglo XXI, los investigadores en arrecifes coralinos en Colombia, independientemente o conformando reconocidos grupos de investigacíon en el Instituto de Investigaciones Marinas y Costeras-INVEMAR y en la Universidad del Valle, han lo grado ocupar un lugar destacado en el escenario internacional de las ciencias marinas. En el VIII Simposio Internacional de Arrecifes Coralinos (Panamá-1996), el máximoevento cierntifico a nivel mundial en el tema, la paricipación de Colobia, con la presentación de varios trabajos y nutrida asistencia, fue solo superada por la de los Estados Unidos y Australia. Los trabajos publicados por estos investigadores, tanto por los resultados como por las metodologías aplicadas en los estudios de líines base y monitorea de arrecifes coralinos, han sido ampliamente reconocidos por la comunidad cientifica internacional y han servido de inspiracíon en la elaboracion de protocolos metodológicos para el estudio de comunidales coralinas en otras regions.

Esta obra es un compendio de la infromacíon adquirida por los autores en los últimos anos, aunando esfuerzos y aciendo frente a dificultades logísticas y financiereas, pero siempre con entusiasmo y espíritu de colaboración. Se desarolló un plan sistemático de investugacíon acorde con las necesidades de información para adelantar planes y estrategias de manejo del ecosistema, dentro de los lineamientos del Programa Nacional de las Ciencias y Tecnologías de Mar.

En el trancurso de sus invesrigaciones, los autores ganaron amplia experiencia recorriendo y estudiando las areas coralinas de Colombia, lo cual se refleja en las numerouzs publicaciones científicas en reconocidas revistas de circulación internacional. L obrsa que eaquí se presenta es el refelejo de ese empeno y del sentido de compromiso de poner en conocimiento de todo público los diferentes aspectos

relacionados con los arrcifes de coral. Otros países del mundo deben imitar a Colombia en este noblelabor. La contribución que han hecho los autores de este libro es importante y debe ser motivo de orgullo e inspiración para los colombianos y para todos los latinoamericanos. Esta una maestra contundente de la capacidad científica de la región. No cabe dudas de queson obras como etsa las que perduran en el tempo y las que marcan el avance de un país. Quiero agradecerles a mis colegas y amigos colombianos el honor que me han hecho al solicitarme elaborar este prólogo. Estoy seguo que este magnifico libro motivará a presentes y futuras generaciones a seguir adelante investigando el mundo que las rodea. Finalmente, no puedo dejar de sentirne profondamente conmovido por el hecho de que este libro le sea dedicado al insigne científico, de Colombia y del mundo, el Dr. Henry von Prahl, a los diez anos de su trágica y prematura muerte. [Original Prólogo by Jorge Cortés, Ph.D.; CIMAR, Universidad de Costa Rica]
[Authors of the diverse papers are: **L.M. Barrios** (INVEMAR), **M.H. Cendales** (Universidad Nacional – INVEMAR), **J. Garzón-Ferreira** (INVEMAR), **J. Geister** (University Bern/Switzerland), **M. López-Victoria** (INVEMAR), **G. H. Aspina** (INVEMAR), **F. Parra-Velandia** (INVEMAR), **J. Pinzón** (INVEMAR), **B. Varegas-Angel** (RSMAS, Univ. Miami), **F. A. Zapata** (Universidad del Valle), **S. Zea S.** (Uinversidad Nacional – INVEMAR)].
[Content: Prólogo, I. Introdución; II. Unidades ecológicas de las áreas coralinas; III. Áreas coralinas del Caribe: – Áreas oceánicas, 1. Cayos Albuquerque, 2. Cayos Coutown, 3. Complejo arrecifal de San Andrés, 4. Complejo arrecifal des Providencia, 5. Banco Roncador, 6. Banco Serrana, 7. Banco Quitasueno; – Áreas continentales, 8. Urabá chocoana, 9. Isla Tortuguilla, 10. Complejo arrecifal de Isla Fuerte, Bajo Buhsnell y Bajo Burbujas, 11. Archipiélago de San Bernardo, 12. Bajo Tortugas, 13. Península de Barú, Islas del Rosario y bajos aledanos, 14. Bajos de Salmedina, 15. Isla Arena, 16. Banco de las Ánimas, 17. Área de Santa Marta y del Parque Nacional Natural Tayrona, 18. Áreas coralinas de la Guajira, IV. Áreas coralinas del Pacifico: 1. Isla de Malpelo, 2. Isla Gorgona, 3. Chocó Norte : Ensenada de Utría y Punta Tebada, V. Problemática de deterioro y conservación de los arrecifes coralinas en Colombia : 1. Evidencias del deterioro, 2. Causas del deterioro, 2a.

Causas naturales, 2b. Causas antropogénicas, 3. Perspoectivas de manejo y conservación., Bibliografía, Agradécimientos; material supplied by Oekentorp]

Dornelas M., Connolly S. R. & Hughes T. P. 2006. Coral reef diversity refutes the neutral theory of biodiversity. *Nature* **440** (2); pp 80–??.
The global decline of coral reefs highlights the need to understand the mechanisms that regulate community structure and sustain biodiversity in these systems. The neutral theory, which assumes that individuals are demographically identical regardless of species, seeks to explain ubiquitous features of community structure and biodiversity patterns. Here we present a test of neutral-theory predictions with the use of an extensive species-level data set of Indo-Pacific coral communities. We show that coral assemblages differ markedly from neutral-model predictions for patterns of community similarity and the relative abundance of species. Within local communities, neutral models do not fit relative abundance distributions as well as the classical log-normal distribution. Relative abundances of species across local communities also differ markedly from neutral-theory predictions: coral communities exhibit community similarity values that are far more variable, and lower on average, than the neutral theory can produce. Empirical community similarities deviate from the neutral model in a direction opposite to that predicted in previous critiques of the neutral theory. Instead, our results support spatio-temporal environmental stochasticity as a major driver of diversity patterns on coral reefs. [original abstract; Oekentorp]

Fernández L.P., Nose M., Fernández-Martínez E., Méndez-Bedia I., Schröder St. & Soto F. 2006. Reefal and mud mound facies development in the Lower Devonian La Vid Group at the Colle outcrops (León province, Cantabrian Zone, NW Spain). *Facies* **52** (2), pp 307-327.
In the locality of Colle (Cantabrian Zone, NW Spain), the upper part of the Valporquero Shale Formation (Emsian, La Vid Group) contains an interval of shales and marlstones (barren, greenish-grey shales and

fossiliferous, greenish-grey or reddish shales/marlstones) with beds and packages of homogeneous and cross-bedded skeletal limestones. Metre-scale mud mounds and coral biostromes occur encased in the fossiliferous reddish and greenish-grey shales/marlstones, respectively, with the coral biostromes overlying conspicuous skeletal limestone bodies. These rocks were deposited on a carbonate ramp, ranging from above storm wave base for the cross-bedded skeletal limestones to below the storm wave base for the remaining deposits, organic buildups included. The vertical stacking of these facies and the occurrence of the two types of buildups are interpreted to reflect the interplay among several (possibly 4th and 5th) orders of relative sea-level variations, during a 3rd-order highstand.
Coral biostromes occur in early 5th-order transgressive system tracts developed within late 4th-order highstand, and are interpreted to have thrived on a stable granular substrate (skeletal limestones) in non-turbid waters, being later aborted by the onset of muddy sedimentation. Biostrome features suggest that they developed under environmental conditions essentially different from those related to the sedimentation of their granular substrate. Mud mounds occur in 5th-order transgressive and early highstand system tracts tied to early 4th-order sea-level rise. Field relationships suggest that mud mounds grew coevally with muddy sedimentation, with high-frequency variations in carbonate vs. terrigenous mud sedimentation influencing their development. [original abstract; Schroeder]

Helm C. 2005. Riffe und fazielle Entwicklung der florigemma-Bank (Korallenoolith, Oxfordium) im Süntel und östlichen Wesergebirge (NW-Deutschland). *Geologische Beiträge Hannover* **7**; pp 3–339, 46 pls.
During the sedimentation of the platform carbonate deposits of the Korallenoolith Formation (Middle Oxfordian to early Kimmeridgian) small buildups of corals arose in the Lower Saxony Basin. These bioconstructions are restricted to certain horizons (Untere Korallenbank, florigemma-Bank Member etc.) and represent patch reefs and biostromes.
In this study, the development of facies, fossil assemblages, spatial distribution of fossils, and reefs of the florigemma-Bank Member (upper

Middle Oxfordian) in the Süntel Mts and the eastern Wesergebirge Mts is described; the formation of reefs is discussed in detail. Altogether, 12 facies types are described and interpreted. They vary between high-energy deposits as well winnowed oolites and quiet-water lagoonal mudstones. Owing to the significance of biota, micro- and macrofossils are systematically described.

The reefs are preserved authochtonously, are characterized by numerous corresponding features and belong to a certain reef type. According to their size, shape and framework, they represent patch reefs, coral knobs (sensu James, 1983), coral thrombolite reefs (sensu Leinfelder et al., 1994) or Klein- and Mitteldickichte (sensu Laternser, 2001). Their growth fabric corresponds to the superstratal (dense) pillarstone (sensu Insalaco, 1998). As the top of the florigemma-Bank displays an erosional unconformity (so-called Hauptdiskontinuität), the tops of the reefs are erosionally capped. Their maximum height amounts to at least the maximum thickness of the florigemma-Bank which does not exceed 4 metres.

The coral fauna of the reefs is relatively poor; a total of 13 species is recorded. The coral community is overwhelmingly dominated by the thin-branched ramose *Thamnasteria dendroidea* (Lamouroux) which forms aggregations of colonies (*Th. dendroidea* thickets). Leafy to platy *Fungiastrea arachnoides* (Parkinson) and *Thamnasteria concinna* (Goldfuss) occur subordinately, other species are only of minor importance. In a few cases, the reef-core consisting of *Th. dendroidea* thickets is laterally encrusted by platy *F. arachnoides* and *Th. concinna* colonies, and microbial carbonates. This zonation reflects probably a succession of different reef builders as a result of changing environmental conditions (allogenic succession). Moreover, some reefs are overlain by a biostrome made of large *Solenopora jurassica* nodules passing laterally in a nerinean bed.

Microbial carbonates promoted reef growth and favoured the preservation of reef organisms in their growth position or in situ. They exhibit a platy, dendroid or reticulate growth form or occur as downward-facing hemispheroids. According to their microstructure, they consist of a peloidal, clotted or unstructured fabric (predominately layered and poorly structured thrombolite as well as clotted leiolite)

(sensu Schmid, 1996).
Abundant endo- and epibiontic organisms (bivalves, gastropods, echinoids, asteroids, ophiuroids, crabs etc) are linked to the reefs. With regard to their guild structure, the reefs represent occurrences in which only a few coral species serve as builder. Moreover, microbial carbonates contribute to both building and binding. Additional binder as well as baffler are of no importance. According to the species diversity, the dweller guild comprises by far the highest number of invertebrates. The destroyer guild chiefly encompasses bivalves.
The composition of the reef community was influenced by the habitat structure of the *Th. dendroidea* thickets. Owing to the increase in encrusting organisms and other inhabitants of the thickets, the locational factors changed, as light intensity and hydrodynamic energy level along with combined parameter, like oxygen supply declined in the crowded habitat. Therefore a characteristic succession of organisms is developed, which depend on the predominant environmental conditions and respond to changing environmental conditions ("community replacement sequence"). The succession allows the erection of different stages. It arose after the cessation of the polyps with boring organisms and photoautotrophic micro-encrusters (calcareous algae, *Lithocodium aggregatum*). Following the death of these pioneer organisms, encrusting and adherent organisms (serpulids, "*Terebella*" species, bryozoans, foraminifers, Thecideen, sklerospongid and pharetronid sponges, terebratulids), small mobile organisms (limpets) as well as microbial induced carbonates evolved. The final stage in the community replacement sequence involved small cryptic habitats and organisms that belong to the crypts (cryptobionts, coelobites). These conditions especially favoured small non-rigid demosponges ("soft sponges"), which tolerate a small amount of water circulation.
Reef rubble is negligible so that the reefs are bordered by fossiliferous micritic limestone passing laterally in micritic limestone.
Approximately 10% of the study area (outcropping florigemma-Bank) corresponds to reefal deposits whereas the remaining 90% encompass lagoonal inter-reefal deposits.
The reef development is a good example for the interaction between reef growth, facies development and sea-level changes. It was initiated

by a sea-level rise (transgression) and corresponding decrease in hydrodynamic energy level. Colonization and reef growth took place on a coarse-grained substrate composed of oncoids, larger foraminifers and bioclasts. Reef growth took place during uniform environmental conditions in a calm open marine lagoonal setting. Increasing importance of spherical coral morphs toward the northeast (section Kessiehausen, northwestern Süntel Mts) reflects higher turbidity and facies transition to coral occurrences of the florigemma-Bank Member in the adjacent Deister Mts.

The reef growth was neither influenced by storms nor by input of siliciclastic deposits, and took place in short time - probably in 1000 years. On the whole, mesotrophic conditions during reef growth seem to be likely. The mass appearance of solenoporids and nerineids in the upper part of the florigemma-Bank Member point to enhanced nutrient level as a result of regression. In addition, this scenario of fluctuations in nutrient availability seems to be responsible for the cessation of reef corals. The sea level fall reached its climax in the subaerial exposure and palaeokarst development of the florigemma-Bank.

The reef building corals are typical pioneer species. The blade-like, flattened *F. arachnoides* colonies are characterized by their light porous calcium carbonate skeleton, which is a distinct advantage in soft bottom environment. Thus, they settled on soft bottom exposing the largest possible surface area to the incoming light. On the other hand, in response to their small light requirements they were also able to settle shaded canopy structures as well as reef caves. *Th. dendroidea* is an opportunistic coral species in very shallow, well illuminated marine environment. Their thin and densely spaced branches led to a very high surface/volume ratio of the colonies, which were extraordinarily capable to exploit incoming light due to their small thamasterioid calices characterized by "highly integrated polyps". In addition, sideward coalescence of branches during colony growth led to a wave-resistant framework and favoured an authochthonous preservation of the reefs. Asexual reproduction by fragmented colonies promoted reef development as *Th. dendroidea* thickets laterally extend over the sea floor or new reefs have developed from broken fragments of parent colonies.

Similar build ups with *Th. dendroidea* as a predominant or frequent reef building coral species are known from the Paris Basin and the Lower Saxony Basin (Kleiner Deister Mts). These build ups evolved in well light-flooded shallow water and represent coral reefs or coral thrombolite reefs. Intra- and inter-reef deposits vary between well-winnowed reef debris limestone and mudstones representing considerably calmer conditions. Solenoporid, nerineids and diceratides belong to the characteritic fossils of these occurrences. However, diceratides are missing in the florigemma-Bank Member. *Th. dendroidea* differs in its colonization of low- to high-energy environment from recent ramose scleractinian corals (e.g., *Acropora* and *Porites* species). The latter are restricted to agitated water habitats creating coral thickets and carpets. According to the morphologic plasticity of *Th. dendroidea* thick-branched colonies evolved in a milieu of high water energy, whereas fragile, widely- and thin-branched colonies prevail in low-energy settings. Moreover, due to relatively rapid upward growth, *Th. dendroidea* were able to cope with elevated sedimentation rates.
68 benthonic foraminiferan species/-taxa have been recognized in thin sections. Agglutinated foraminifers (textulariids) predominate in comparison with rotaliids and milioliids. Numerous species are restricted to a certain facies type or occur in higher population densities, in particular *Everticyclammina* sp., a larger agglutinated foraminifer, which occur in rock building amount. Among the 25 reef dwelling foraminiferal species, a few were only known from Late Jurassic sponge reefs. Another striking feature is the frequency of adherent foraminiferal species.
Fauna and flora, in particular dasycladaleans and agglutinated foraminifers, document palaeobiogeographic relationships to the Tethys and point to (sub)tropical conditions. Moreover, in Germany this foraminiferan assemblage seams to be incredible. In southern Germany similar tethyan type assemlages arose not as early as in Middle Tithonian times. [original abstract; Loeser]

Herbig H.-G. & Weber H. M. 1997. Der mitteldevonische Riffzyklus im Bergischen Land - von der siliziklastischen Rampe zum

Karbonatschelf. *In*: **Ristedt, H.** (ed.). Sediment `97. Exkursionsführer des 12. Sedimentologentreffens. *Terra Nostra* **97**, 3; pp 51–67, 14 figs. [Oekentorp]

Ikeda, E., Iryu, Y., Sugihara, K., Ohba, H., and Yamada, T., 2006, Bathymetry, biota, and sediments on Hirota reef, Tane-ga-shima; On the northernmost coral reef in the Ryukyu Islands. *Island Arc*, 15(4), 402-414. [T. Sugiyama]

Iryu, Y., Matsuda, H., Machiyama, H., Piller, W.E., Quinn, T.M. and Mutti, M., 2006, An introductory perspective on the COREF Project. *Island Arc*, 15(4), 389-401. [T. Sugiyama]

Karlson R. H., Cornell H. V. & Hughes T. P. 2004. Coral communities are regionally enriched along an oceanic biodiversity gradient. *Nature* **429**; pp ??-??
Ecological communities are influenced by processes operating at multiple scales. Thus, a better understanding of how broad- as well as local-scale processes affect species diversity and richness is increasingly becoming a central focus in modern community ecology. Here, in a study of unprecedented geographical scope, we show significant regional and local variation in the species richness of coral assemblages across an oceanic biodiversity gradient. The gradient that we sampled extends 10.000 km eastwards from the world´s richest coral biodiversity hotspot in the central Indo-Pacific. Local richness and the size of regional species pools decline significantly across 15 islands spanning the gradient. In addition, richness declines across three adjacent habitats (reef slopes, crests and flats). In each habitat, a highly consistent linear relationship between local and regional species richness indicates strong regional enrichment. Thus, even on the most diverse coral reefs in the world, local coral assemblages are profoundly affected by regional-scale processes. Understanding these historical and biogeographical influences is essential for the effective management and preservation of these endangered communities. [original abstract; Oekentorp]

Kershaw, St., Li, Guo & Braga, J. C., 2005. A Holocene coral-algal reef at Mavra Litharia, Gulf of Corinth, Greece: structure, history, and applications in relative sea-level change. *Marine Geology* **215**, pp 171–192.
A Holocene coral-algal reef at Mavra Litharia, south-central coast of Gulf of Corinth, Greece, is exposed from ca. 2 to 9.3 m above sea level on an uplifting footwall associated with the Eliki Fault. The reef lacks sea-level-critical species but its coralline algal assemblage indicates a ca. 10m water depth. Reef-frame components date from 9280–8730 years BP to 6343–5993 BP, so the reef frame grew between ca 10,000 and 6,000 years BP. The youngest dated shells (1860–305 years BP) from the site are accessory organisms collected from the lowest 2m outcrop, one of which (*Dendropoma*) grew at sea level {**Stiros, S.C. and Pirazzoli, P., 1998.** Late Quarternary coastal changes in the Gulf of Corinth, Greece: tectonics, earthquake, archaeology. Guidebook for the Gulf of Corinth Field Trip, Patras University, Greece, Patras, September 14–16, 1998}. Reef history has four phases: a) growth and lithification of reef; b) development of smooth-walled dissolution pipes and caves in the reef; c) colonisation of dissolution surfaces by Mn-Fe crusts (that may be bacterially formed), barnacles, serpulid worms, and rock-boring bivalves; and d) uplift to present position where much of the reef is eroded. Sea-level history after 11,500 years BP, when rising post-glacial sea level overtopped the Rio sill and returned the Gulf of Corinth to a marine environment, is reconstructed. Calculations of interplay between sea-level rise and tectonic uplift suggest that between 11,500 and 10,000 years BP sea level rose very quickly, associated with deglaciation at the close of the Younger Dryas, MWP-1B, at a maximum of 25.6 mm/year (broadly consistent with other studies), then slowed to ca. 4.4 mm/year until 6000 years BP when sea level was ca. 3 m below modern, after which sea level rose at ca. 0,5 mm/year to modern day. Tectonic uplift rate of maximum 3 mm/year, slower than sea.level rise, means that the reef could not catch up to sea level until recent times. [original abstract; Oekentorp]

Kiessling W. 2003. Riffdiversität in der Erdgeschichte - Fossilbericht und Interpretation. *In*: **Gradstein St. R., Willmann R. & Zizka G.**

(eds.). Biodiversitätsforschung. Die Entschlüsselung der Artenvielfalt in Zeit und Raum. *Kleine Senckenberg-Reihe* **45**; pp 205-215, 8 figs.; Frankfurt am Main. [in German, with English abstract]
Coral reefs are amongst the most diverse ecosystems on our planet. Historical and ecological factors are discussed as potential causes of the extremely high species richness ranging to hundreds of thousands. The extreme depletion of nutrients, the spatial complexity and the common but moderate disturbances of the reef building is well documented in the fossil record but quantitative fluctuations of reef diversity are only roughly known. The best available diversity curves the last 550 million years exhibit strong variations of both species richness within reefs and the global diversity of reef builders. These fluctuations are often related to mass extinctions but also occur independently of evolutionary crises. The most important factor governing secular fluctuations of reef diversity is probably the similarity nutrient concentration in the oceans. Climate change, while influencing the biological composition of reefs, had only limited effect on reef diversity. [original abstract; Oekentorp]

Lathuiliere B., Bodeur Y., Gaillard C., Habrant N., Hanzo M., Marchand D. & Werner W. 2003. Coral zonation of an oxfordian reef tract in the northern French Jura. International Congress on Fossil Cnidaria and Porifera, Graz, Austria; *Berichte des Institutes für geologie und Paläontologie der Karl-Franzens-Universität* Graz/Austria, **7**, p. 50. [Lathuiliere]

Lathuiliere B., Carpentier C., Andre G., Dagallier G., Durand M., Hanzo M., Huault V., Harmand D., Hibsch C., Le Roux J., Malartre F., Martin-Garin B., Nori L., 2003. Production carbonatée dans le Jurassique de Lorraine. Excursion Groupe Français d'Etudes du Jurassique, livret-guide, 2 vol. 113 p.+ 42 p. unpublished. [Lathuiliere]

Lathuiliere B., Carpentier C., Huault V. & Martin-Garin B. 2006. Biological zonation of Oxfordian reefs. *Volumina Jurassica* **4**, p. 120. [Lathuiliere]

Lathuiliere B., Carpentier C., Huault V. & Martin-Garin B. 2006. Les assemblages coralliens du Jurassique supérieur du site de Bure. 7eme Colloque du GdR FORPRO. La Grande Motte 2-4 mai 2006 p. 188. [poster; Lathuiliere]

Lathuiliere, B., Gaillard, Chr., Habrant, N., Bodeur, Y., Boullier, A., Enay, R., Hanzo, M., Marchand, D., Thierry, J. & Werner, W. 2005. Coral zonation of an Oxfordian reef tract in the northern French Jura. *Facies* **50**, pp 545–559.
[key words: Jurassic, Benthic communities, Palaeoenvironment, Corals, Reefs, Facies model, Carbonate platform]
During the Middle Oxfordian, numerous coral reefs flourished on the northern margin of the Tethys Ocean. The outcrop of Bonnevaux-le-Prieuré (northern French Jura mountains) provides a rare opportunity to observe a nearly complete section allowing the installation, evolution and demise of this global carbonate reef rich event to be studied. Quantitative data on coral assemblages together with sedimentological and palaeoecological observations lead to the reconstruction of a reef tract coral zonation. Starting from the outer slope, *Dimorpharaea*, *Microsolena*, *Dendraraea*, *Comoseris*, and *Stylina* ecozones are recognized. This new facies model implies a central position for an oolitic shoal in the highest energy zone, within the *Comoseris* ecozone. Applying this facies to the sequence stratigraphic interpretation of the vertical succession results in recognising a third-order relative sea-level fluctuation, which can be correlated at least with Lorraine (France) and Switzerland. [original abstract; Lathuiliere, Oekentorp]

Martin-Garin B, Lathuiliere B., Geister J., Chellai E. H. Huault V. Ourribane M. 2004. Les associations coralliennes du Jurassique supérieur, une clef de lecture pour la géologie des récifs: exemple du cap Ghir, Haut-Atlas atlantique, Maroc. Deuxieme colloque sur le Jurassique marocain (CJM2), Marrakech (Maroc), 21–22 avril 2004, p. 76–77. [Lathuiliere]

Martin-Garin B., Lathuiliere B., Geister J., Chellai E.H. & Huault V. (in press). Geology, facies model and coral associations of the Late

Jurassic reef complex at cape Ghir (Atlantic High Atlas, Morocco). *Comptes Rendus Geosciences*. [Lathuiliere]

Montaggioni, L.F., 2005. History of Indo-Pacific coral reef systems since the last glaciation: Development patterns and controlling factors. *Earth Science Reviews*: 1–75.
[keywords: Corals, Reefs; Growth; Paleoenvironments; Indian Ocean, Pacific Ocean; late Pleistocene; Holocene]
A significant body of new information about the development of coral reefs during the 23 ka has been generated in the last three decades. The Indo-Pacific province structures from a variety of geodynamic settings have bee investigated using subsurface drilling and submersible diving. This paper is based principally on the re-examination of the core data-set from the literature, with reconversions of many previously published radiocarbon ages into calendar dates.
Seven framework and three detrital facies were identified on the basis of the nature and growth shapes of dominant framework builders, and on that of the texture of sediments, respectively. Framework facies in high-hydrodynamic energy settings were dominated by an association of coralline algae and robust-branching corals (*Acropora robusta* group, *A.* gr. *humilis*, *A. palifera*, *Pocillopora damicornis*) with locally encrusting coral forms (faviids). In moderate energy environments, these were replaced by domal (*Porites*), tabular-branching (*Acropora* gr. *hyacinthus*) and arborescent (*Acropora* gr. *muricata*), whereas sheltered areas included an association of arborescent, foliceous (*Montipora*, *Pavona*) and encrusting coral species. Detrital facies comprise coral rubble, carbonate sand and mud. On compositional and textural bases, four main sand subfacies were recognized: coralgal rudstone to packstone; coral-molluscan grainstone/packstone; molluscan-foraminiferal grainstone/packstone; and green algal (*Halimeda*) grainstone/packstone. Despite some overlaps in the sand facies association, each subfacies can provide additional support to reconstruction of paleoreef environment.
Three types of facies association were identified within entire reef-margin sequences: framework of homogeneous composition reflecting stability of environmental conditions through time; superimposition of

two distinct frameworks, usually as deeper water corals overlain by shallower, higher energy ones, and recurrent alternations of shallower and deeper coral assemblages. The two last associations resulted probably from lateral displacement of coral communities in response to rapid changes in accommodation space. Such facies transitions also are described from back-reef sediment piles: gravel graded into sand and mud successively as a result of upward shallowing. The degree of reef development seems to be linked to coral community structure. Communities consisting principally of branching and domal coral forms favoured substantial accretion and the formation of well developed reefs, whereas assemblages comprising foliaceous and encrusting colonies produced only incipient reefs. Within reef systems, the proportions of detritus over framework tend to increase as hydrodynamic energy declines. The Indo-Pacific reef systems are classified into four types on the basis of dominant depositional patterns: balanced aggrading/overlapping, unbalanced aggrading/downlapping, prograding and backstepping types.Vertical accretion rates of frameworks are highly variable and are not directly dictated by coral growth habits. However, the highest rates recorded (up to 20 mm $year^{-1}$) relate to tabular- and arborescent-acroporid rich sections. Abrupt variations in the aggradation rates of framework are recorded in sequences at the transitional zone between two distinct coral assemblages In detritus-dominated sequences, accumulation rates range from 0.2 to about 40 mm $year^{-1}$, with higher values suggesting intense hurricane-controlled deposition. In addition, accretion rates also seem to depend on water-energy conditions. In high-energy environments, aggradation rates did not exceed 12 mm $year^{-1}$, but reached 25 mm $year^{-1}$ in more protected areas. By contrast, lateral accretion operated at an average rate 90 mm $year^{-1}$ in agitated waters, while it did not exceed the mean rate of 55 mm $year^{-1}$ in calm waters. Changes in accretion rates appear to be linked to reef growth modes. In the reef zones driven by a "keep-up" mode, mean vertical accretion rates range at around 6 mm $year^{-1}$. The reef zones developed through a "catch-up" mode at rates of 3–4 mm $year^{-1}$. There was little variation in accretion rates according to latitude.
At the Last Glacial Maximum, from 23 to about 19 ka BP, reefs (Reed Generation RGO) only developed along what were to become the fore-

slopes of present reefs, forming accumulations a few metres thick at vertical rates of up to 1 mm year^{-1}. The rapid post-glacial rise in sea level, from about 19 to 6.5 ka BP, was accompanied by the settlement of three successive reef generations (the so called RGI, RGII and RGIII), within the periods 17.5–14.7, 13.8–11.5 and 10 ka BP to Present. During the Post-glacial transgression, regional to local differences in gross morphology and internal architecture of the reefs have been determined by differing sea-level histories in combination with neotectonics and typographic factors. Locally, reef colonization seems to have been faciliated or prevented chiefly by small-scale topographic features. Development during subsequent deglaciation was probably largely independent of variations in sea surface temperatures. Water turbidity also seems to have been only a minor determinant of reef settlement and growth, but may locally have controlled the composition of coral communities, resulting in the growth of turbidity-tolerant and foliaceous forms.

Changes in atmospheric CO_2 levels remained within the tolerance thresholds for reef calcification. The three main reef growth episodes coincide roughly with rapid increases in atmospheric pCO_2. Dust input and variations in sea surface salinities seem to have had a very limited control on reef growth. The LGM was characterized by salinities comparable with those of the present, but higher dust fluxes. By contrast, nutrient levels, hydrodynamic energy, and to a lesser, extent coral recruitment in relation to substrate availability and ocean circulation, have played major roles in determining reef accretion patterns at both local and regional scales. Two periods of increased up-welling in the western Indian Ocean, at 15.3 and 11.5–10.8 ka BP, coincided with the demise of RGI and RGII. During deglaciation, high-frequency storm events probably led to a scarcity of typical growth framework reefs and favoured the formation of structures composed of reworked and recemented coral framework. Storm control may have been particularly important in the mid-Holocene when water depths over incipient reefs were greater than 5 m. From the LGM to the early Holocene, coral settlement has probably declined due to a lack of suitable nurseries, until the modern patterns of ocean circulation were established and thus favoured larval dispersal from refuges. It is highly desirable to improve

analysis of the core database and to increase the number of core-transects, including fore-reef sites, to enhance our knowledge of Recent reef development. [original abstract; Oekentorp]

Olivier N., Carpentier, C., Martin-Garin B. Lathuiliere B., Gaillard C., Ferry S., Hantzpergue P. and Geister J. 2004. Coral-microbialite reefs in pure carbonate versus mixed carbonate-siliciclastic depositional environments: the example of the Pagny-sur-Meuse section (Upper Jurassic, Northeastern France). *Facies* **50**: pp 229–255. [Lathuiliere]

Olivier N., Lathuiliere B. & Thiry-Bastien P. 2006. Growth models of Bajocian coral-microbialite reefs of Chargey-les-Port (eastern France): palaeoenvironmental interpretations. *Facies* **52**, pp 113-127. [Lathuiliere]

Pandolfi J. M. 2006. Corals fail a test of neutrality. *Nature* **440** (2); pp 35-??.
Ecologists continue to wrestle with a central question in biodiversity studies - the predictions of species´ distribution in various environments. A merger of different theories is the long-term prospect. [comments on a paper by **Dornelas & al. 2006** - see above - in the same volume; Oekentorp]

Remia, A. & Taviani, M., 2005. Shallow-buried Pleistocene *Madrepora*- dominated coral mounds on a muddy continental slope, Tuscan Archipelago; NE Tyrrhenian Sea. *Facies* **50**, pp 419–425.
[key words: Deep coral mound, Mediterranean Sea, Pleistocene, *Madrepora*]
Subfossil zooxanthellate deep-sea coral mounds occur at 355-410 m on the continental slope of the NE Tyrrhenian Sea between Gorgon and Capraia islands, Tuscan Archipelago. These low-relief patch reefs are at present buried by a thin muddy drape. Their age is latest Pleistocene. The colonial scleractinian *Madrepora oculata* is the major frame builder, in association with the solitary coral *Desmophyllum dianthus* and the colonial coral *Lophelia pertusa*. These NE-Tyrrhenian *Madrepora* dominated coral mounds represent one of the few known Mediterranean

examples of deep-coral colonization of a muddy, low-gradient continental slope. [original abstract; Oekentorp]

Reolid M., Gaillard C. & Lathuiliere B. 2006. Microfacies and microfossil assemblages from the Oolithe corallienne de Pagnoz Formation (French Jura, Oxfordian): stratigraphic fluctuations in a shallowing upward sequence. *XXII jornadas de la Sociedad espanola de Paleontología*, pp 75-77. [Lathuiliere]

Sasaki, K., Omura, A., Miwa, A., Tsuji, Y., Matsuda, H., Nakamori, T., Iryu, Y., Yamada, T., Sato, Y. and Nakagawa, H., 2006, 230Th/234U and 14C dating of a lowstand coral reef beneath the insular shelf off Irabu Island, Ryukyus, southwestern Japan. *Island Arc*, 15(4), 449-461. [T. Sugiyama]

Shiraishi F. and A. Kano, 2004, Composition and spatial distribution of microencrusters and microbial crusts in upper Jurassic-lowermost Cretaceous reef limestone (Torinosu Limestone, Southwest Japan). *Facies*, 50, 217-227. [T. Sugiyama]

Somerville, I.D. 2003. Review of Irish Lower Carboniferous (Mississippian) mud-mounds: depositional setting, biota, facies and evolution. In **Ahr, W., Harris, A.P., Morgan, W.A. and Somerville, I.D.** (eds) Permo-Carboniferous Carbonate Platforms and Reefs. *Society for Economic Paleontologists and Mineralogists Special Publication* **78** *& American Association of Petroleum Geologists Memoir* **83**, pp 239–252. [Somerville]

Stanley G. D. Jr. 2004. Triassic reefs of North America and the Tethys: outposts in the ancient Pacific. *10th International Coral Reef Symposium*, June 28–July 2, 2004, Okinawa, Japan. Abstracts, p. 142. [Baron-Szabo]

Stanley G. D. Jr. 2004. Early Mesozoic reefs and the rise of scleractinians. *Geological Society of America Abstracts with Programs* **36**, 3, p. 51. [Baron-Szabo]

Stanley G. D. Jr. 2005. Coral microatolls from the Triassic of Nevada: oldest scleractinian examples. *Coral Reefs* **24**, 2, p. 247. [Baron-Szabo]

Stock, C. W. & Holmes A. E., 2004. Latest Silurian (Pridoli) reefs in the Appalachian Basin. *Geological Society of America, Abstracts with Programs* **36** (3), p. 51. [Stearn]

Sugihara, K. et al., 2006, Latitudinal changes in larger benthic foraminiferal assemblages in shallow-water reef sediments along the Ryukyu Islands, Japan. *Island Arc,* **15**: 430-447. [T. Sugiyama]

Sugihara, K., Nakamori, T., Iryu, Y., Sasaki, K., and Blanchon, P., 2003, Holocene sea-level change and tectonic uplift deduced from raised reef terrace, Kikai-jima, Ryukyu Islands, Japan. *Sedimentary Geology* **159**: 5-25. [T. Sugiyama]

Takeuchi, Y., Iryu, Y., Sato, T., Chiyonobu, S., Yamada, T., Odawara, K. and Abe, E., 2006, Pleistocene reef development and stratigraphy on Ie-jima, the Ryukyu Islands, southwestern Japan. *Proceedings of the 10th International Coral Reef Symposium (Okinawa)*, 536-546. [T. Sugiyama]

Webb E. 2005. Quantitative analysis and paleoecology of earliest Mississippian microbial reefs, Gudman Formation, Queensland, Australia; not just post-disaster phenomena. *Journal of Sedimentary Research* 75, issue 5, pp 877-896. [Schroeder]

Various topics

Blieck A., Brice D., Courville P., Crônier C., Derycke C., Hubert B., Mistiaen B., Nicollin J.-P. & Zapalski M. K. 2006. La Vie en Ardenne occidentale au Paléozoique supérieur (Dévonien-Carbonifere, 416 a 299 Ma): paléobiodiversité, événements paléobiologiques, paléoenvironnements, paléobiogéographie. *Géologie de la France* **2006** (1), pp 21-27. [Zapalski]

Coen-Aubert M. & Boulvain F. 2006. Frasnian. *In*: **Dejonghe L.** (ed.): Current status of chronostratigraphic units named from Belgium and adjacent areas. *Geologica Belgica* **9**, pp. 19-25.
The name Frasnian, which comes from the locality of Frasnes near Couvin in Belgium, was introduced by Gosselet in 1879 and was formally retained for the lower stage of the Upper Devonian by the Subcommission on Devonian Stratigraphy in 1981. The modern definition of the Frasnian is based on conodonts and the historical background of the stage is developed in detail herein. Data about the lithostratigraphy, sedimentology, biostratigraphy, chronostratigraphy and absolute age of the Frasnian can also been found in this contribution. [Coen-Aubert]

Cope, J.C.W., 2005. Octocorallian and hydroid fossils from the Lower Ordovician of Wales. *Palaeontology* **48**, 2: 433–445.
Octocorallian and hydroid fossils are described from the Lower Ordovician (Arenig Series) of Wales. They include gorgoniids that are the earliest known fossils of this group: *Petilavenula varifurcata* gen. et sp. nov. and *P. surculosa* gen. et sp. nov. Pennalina crossi gen. et sp. nov. is probably also a gorgoniid but may be a hydroid. A new hydroid, *Pontifennia gracilis* gen. et sp. nov., is also described. [original abstract; Loeser]

Dieni, I., Giordano, D., Loydell, D.K. & Sassi, F.P., 2005. Discovery of Llandovery (Silurian) graptolites and probable Devonian corals in the Southalpine Metamorphic Basement of the Eastern Alps (Agordo, NE Italy. *Geological Magazine* **142** (1), 1–5. [key words: graptolites, corals,

Silurian, Devonian, Eastern Alps]
We report the discovery of Aeronian (Middle Llandovery) graptolites, and corals of probable Devonian age, in boudins hosted by greenschists, within the Southalpine Metamorphic Basement. These discoveries provide key constrains to the depositional age range of the protoliths. This remarkable occurrence of almost undeformed graptolites and compound corals in boudins within a metamorphic shear zone indicates very marked strain partitioning. [original abstract; Oekentorp]

Fontaine H., Salyapongse S. & Suteethorn V. 2005. Fossil Diversity in limestones of Thailand: a cornucopia of information about the history of life. *Nat. Hist. Bull. Siam Soc.* **53** (1), pp 33–70, 11 figs., 3 tabs.
In Thailand, fossils are common and diverse. They come from both terrestrial and marine environments. The belong to many time periods beginning with the Cambrian, thus spanning more than 500 million years (the Phanerozoic eon): This rich past emerges from extensive published data and is still very interesting to explore. This publication concerns only fossils included in limestone deposited in the seas of the past. Limestone is widespread in Thailand and of various ages. Marine floras (algae) and faunas are in abundance at many limestone exposures and their skeletons are an important component of the limestone. They give deep-time perspective on the evolution of the life in the seas of the past.
The limestones of Thailand are not restricted to the widespread visible on the land. They have been found by hydrocarbon exploration at varied depths and in different areas. Permian limestone has been reached by wells under the Khorat Plateau and its extent has been determined by seismic interpretation; it is widespread (for instance, see Mouret, 1994). This publication is concerned only with limestones exposed at ground surface. Limestone is a general term for diverse types of rocks, deposited in different environments. Before describing their biodiversity, we discuss the origin of the limestones of Thailand. [original abstract; Oekentorp]

Fontaine H., Salyapongse S., Suteethorn V., Tian P. & Vachard D. 2005. Sedimentary rocks of the Loei Region, Northeast Thailand. 165

pp, 15 figs., 1 tab., 30 pls.; Bangkok.
In the 1950s, the Department of Mineral Resources was very active in the geologic reconnaissance of the diverse mineral deposits of Thailand (Brown et al., 1951), but it was also interested to extend the investigation to other geologic problems. For instance, it was eager to find good sections of sedimentary rocks, to study their fossils, and then, to distinguish biozones easy to correlate with the rocks of other countries (Sethaput, 1956). An important programme started in Loei Province and was carried out by M. Veeraburus, D. Bunnak and A. Hongnusothi, with the cooperation of Japanese paleontologists (T. Kobayashi, H. Igo, T. Hamada, J. Iwai, J. Yanagida). K. Pitakpaivan (1966) studied fusulines from calcareous shale of Wang Saphung area as well as from other localities of Thailand; he became the first Thai paleontologist.
Near Wang Saphung, Middle-Upper Carboniferous and Permian fossils were collected in fair quantity. They were diverse and consisted of trilobites, foraminifera, conodonts, brachiopods, and ammonoids. They were described in many publications; see the references of this publication. Permian plant imprints were discovered in Loei area.
In 1980 in Loei region, information on rocks older than Middle Carboniferous was very poor. Fossils, supposed to be Devonian in age, had been mentioned as early as 1925, but at a single locality, without good identification and description. New research was needed; it was undertaken under an agreement between the Department of Mineral Resources and CCOP, New results were obtained during the first fieldwork carried out with the cooperation of Mr. N. Nakornsri and Mrs. B. Sektheera; they were published in CCOP Newsletter in 1981. Devonian and Lower Carboniferous fossils had been discovered at a few localities. Outside of the Wang Saphung area, other parts of the Loei region appeared as also very rich in fossils and very interesting, but they remained poorly known. Some geologists became enthusiastic for new investigations, especially Dr. V. Suteethorn and Mr. W. Tantiweanit. New fieldwork led to many new discoveries of fossiliferous localities. Later on, Mr. S. Salyapongsewas happy to be involved in this research and was eager to extend it. Dr. D. Vachard of the University of Lille (France) has been very helpful in the identification of the Carboniferous

and Permian microfossils. Dr. B. Mistiaen and Dr. D. Brice of the University of the University Federation of Lille are presently studying Devonian samples collected from the Loei region and consisting of stromatoporoids, Tabulata and some brachiopods.
The study of this publication corresponds to the programme proposed in 1956 by Mr. V. Sethaput (or V. Sresthaputra in another occasional way of writing). [original first paragraphs of the introduction by H. Fontaine; Oekentorp]

Fryer G. and Stanley G. D. Jr. 2004. A Silurian porpitoid hydrozoan from Cumbria, England and a note on porpitoid relationships. *Palaeontology* **47**, 5, pp 1109–1120. [Baron-Szabo]

Głuchowski, E., 2005. Epibionts on upper Eifelian crinoid columnals from the Holy Cross Mountains, Poland. *Acta Palaeontologica Polonica* **50** (2), pp 315–328.
[Among the numerous epibionts there occur also a rugosan *Adradosia*? sp. and a tabulate *Favosites* – Coen-Aubert]

Halamski A. T. & Zapalski M. K. 2006. Les schistes a brachiopodes de Skały - un niveau exceptionnel. Premiere partie: inventaire faunistique. *Bulletin mensuel de la Société linnéenne de Lyon* **75** (3), pp 145-150. [Zapalski]

Hladil, J., 2005. The formation of stromatactis-type fenestral structures during the sedimentation of experimental slurries – a possible clue to a 120-year-old puzzle about stromatactis. *Bulletin of Geosciences (Prague)* **80** (3), pp 193–211.
[This study emphasizes the overall reasons together with experimental evidence suggesting that the stromatactis fenestrae (and a number of their characteristic features) may be produced basically during the sedimentation process. Thank you for taking of these results into consideration thinking about their further testing – confirmation or falsification when similar rocks or sedimentary systems will be studied by you in the future. Journal can be accessed on-line at http://www.geology.cz/app/bulletin.htm – Hladil.]

Hou, X.-G., Stanley G. D. Jr., Zhao J. and Ma X. 2005. Cambrian anemones with preserved soft tissue from the Chengjiang biota. *Lethaia* **38**, pp 1–12. [Baron-Szabo]

Iryu, Y., Yamada, T., Matsuda, S. and Odawara, K., 2006, Pliocene to Quaternary carbonate sequence on Okinawa-jima. *Proceedings of the 10th International Coral Reef Symposium (Okinawa),* 2022-2036. [T. Sugiyama]

Kano A., T. Kawai, J. Matsuoka and T. Ihara, 2004, High-resolution records of rainfall events from clay bands in tufa. *Geology*, 32, 793-796. [T. Sugiyama]

Mitchell, S.F., Pickerill, R.K., Stemann, Th.A., 2001. The Port Morant Formation (Upper Pleistocene, Jamaica): high resolution sedimentology and paleoenvironmental analysis of a mixed carbonate clastic lagoonal succession. *Sedimentary Geology* **144**: 291-306.
The Port Morant Formation consists of a mixed clastic-carbonate sedimentary sequence that was deposited as a lagoon fill during the Sangamonian interglacial. Ten sedimentary facies are recognised and sequence stratigraphic analysis indicates the presence of transgressive and highstand systems tracts. The transgressive systems tract consists of a basal transgressive conglomerate (facies I), crustose coralline algal bindstones-boundstones (II) and 2 m high *Solenastrea* coral heads (III). The highstand systems tract is represented by sediments of a braid delta/fan-delta prograding into the lagoon (IV and V), marine pebbly sandstones deposited adjacent to mangrove swamps (VII), more distal algal mudstones (VIII), and sheet-like (VI) and channelized (IX) conglomerates filling delta-top distributary channels. A barrier and/or fringing reef is present (X), but its relationship with the lagoon-fill sediments is obscure due to poor exposure. Carbonates are restricted to the transgressive systems tract and the barrier/fringing reef (transgressive and/or highstand systems tract). Two transgressive events are recog-nized, the transgressive systems tract (facies I to III) and facies VII, the latter either a second sea-level rise or due to delta

abandonment. A single coral date from facies VII gave an age of 132 ą7 kyr. This indicates that the upper transgressive event (facies VII) belongs to the early highstand that has been recognized in isotope substage 5e. The lower transgressive event (facies I to III) in the Fort Morant Formation is therefore either also of this age, or older. [original abstract; Loeser]

Niebuhr, B., Wilmsen, M., 2005. First record of the hydroid *Protulophila gestroi* Rovereto, 1901, a serpulid symbiont, from the Middle Cenomanian *primus* Event, northern Germany. *Neues Jahrbuch für Geologie und Paläontologie, Monatshefte* **4**: 219–232.
The colonial hydroid *Protulophila gestroi* Rovereto, 1901, a common serpulid symbiont, is recorded for the first time from the lower Middle Cenomanian *Praeactinocamax primus* Event of northern Germany. It is represented by a reticulate system of thin stolons, small subcircular openings or chimney-like bosses, and elongate polyp chambers preserved by in vivo bioimmuration in the outer layers of the calcareous tubes of serpulid worms. From the rich serpulid fauna of the *primus* Event, only representatives of the genus *Rotulispira* Chiplonkar & Tapaswi are infested whereas other genera (e.g., *Nogrobs* (*Tetraditrupa*) Regenhardt and *Pentaditrupa* Regenhardt) appear to be not affected. This observation may indicate that *P. gestroi* was selective in the choice of its hosts, a phenomenon known also from recent colonial hydroids living as polychaete symbionts. A commensalic relationship is inferred for *P. gestroi* from the *primus* Event as the percentage of infestation (ca. 40%) indicates that infested and non-infested serpulids were roughly equally successful in the same environment. [original abstract; Loeser]

Olivier, N., Lathuiliere, B., Thiry-Bastien, Ph., 2006. Growth models of Bajocian coral-microbialite reefs of Chargey-les-Port (eastern France): palaeoenvironmental interpretations. *Facies* **52**, 1: 113 - 127.
Very large amount of microbialites, up to 70% of the reef volume takes part in the edification of Lower Bajocian coral reefs in the Chargey-les-Port quarry (Haute-Saône, France). Such high amounts of microbialites were unknown within bioconstructions of Middle Jurassic age. Along the 16 m-thick section, seven successive biohermal or biostromal units

developed on a shallow platform. Bioconstructions display a first coral growth phase with either constratal or superstratal growth fabrics. Coral fauna is relatively poorly diversified and is dominated by massive forms (*Isastrea*, *Thamnasteria*, and *Periseris*) or branched phaceloid (*Cladophyllia*) and ramose (*Dendraraea*) colonies. Corals can be heavily encrusted by microbialites of diverse forms and fabrics (leiolitic, thrombolitic, and stromatolitic). According to the coral growth fabrics, microbialite crusts developed on top of or at the underside of coral colonies, forming a coral-microbialite elementary unit. Microbialites show a multiphase development: (i) directly at the coral surface, a first and mm-scale microbialite layer locally developed; (ii) a second, cm-scale microbialite layer (up to 8 cm thick) covered the entire coral reef framework and assumed the main building role; and (iii) a third, mm- to cm-scale, laminated microbialite layer may also be observed onlapping previous reef structures, before having been progressively buried under sediments. Contemporaneously to the coral growth phase, the first microbialite layer developed on dead portions of coral colonies. The transition between coral growth and microbialite development (i.e., second layer of microbialites) is interpreted as a result of a coral reef crisis, probably reflecting more nutrient-rich conditions. The passage to a stromatolitic (third) layer suggests a control of the accumulation rate. Composition and architecture of coral-microbialite reef units of Chargey-les-Port highlight the relations between high-frequency fluctuating environmental factors (mainly accumulation rate and trophic conditions) and reef development. [original abstract; Loeser]

Opresko D. M. 2005. New genera and species of antipatharian corals (Cnidaria: Anthozoa) from the North Pacific. *Zoolologische Mededelingen Leiden* **79**, pp 129–165.
New taxa of deep water antipatharian corals of the North Pacific are described. Represented in the family Schizopathidae are: *Bathypathes seculata* sp. nov.; *Umbellapathes* gen. nov.; *U. helioanthes* sp. nov.; *U. bipinnata* sp. nov.; *Dendrobathypathes boutillieri* sp. nov.; *D. fragilis* sp. nov.; *Dendropathes* gen. nov.; *Dendropathes bacotaylorae* sp. nov.; and *Lillipathes wingi* sp. nov. Represented in the family Cladopathidae are

Chrysopathes gracilis sp. nov. and *Heliopathes pacifica* sp. nov. [Baron-Szabo]

Opresko D. M. and Sánchez J. A. 2005. Caribbean shallow water black corals (Cnidaria: Anthozoa: Antipatharia). *Caribbean Journal of Science* **41** (3), 16pp.
Our aim is to provide a complete key and guide to the species of black corals from the Caribbean reefs at depths shallower than about 100 m. The key to the species is mostly based on colonial features that are recognized in the field, although some closely related species can only be differentiated by microscopic skeletal features. Each species is illustrated with one or more photos showing the size and shape of the colony; many photos were taken in the natural environment to facilitate underwater identification.
Additionally, a short description is provided of each species and their microscopic diagnostic characters are illustrated with the aid of the Scanning Electron Microscope (SEM). Fifteen black coral species are found in relatively shallow-water in the Caribbean, Gulf of Mexico, and other parts of the tropical western Atlantic; these belong to the families Myriopathidae [*Tanacetipathes hirta* (Gray), *T. tanacetum* (Pourtales), *T. barbadensis* (Brook), *T. thamnea* (Warner), and *Plumapathes pennacea* (Pallas)]; Antipathidae [*Antipathes lenta* Pourtales, *A. rubusiformis* Warner and Opresko, *A. furcata* Gray, *A. umbratica* Opresko, *A. atlantica* Gray, *A. gracilis* Gray, *A. caribbeana* Opresko, *Stichopathes lutkeni* Brook, and *S. occidentalis* (Gray)]; and Aphanipathidae [*Rhipidopathes colombiana* (Opresko and Sánchez)]. We hope that this guide will facilitate research on black corals on Caribbean reefs, where population surveys are urgently needed to evaluate or modify conservation policies. [Baron-Szabo]

Rosen, B.R., Aillud, G.S., Bosellini, F., Clack, N., Insalaco, E., Valldeperas, X.F., Wilson, M.E.J., 2002. Platy coral assemblages: 200 million years of functional stability in response to the limiting effects of light and turbidity. *In*: **Moosa, M.K., Soemodihardjo, S., Soegiarto, A., et al.** (Eds.), Proceedings of the ninth International coral reef symposium. Bali, 23-27 October 2000. Indonesian Institute of Sciences,

Jakarta, pp 255-265.
Ecological assemblages of platy corals occur through most of the geological record of the Scleractinia (late Triassic to Recent) but they have received almost no detailed attention. Recent studies have suggested that they represent a photoadaptive response by photosymbiotic corals to reduced illumination in deeper and/or more turbid waters. As an informal working group, we have aimed to establish (1) if this model applies more generally to the geological record, and (2) if so, what implications this may have for long-term stability of tropical marine ecosystems (e.g. role of photosymbiosis). Here we discuss preliminary results compiled from our own independent projects in 32 study areas ranging from late Jurassic to mid Miocene age. We set out simple descriptive concepts of platy corals and platy coral assemblages and provide other palaeoecological and geological information that characterises these assemblages. Sedimentological and palaeoecological evidence supports the photoadaptive nature of platy coral assemblages ('euphotic floor model'), and indicates their ecological functional stability since the late Triassic. We recognise seven variants of such assemblages according to the role of turbidity in different spatiotemporal settings. Preliminary work so far has failed to reveal closely comparable modern analogues. [original abstract; Loeser]

Schöne, B. R., E. Dunca, J. Fiebig, & M. Pfeiffer, 2005. Mutvie's solution: an ideal agent for resolving microgrowth structures of biogenic carbonates. *Palaeogeography, Palaeoclimatology, Palaeoecology* **228** (1–2), pp 149–166.
[Annual and subannual growth structures in skeletons are resolved by Mutvie's solution which etches biogenic carbonates and calcium phosphates, fixates the soluble and insoluble organic matrices and fibers, and stains mucopolysaccharides. Growth lines are stained blue. A sclerosponge specimen, among others, is used to illustrate the technique – Stearn.]

Shen Chuan-Chou, Lee Typhoon, Liu Kon-Kee, Hsu Guang-Hsiung, R. Lawrence Edwards, Wang Chung-Ho, Lee Meng-Yang, Chen

Yue-Gau, Lee Huang-Jen & Sun Hsiao-Tien 2005. An evaluation of quantitative reconstruction of past precipitation records using coral skeletal Sr/Ca and ?18O data. *Earth and Planetary Science Letters* **237**; pp 370–386.
[key words: precipitation; coral; Sr/Ca; ?18O; Holocene; climate]
Coupled records of ?18O and Sr/Ca in *Porites* coral have been used to derive hydrological conditions by removing the Sr/Ca-inferred temperature component from the ?18O signal. Nanwan, a semi-enclosed bay in southern Taiwan, provides an opportunity to demonstrate the feasibility of quantitatively reconstruction past precipitation history. Recurrence of seawater ?18O offsets between wet and dry seasons in the early 1990s is well correlated with the precipitation record. Even though the hydrological signal only accounts for 20% of the total annual coral ?18O variation of ca. 1‰, offsets can be found in the residual ?18O of modern corals after removing the thermal effect, which contributes to the other 80%.The observation timing and amplitude of the seasonal seawater ?18O offsets in Nanwan and their correlation with precipitation are reproduced by hydrological models. In the mid-Holocene, the seasonal anomaly of residual ?18O was twice of the modern value based on the 9-yr Sr/Ca- ?18O data recorded in a 6.73-kaPorites coral. Hydrological models suggest an annual rainfall of1800-3000 mm/yr at the window during mid-Holocene, 20% higher than that of the average of 30.yr modern instrumental records of 1500-2500mm, consistent with the qualitative pollen record from lake sediments. The seasonal decrease of residual ?18O in 5 of 9 yr was earlier than the increase of the coral Sr/Ca-inferred temperature, which implies that these rainy seasons probably occurred from the early-mid spring to mid-summer, earlier than that from late spring to late summer today. The driving force may be related to the changes of solar insolation and the East Asian monsoon. It cautioned that the variation of hydrographic conditions impose restrictions on a precise calculation of the amount of paleo-precipitation. The dynamic nature of local tectonics, monsoons and water circulation should be further addressed to precisely quantify precipitation over the past 10,000 yr from coral geochemical records. [original abstract; Oekentorp].

Sinclair D. J. 2005. Non-river flood barium signals in the skeletons of corals from coastal Queensland, Australia. *Earth and Planetary Science Letters* **237**; pp 354–369.
[key words: coral, barium; river flood; mass spawning; phytoplankton; LA-ICP-MS]
Two corals from coastal Queensland (Cow and Calf Islands, and Orpheus Island) have been analysed for a suite of trace elements by laser-ablation ICP-MS (LA-ICP-MS). Barium signals in these two corals are `anomalous´ in comparison with Ba behaviour seen in other near-shore corals from this region. The two corals display large sharp peaks in spring which do not correlate with markers of river discharge (Y/Ca and fluorescence). This Ba pattern contrasts with `normal` behaviour – characterised here by the patterns previously published for two other coastal Queensland corals (King Reef and Pandora Reef), which display Ba peaks in summer associated with flooding of nearby rivers [see: **Sinclair & McCulloch 2004** Corals record low mobile barium concentrations in the Burdekin River during the 1974 flood: evidence for limited Ba supply to rivers? *3xPalaeo* **214**]. Similarities are observed between the anomalous Ba in the Queensland corals and other published patterns of Ba behaviour in corals from South Africa and the Arabian Sea. This non river-flood Ba behaviour is characterized by large sharp spikes of Ba which are resistant to oxidative cleaning and form a continuous horizon within the corals. Curiously, not all corals from a region display anomalous Ba behaviour despite being in similar environment. The timing of anomalous Ba is consistent within a coral, but may vary from one location to the next. Anomalous Ba spikes are too large to be caused by Ba-rich upwelling, and no single environmental forcing function seems to be able to account their timing. This combination of observations argues against an exogenous abiotic source for the anomalous Ba signal; instead, it may result from a biological event triggered by a combination of environmental parameters. Three hypotheses are presented, and critically tested against the observations: barite inclusion following phytoplankton blooms, decaying blooms of the blue-green algae Trichodesmium, and physiological perturbations associated coral mass spawning. None of the tree hypotheses are fully consistent with all of the observations and

it is concluded that no satisfactory explanation currently exist for the anomalous Ba spikes. [original abstract; Oekentorp]

Sobhy, M. and Ezaki, Y., 2005, Lithostratigraphy and microfacies of the Lower Carboniferous (Visean) Um Bogma Formation in Gabal Nukhul, west-central Sinai, Egypt. *Jour. Geosci, Osaka City Univ.*, 48, (8), 123-142. [T. Sugiyama]

Stanley G. D. Jr. 2005. Late Triassic events among reef ecosystems during the latest Triassic interval. *5th Field Workshop IGCP Project 458*, Triassic-Jurassic Boundary Events 5–10 September, 2005, Tata, Hungary, pp. 22–23. [Baron-Szabo]

Stanley G. D. Jr., Hou X.-G., Zhao J. and Ma X. 2004. Fossil anemones from the Lower Cambrian Chengjiang biota. *Geological Society of America Abstracts with Programs* **36**, 5, p. 522. [Baron-Szabo]

Stanley G. D. Jr., MacKay M. L. and Smith P. L. 2005. Paleoautecology of Heterastridium: a globally distributed hydrozoan from Upper Triassic terranes of the North American Cordillera. *5th Field Workshop IGCP Project 458*, Triassic- Jurassic Boundary Events 5-10 September, 2005, Tata, Hungary, pp. 23–24. [Baron-Szabo]

Stanley G. D. Jr., Sanderson A., Ailin C., and Hou-X.-G. 2005. Soft-bodied anemone and gelatinous fossils (Cnidaria/Ctenophora) from the Lower Cambrian, Chengjiang biota, Yunnan Province, China. *Geological Society of America Abstracts with Programs* **37**, 7, p. 486. [Baron-Szabo]

Stock C.W. 2005. Biogeographical barriers. *In*: **Lieberman B.S. & Stigall Rode A.L.** (eds.): Paleogeography: generating new insights into the coevolution of the Earth and its biota. *Paleontological Society Papers* **11**, pp. 89-102. [Coen-Aubert]

Stolarski, J., Mazur, M. 2005. Nanostructure of biogenic versus abiogenic calcium carbonate crystals. *Acta Palaeontologica Polonica* **50** (4), pp 847–865.

The mineral phase of the aragonite skeletal fibers of extant scleractinians (*Favia*, *Goniastrea*) examined with Atomic Force Microscope (AFM) consists entirely of grains ca. 50-100 nm in diameter separated from each other by spaces of a few nanometers. A similar pattern of nanograin arrangement was observed in basal calcite skeleton of extant calcareous sponges (*Petrobiona*) and aragonitic extant stylasterid coralla (*Adelopora*). Aragonite fibers of the fossil scleractinians: Neogene *Paracyathus* (Korytnica, Poland), Cretaceous *Rennensismilia* (Gosau, Austria), *Trochocyathus* (Black Hills, South Dakota, USA), Jurassic *Isastraea* (Ostromice, Poland), and unidentified Triassic tropiastraeid (Alpe di Specie, Italy) are also nanogranular, though boundaries between individual grains occasionally are not well resolved. On the other hand, in diagenetically altered coralla (fibrous skeleton beside aragonite bears distinct calcite signals) of the Triassic corals from Alakir Cay, Turkey (*Pachysolenia*), a typical nanogranular pattern is not recognizable. Also aragonite crystals produced synthetically in sterile environment did not exhibit a nanogranular pattern. Unexpectedly, nanograins were recognized in some crystals of sparry calcite regarded as abiotically precipitated. Our findings support the idea that nanogranular organization of calcium carbonate fibers is not, per se, evidence of their biogenic versus abiogenic origin or their aragonitic versus calcitic composition but rather, a feature of $CaCO_3$ formed in an aqueous solution in the presence of organic molecules that control nanograin formation. Consistent orientation of crystalographic axes of polycrystalline skeletal fibers in extant or fossil coralla, suggests that nanograins are monocrystalline and crystallographically ordered (at least after deposition). A distinctly granular versus an unresolvable pattern of nano-organization of $CaCO_3$ fibers seems to correspond, respectively, to an original versus a diagenetically depleted amount of organic matter bounding a mineral phase; this is consistent with qualitative and quantitative analyses of organic matter content in extant and fossil skeletons [original abstract; Stolarski]

Sugiyama, T. , Fujise, H., Taguchi, S. & Nagai, K., 2003. Occurrences and origin of euhedral crystals of quartz in the Akiyoshi organic reef Limestones. *Bulletin of the Akiyoshi-dai Museum of Natural History* **38**, 10 figs, 9 pls.
Abundant euhedral of quartz were found in the reef limestone from seven localities in the Akiyoshi Limestone area. Quartz crystals occurred in an grainstone has an average length of 0.261 mm and width of 0.121 mm, and the average ratio between length and width is 2.149, which means the quartz crystallized in elongate shape under a hydrothermal environment. The quartz crystals have different size distributions and inside structures among their host limestone textures. Large crystals grew up in trabecula tissue of reef building organisms, such as rugose corals and chaetetids, and small ones in micritic matrix of coated grains. It might depend on density of fine clucks and solubility to the hydrothermal liquid in each host limestone texture. Quartz usually has solid calcite inclusions as inside layers. These solid inclusions are come from remains of host calcite tissues which unsolved during crystallization in hydrothermal liquid. Mineralogical identification of inside layers of quartz was done by the laser Raman microprobe. Homogenization temperatures of primary fluid inclusions in quartz veins (from 150–220 °C.) and a calcite vein (169,5 °C) talked that the origin of these euhedral crystals of quartz came from a hydrothermal activity which possibly occurred in Late Cretaceous after the intrusion of quartz porphyry in the Akiyoshi Limestone area. [original abstract; Oekentorp]

Suzuki, Y., Iryu, Y., Inagaki, S., Yamada, T., Aizawa, S., Budd, D.A., 2006, Origin of atoll dolomites distinguished by geochemistry and crystal chemistry: Kita-daito-jima, northern Philippine Sea. Sedimentary Geology, 183,(2006), 181-202. [T. Sugiyama]

Tapanila, L. 2004. Life in a living hard substrate: the rise and fall of skeletal endosymbionts during the Paleozoic. *Geological Society of America, Abstracts with Programs* **36** (5), p. 110. [Stearn]

Tapanila, L., Copper P. & Edinger E., 2004. Environmental and substrate control on Paleozoic bioerosion in corals and stromatoporoids, Anticosti Island, eastern Canada. *Palaios* **19** (3), pp 292–306.
[In most of the statistical measures in this paper the stromatoporoids are grouped with the corals but in Figure 11 the extent of boring in aulacerids, *Ecclimadictyon*, *Clathrodictyon* and *Pachystroma* is distinguished. Almost all the boring took place after death and is attributed to *Trypanites* – Stearn.]

Tapanila, L. M. & Ekdale, A. A. 2004. Impact of an impact: benthic recovery immediately following the late Devonian Alamo event. *Geological Society of America, Abstracts with Programs* **36** (5), p. 313.
[The impact preceded the F/F event by 3 Ma. Stromatoporoids overlie the breccia and the Alamo impact had no lasting effect on the community – Stearn.]

Webby, B.D., Elias, R.J., Young, G.A., Neuman, B.E.E., and Kaljo, D., 2004. Corals; pp 124-146. In: **B.D. Webby, F. Paris, M.L. Droser, and I.G. Percival** (eds.), The Great Ordovician Biodiversification Event. Columbia University Press, New York.

Wilmsen, M., 2003. Taxonomy, autecology and palaeobiogeography of the middle Cretaceous genus *Parkeria* Carpenter, 1870 (spherical hydrozoan). *Journal of Systematic Palaeontology* **1**, 3: 161–186.
A revision of the poorly known, colonial, spherical hydrozoan genus *Parkeria* Carpenter, 1870 and its included species is presented. Corresponding skeletal architecture and mode of accretion confirm the suggestion that the genus belongs to the family Hydractiniidae Agassiz, 1862. A previous classification of *Parkeria* and the Late Triassic spherical hydrozoan genus *Heterastridium* Reuss, 1865 within the family Heterastridiidae Frech, 1890 was based on external morphology only. Considering the similarities of *Heterastridium* with representatives of the family Milleporidae Fleming, 1828, the Heterastridiidae may well be redundant. *Parkeria sphaerica* Carter, 1877, from the Late Albian/Early Cenomanian mainly of Europe, is characterised by an originally aragonitic, spherical skeleton up to 70 mm in diameter

formed by concentric laminae and radiating pillars interlaced by stolonal tubes. *P*. cf. *sphaerica* from Oman lacks the concentric internal fabric and shows irregularly-formed skeletons; therefore, it is placed in the species with reservation. *P*. *provalei* Parona, 1909, from the Aptian of Italy, is smaller (-20 mm), has larger skeletal interspaces and lacks the strict incremental growth of *P*. *sphaerica*. The absence of external attachment areas in *Parkeria* suggests a free-living mode of life. The skeletons of *P*. *sphaerica* and *P*. *provalei* testify long-term uniform centrifugal skeletal accretion. Contrary to previous assumptions, they are not interpreted as floating (i.e. planktonic) colonies but as 'benthic drifters' that were constantly carried and drifted across the sea-bottom by currents and/or waves. This mode of life, where the zooids fed on benthic microorganisms, was aided by the light-weight design of the skeletons, the cavities of which were presumably filled with gas. Estimates of skeletaI-interskeletal ratios and density calculations support the existence of weak buoyancy. The genus shows a rather disjunct palaeobiogeographical distribution in shallow seas of low to warm-temperate palaeolatitudes during the Aptian and Late Albian/Early Cenomanian. [original abstract; Loeser]

Young, G.A. & Kershaw, St., 2005. Classification and controls of internal banding in Palaeozoic stromatoporoids and colonial corals. *Palaeontology* **48** (3), pp 623–651.
[key words: stromatoporoid, coral, Tabulata, Rugosa, density banding, Ordovician, Silurian]
Palaeozoic corals and stromatoporoids exhibit a variety of internal banding phenomena, many of which have been commonly interpreted as annual growth bands. We evaluate bands through analysis of colonial corals and stromatoporoids from three stratigraphic intervals: Upper Ordovician of Manitoba, Canada, and Llandovery – Wenlock and Ludlow of Gotland, Sweden. Banding features are divided into four categories: (1) absence of banding; (2) density banding formed by variation in density or form of elements;(3) growth-interruptions banding including growth cessation and regeneration; and (4) post-mortem banding caused by compaction or diagenesis. For

discrimination of band types, it is essential to examine internal structures and skeletal margins in thin sections or acetate peels. Species vary considerably in degree and type of banding; each has a distinct pattern of variation. We propose criteria to determine if banding is consistent with seasonally induces growth variation: (1) consistency in band character and thicknes; (2) continuity of skeletal growth; (3) marginal features; and (4) evidence of diagenetic alteration. Density bands in tabulate and rugose corals probably represent annual variations, but results for stromatoporoids are more ambiguous; although stromatoporoids commonly show banding, unequivocal density banding is poorly developed and growth interruption generated most stromatoporoid banding. Cerioid rugose and tabulate corals possess the thickest density bands; the thinnest bands are in stromatoporoid and heliolitid tabulates. [original abstract; Oekentorp]

Collections

Kühlmann D. H. H. 2005. Die Steinkorallensammlung im Naturhistorischen Museum in Rudolstadt (Thüringen) nebst ökologischen Bemerkungen. *Rudolstädtische natur-historische Schriften* **13**; pp 37-113, 36 figs.; Rudolstadt. [The collection of stony corals in the Museum of Natural History at Rudolstadt (Thuringia) with ecological notes; in German, with English summary].
[key words: Stony corals, Scleractinia, Milleporina, Stolonifera, Coenothecalia, museum collection, new records, biogeography, ecology, Caribbean Sea, Mediterranean Sea, Indian Ocean, Pacific]
In the Naturhistorisches Museum of the Thüringer Landesmuseum Heidecksburg at Rudolstadt (Thuringian State Museum Heidecksburg) there is with 271 species a rich collection of stony corals. The earliest specimens of it are older than 200 years. In former times they were belonging to the royal natural cabinet, but nearly than 400 specimens were collected recently by diving in the Caribbean Sea, the Mediterranean Sea, the Red Sea, the Indian Ocean, the Pacific and adjacent waters. Among them are rare and fragile corals, i.e. *Leptoseris papyracea* (Dana 1846), *Acropora scabra* Vaughan 1907, and *Galaxea horrescens* (Dana 1846) from the deeper water of the reef front. Two paratypes of *Stylophora kuehlmanni* Scheer & Pillai 1983 and *Stylophora mamillata* Scheer & Pillai 1983 were collected in the Red Sea. Some new discoveries, shore, geographical and ecological information are given. [original abstract; Oekentorp]

Biographies

Hubmann, B., 2004. Univ.-Prof. Dr. Alexander von Schouppé – 26. Februar 1915 – 6. Juli 2004. *Jahrbuch der Geologischen Bundesanstalt* **144** (3+4), pp 407–410, 1 Abb.; Wien. [Oekentorp]

FOSSILS & DATABASES

This chapter presents important contributions summarizing and presenting data on large groups of fossils and / or significant paleontological collections.

Catalogue of Cretaceous Corals / Hannes Löser

Loeser, H., Barattolo, F., Badia, S.C., Chikhi-Aouimeur, F., Dhondt, A., Erlich, R.N., Fözy, I., Geister, J., Hiss, M., Kolodziej, B., Leloux, J., Lewy, Z, Minor, K.P., Mitchell, S., Moosleitner, G., Peza, L., Remane, J., Romana, R., Sikharulidze, G.Y., Sinnyovski, D., Steuber, T., Tröger, K.-A., Turnšek, D., Vecchio, E., Vilella i Puig, J. & Zítt, J., 2002. List of citations. Catalogue of Cretaceous Corals 2: 2 vols., 784 pp.

[This volume contains practically the revision of the Fossilium Catalogus, partes 5–7, first edited in 1914 by J. Felix. It is a list of all Cretaceous coral taxa ever cited in the literature published between 1758 and 2001. The new edition encompasses 22,500 (= seven times more than in Felix) citations. The catalogue gives the type species of each genus and its stratigraphical range. Each species is provided with data on the type material and type locality, its stratigraphical range, all citations in the literature and all localities where it is indicated. The edition is fully indexed]

Löser, H., 2005. (et al.) List of Localities. Catalogue of Cretaceous Corals **3**: 366 pp.

The volume contains a list of all 2,735 localities from which Cretaceous corals were reported. Each locality is provided with data on the stratigraphy, lithostratigraphy, additional literature, and often additional notes (exact positions are ommitted on request by the majority of co-authors). Each locality is complemented by a list of indicated coral species. Many countries and regions are profoundly checked by 29 local specialists from all over the world. The Catalogue of Localities may be an interesting handbook for everybody who is working on the Cretaceous, because numerous localities are not only known to have

yielded corals but also other fossil organism groups. [Loeser]

Virtual Paleontological Museum / Tomasz Wrzołek

http://www.rugosa.wnoz.us.edu.pl/

Quite much work has been done for the Virtual Paleontological Museum (VPM) by myself, with help of **Jarosław Krupa** B.Sc., but I do not feel satisfied and, as I can see, there is still very much to be done...

The general public has got sections on introductory paleontology and systematics, also service map (http://www.rugosa.wnoz.us.edu.pl/mapae.html) with links to illustrations of species presented in databases in the Museum. The next step will be, if time permits, expansion of the service map, so it will eventually contain links to full descriptions of species, with synonymies, discussions etc., with a place for anybody to present opinions, especially on taxonomy, under her or his own name...

The specialists might benefit from visiting the 3rd database recently added (http://www.rugosa.wnoz.us.edu.pl/przegladaje6.php), supplementing the newly published paper of myself (Wrzołek 2005) on Rugosa of the *Phillipsastrea hennahii* species group (see Bibliography > Rugosa). I hope that in the near future the next database and the next batch of pictures will be presented, hopefully on what I believe is the genus *Smithicyathus*...

My **dissatisfaction** comes from the fact, that the pictures at VMP seem to show rather few details and must not be good enough to be of use for a real specialist. Solution I can see in presentation of higher resolution pictures, but this would require much more space on server (ca. 2GB at present). This in turn requires some feedback (be it positive or negative, but anyway authentically critical) from the visitors, but so far there is almost none, besides few occasional and polite remarks... This is not what I need! (I do not ask you to be impolite – be critical and responding!)

I am afraid that the project only drains my limited time-resources and nobody cares for the outcome, besides myself here...

I would be glad to have links to your collections, Friends and

Colleagues, presented on-line, maybe in some other, better way, maybe as expositions in some way affiliated with the VMP, but not necessarily so – just links to show that the idea gets support elsewhere would be good enough and would stimulate my efforts here.

2004 Treatise E (Porifera) revised / Dorte Janussen

Rigby J. K. 2004. Coordinating author, *In* Roger Kaesler, editor, Treatise on Invertebrate Paleontology, Part E (Revised), Porifera, vol. 3. Demospongea, Hexactinellida, Heteractinida, Calcarea. The Geological Society of America and University of Kansas. 872 pp, 506 figs.

Rigby J. K. 2004. Classification, pp 1–8; ibid.

Finks R. M. and Rigby J. K. 2004. Paleozoic demosponges, pp 9–173, figs. 1–126; *ibid*.

Finks R. M. and Rigby J. K. 2004. Paleozoic hexactinellid sponges, pp 319–448, figs. 200–295; *ibid*.

Finks R. M. and Rigby J. K. 2004. Heteractinida, pp 557–584, figs. 365–383; *ibid*.

Finks R. M. and Rigby J. K. 2004. Hypercalcified sponges, pp 585–764, figs. 384–504; *ibid*.

Rigby J. K. 2004. Unrecognizable supposed sponges, pp 765–773, figs. 505–506, and Genera incorrectly assigned to Porifera but belonging to other taxa, p. 773; *ibid*.

Biographical and bibliographical notes on coral specialists / by Klemens Oekentorp

Below you will find notes on three coral specialists, kindly supplied by **Klemens Oekentorp** (Münster) who will continue his work (on

German workers), and the following notes are to be expected from him soon. We can only hope that the other Colleagues will prepare similar compilations for the other authors. [Editors]

ALFONS GLINSKI
* 07. 09. 1923 in Deutsch-Usch/Netze – † 19. 02. 2002 in Burgdorf
Biography
Birenheide, R., 1994. Historischer Werdegang der Nesseltier-Paläozoologie-Forschung (Paläozoologie I) im "Senckenberg" von 1860 bis 1993. *Fossil Cnidaria & Porifera* **23** (2.2), pp 1–27, 24 figs.; Münster.
see also
http://kse.wnoz.us.edu.pl/aneks/iascp/www.korallen.de/Personae/personae.htm by **Oekentorp, Kl.** (Münster), **Baumeister, R.** (Burgdorf), **Lütte, B.-P.** (Duisburg) & **Schröder, St.** (Köln)

Bibliography of coral papers by Glinski
1953. Die Freilinger Schichten der Rohrer Mulde (Devon, Eifel). *Senckenbergiana lethaea* **34** (1/3), pp 149–162, 3 tabs.
1953. Cerioide Columnariidae (Tetracoralla) aus dem Eiflium der Eifel und des Bergischen Landes. *Senckenbergiana lethaea* **35** (1/2), pp 73–114, 27 figs., 2 pls.
1955. Über ein Eisen-Ooid-Vorkommen in der Sötenicher Mulde

(Devon, Eifel) und seine stratigraphische Bedeutung. *Senckenbergiana lethaea* **36** (3/4), pp 235–242, 2 figs.
1956. *Plumalina conservata* n.sp. (Gorgonaria) aus dem Mittel-Devon der Eifel. *Senckenbergiana lethaea* **37** (1/2), pp 53–57, 1 pl.
1957. Taxionomie und Stratigraphie einiger Stauriidae (Rugosa) aus dem Devon des Rheinlandes. *Senckenbergiana lethaea* **38** (1/2), pp 83–108, 16 figs., 1 tab.
1961. Die Schichtenfolge der Rohrer Mulde (Devon der Eifel). *Senckenbergiana lethaea* **42** (3/4), pp 273–289; 1 fig., 1 pl. [= wesentliche Ergebnisse der Dissertation]
1961. The geological map of the Rohr Syncline / Eifel elaborated by Glinski was published in **Ochs G. & Wolfart R. 1961.** Geologie der Blankenheimer Mulde (Devon, Eifel). *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft* **501**, 1–100, 16 figs., 3 tabs, 5 pls. [maps]
1963. Neue Gattungen der Metriophyllinae (Rugosa) aus dem Devon des Rheinlandes. *Senckenbergiana lethaea* 44 (4), pp 321–339, 7 figs., 1 tab.
1998. Eine Heterokoralle aus dem Mittel-Devon der Eifel. *Senckenbergiana lethaea* **77** (1/2), pp 37–41, 1 fig., 1 pl.
1999. Plerophyllina (Anthozoa, Rugosa) im Mitteldevon der Eifel (Rheinisches Schiefergebirge, Deutschland). *Senckenbergiana lethaea* **79** (1) (in memoriam Dr. Wolfgang Struve), pp 105–117, 3 figs., 2 pls.
2001. *Tryplasma* (Anthozoa, Rugosa) im Mittel-Devon der Eifel (Rheinisches Schiefergebirge, Deutschland). *Senckenbergiana lethaea* **81** (1), pp 71–89, 3 pls.

ALEXANDER VON SCHOUPPÉ
*26. 02. 1915 in Baden near Vienna – † 06. 07. 2004 in Münster
Biography
Oekentorp, Kl., 1980. Prof. Dr. Alexander von Schouppé. – In: **Oekentorp, Kl.** (Ed.): Festschrift zu Ehren von Prof. Dr. Alexander von Schouppé (geb. 26.2.1915). *Münstersche Forschungen zur Geologie und Paläontologie* **52**, pp i–ix, 1 fig.
Oekentorp, Kl., 2004. Prof. Dr. Alexander von Schouppé. *Fossil Cnidaria & Porifera* **33.1**, pp 10–12, 1 fig.
Hubmann, B., 2004. Univ.-Prof. Dr. Alexander von Schouppé, 26. Februar 1915 – 6. Juli 2004. *Jahrbuch der Geologischen Bundesanstalt* **144**, pp 407–410, 1 fig.; Wien.
Oekentorp, Kl., 2005. Alexander von Schouppé – 1915–2004. *GMIT* **19**, pp 103–104.
see also:
http://kse.wnoz.us.edu.pl/aneks/iascp/www.korallen.de/Personae/personae.htm [by **Oekentorp, Kl.**]

Bibliography of coral papers by von Schouppé
1939. Die Coelenteratenfauna de e-gamma der Karnischen Alpen. *Anzeiger der Österreischischen Akaemie der Wissenschaften Wien* **10**, pp 1–3; Wien.
1949. Die "Thamnophyllen" und ihre Beziehung zur Gruppe des

"*Cyathophyllum caespitosum*". *Palaeontographica A* **97**, pp 100–180, 6 Taf.
1950. Kritische Betrachtungen zu den Rugosengenera des Formenkreises *Tryplasma* Lonsd. – *Polyorophe* Lindstr. *Sitzunhgsberichte der Österreichischen Akademie der Wissenschaften Wien I* **159** (1–5), pp 76–85.
1951. Beitrag zu Kenntniss des Baues und der Untergliederung des Rugosen-Genus *Syringaxon* Lindström. *Sitzungsberichte der Österreichischen Akademie der Wissenschaften Wien* **160** (3/4), pp 207–216, 2 Abb.
1951. Kritische Betrachtung und Revision des Genusbegriffes *Entelophyllum* Wdkd. nebst einigen Bemerkungen zu Wedekinds "Kyphophyllidae" und "Kodonophyllidae". *Sitzungsberichte der Österreichischen Akademie der Wissenschaften Wien* **160** (3/4), pp 243–256, 3 Abb., 2 Taf.
1951. Kritische Betrachtungen zu den Tabulatengenera des Formenkreises *Thamnopora – Alveolites* und ihre gegenseitigen Beziehungen. *Sitzungsberichte der Österreichischen Akademie der Wissenschaften Wien* **160** (3/4), pp 257–272.
1953, with **Kropfitsch, M.** Revision der Tabulaten aus dem Paläozoikum von Graz. I. Thamnoporen und Striatoporen. *Mitteilungen des naturwissenschaftlichen Vereins der Steiermark* **83**, pp 90–117, 1 Tab., 1 Taf.; Graz.
1954. Korallen und Stromatoporen aus dem ef der Karnischen Alpen. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen* **99**, pp 379–449, 3 Taf.
1954. Die Korallenfauna aus dem ef des Paläozoikums von Graz. *Mitteilungen des Naturwissenschaftlichen Vereins Steiermark* **84**, pp 159–171, 1 Taf.; Graz.
1954. Revision der Tabulaten aus dem Paläozoikum von Graz. Die Favositiden. *Mitteilungen des Museums für Bergbau, Geologie und Technik am Landesmuseum "Joanneum" Graz* **12**, pp 1–40, 2 Taf.; Graz.
1955, with **Stacul, P.** Die Genera *Verbeekiella* Penecke, *Timorphyllum* Gerth, *Wannerophyllum* n.gen., *Lophophyllidium* Grabau aus dem Perm von Timor. *Palaeontographica* Suppl. 5 (V. Abt., 3. Liefg.), pp 95–196, 9 Abb., 7 Beil., 2 Taf.

1956. Neues zur Skelettbildung der Pterocorallia. *Zeitschrift der deutschen Geologischen Gesellschaft* **108**, pp 255–256.
1956. Neue Betrachtungen zur Skelettbildung der Pterocorallia. *Paläontologische Zeitschrift* **30**, pp 148–162, 5 Abb.
1957. Zwei Pterokorallia aus dem Perm von Portugiesisch Timor. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen* **410**, pp 359–381, 3 Abb., 1 Taf.
1958. Revision des Formenkreises um *Phillipsastraea* d'Orb., *Pachyphyllum* E. & H., *Macgeea* Webst., "*Thamnophyllum*" Pen., *Peneckiella* Soshk. und verwandter Formen. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen* **106** (2), pp 139–244, 26 Abb., 2 Taf.
1958, with **Engel, G.** Morphogenetisch-taxonomische Studie zu der devonischen Korallengruppe *Stringophyllum*, *Neospongophyllum* und *Grypophyllum*. *Paläontologische Zeitschrift* **32** (1/2), pp 67–14, 16 Abb., 2 Taf.
1959, with **Stacul, P.** Säulchenlose Pterocorallia aus dem Perm von Indonesisch Timor (mit Ausnahme der Polycoeliidae). *Palaeontographica* Suppl. 4 (V. Abt. 4 Liefg.), pp 197–359, 41 Abb., 5 Beil., 5 Taf.
1959, with **Stacul, P.** Die Fossula der Pterocorallia, ihre morphogenetische und taxonomische Bedeutung. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen* **108** (1), pp 21–46, 9 Abb., 1 Taf.
1961. Die Axialstruktur der Pterocorallia. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen* **112** (3), pp 251–280, 10 Abb., 2 Tab., 1 Taf.
1961. Beschreibung der Korallenfauna. In: **Ramovs, A. & Schouppé, A. von**: Karbon und Perm im Vtitanje-Gebirge, Ostkarawanken, NW-Jugoslawien. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen* **1961** (7), pp 354–774, 4 Abb.; Stuttgart.
1961. Nachweis von Unterperm in Attika durch *Carinthiaphyllum suessi* Heritsch, 1936. *Annales Géologiques des Pays Helléniques* **12**, pp 122–128, 3 Abb., 1 Taf.; Athens.
1961. Frech, Fritz Daniel, Geologe, * 16.03.1861 Berlin; † 28.09.1917 Aleppo (Syrien). *Neue Deutsche Biographie* **5**. [a biographical paper]

1962, with **Stacul, P.** Das Stereoplasma der Pterocorallia, seine Genese und Struktur. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen* **114** (1), pp 24–57, 9 Abb., 1 Taf.
1963, with **Stacul, P.** Bau und taxonomische Fassung des devonischen Korallen-Genus *Macgeea* Webster 1889 und seine Beziehungen zu *Thamnophyllum* Penecke 1894. *Senckenbergiana Lethaea* **44** (4), pp 265–299, 19 Abb., 1 Taf.
1965. Die mittel- und oberdevonsiche Korallenfauna von Kuragh (Chitral). In: Desio, A.: Italian Expeditions to the Karakorum (K2) and Hindu Kush. *Scientific Reports – IV – Paleontology – Zoology – Botany* **1**, pp 13–53, 6 Abb., 3 Taf.; Leiden.
1966, with **Stacul, P.** Bau und Morphogenese des Skelettes der Pterocorallia. *Palaeontographica* Supplement **11**, pp 1–186, 132 Abb., 8 Tab., 3 Beil., 6 Taf.
1968, with **Stacul, P.** Zur Bildung der Septen und Mesenterien bei den Pterocorallia. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen* **130** (1), pp 47–77, 11 Abb., 1 Taf.
1969, with **Cheng, Y. M.**: *Pterorrhiza* Ehrenberg 1834 (Anthozoa, Rugosa) proposed suppression under the Plenary Powers. Z.N. (S.) 1851. *Bulletin of Zoological Nomenclature* **25** (4/5), pp 171–173; London.
1969, with **Oekentorp, Kl.** Kritische Betrachtungen über die Anordnung der Poren bei *Palaeofavosites* Twenhofel, 1914. *Neues Jahrbuch für Geologie und Paläontologie Abhandlungen* **113** (1), pp 89–100, 4 Abb., 1 Taf.
1970. Lower Carboniferous corals from Badakhshan (North-East Afghanistan). In: **Desio, A.**: Italian Expeditions to the Karakorum (K2) and Hindu Kush. *Scientific Reports – IV – Paleontology – Zoology – Botany* **2**, pp 1–22, 3 Taf.; Leiden.
1974, with **Oekentorp, Kl.** Morphogenese und Bau der Tabulata, unter besonderer Berücksichtigung der Favositida. *Palaeontographica A* **145** (Liefg. 4–6), pp 79–194, 35 Abb., 10 Taf.
1991. Episodes of Coral Research History up to the 18th Century. In: **Oekentorp-Küster, P.** (Ed.): Publications for VI. International Symposium on Fossil Cnidaria including Archaeocyatha and Porifera – Inaugural Lecture [with German version], pp 1–36, 22 Abb.; Münster.
1993. Episodes of coral research history up to the 18th century. – In:

Oekentorp, P. (Ed.): Proceedings of the VI. International Symposium on Fossil Cnidaria and Porifera held in Münster, Germany 9.–14. September 1991. *Courier Forschungs-Institut Senckenberg* **164**, pp 1–16, 21 Abb.

WALDEMAR WEISSERMEL
* 07. 07. 1870 in Groß-Kruschin – † 28. 12. 1943 in Berlin
Biography
Seitz, O., 1953. Waldemar Weissermel †. *Geologisches Jahrbuch Hannover* **67**, pp xxxvii–xliv, 1 fig.; Berlin.
Oekentorp, Kl., 2000. Waldemar Weissermel, Porträt eines westpreußischen Geologen und Forschers. *Westpreußen-Jahrbuch aus dem Land an der unteren Weichsel* **50**, pp 167–173, 2 figs.; Münster.
Schindewolf, O. H., 1943. Spekulation oder Tatsachenforschung? Bemerkungen zur Beurteilung meiner Abhandlung über die Polycoelien und Plerophyllen. *Berichte des Reichsamtes für Bodenforschung* **1943** (7), pp 101–110, Wien. [this paper is mentioned, because herein Schindewolf argues with the interpretation by Weissermel concerning morphological criteria in relation to phylogentical questions]
see also:
http://kse.wnoz.us.edu.pl/aneks/iascp/www.korallen.de/Personae/personae.htm [by **Oekentorp**]

Bibliography of Coral Papers by Weissermel

1894. Die Korallen der Silurgeschiebe Ostpreußens und des östlichen Westpreußens. Dissertation; Königsberg University.

1894. Die Korallen der Silurgeschiebe Ostpreußens und des östlichen Westpreußens [wenig veränderte Fassung der Dissertation]. *Zeitschrift der Deutschen Geologischen Gesellschaft* **46**, pp 580–674, 7 Taf.

1897. Die Gattung *Roemeria* M. E. & H. und die Beziehungen zwischen *Favosites* und *Syringopora*. *Zeitschrift der Deutschen Geologischen Gesellschaft* **49**, pp 368–383, 1 Taf.

1897. Die Gattung *Columnaria* und Beiträge zur Stammesgeschichte der Cyathophylliden und Zaphrentiden. *Zeitschrift der Deutschen Geologischen Gesellschaft* **49**, pp 865–888.

1898. Sind die Tabulaten die Vorläufer der Alcyonarier? *Zeitschrift der Deutschen Geologischen Gesellschaft* **50**, pp 54–78.

1900. Mesozoische und Kaenozoische Korallen aus Deutsch-Ostafrika. In: **Bornhardt**: Zur Geologie der Oberflächengestaltung Deutsch-Ostafrikas, pp 1–18, 2 Taf.; Berlin.

1913. Tabulaten und Hydrozoen. In: **Böhm & Weissermel**: Über tertiäre Versteinerungen von den Bogenfelser Diamantfeldern. *Beiträge zur geologischen Erforschung der deutschen Schutzgebiete* **5**, pp 84–111, 2 Taf.; Berlin.

1925. Die Korallen des deutschen Muschelkalkes. I. Unterer Muschelkalk. *Jahrbuch der Preußischen Geologischen Landesanstalt* **46**, pp l–33, 2 Taf.; Berlin.

1926. Neues über Tabulaten, Hydrozoen und eine Hexakoralle aus dem Tertiär der Bogenfelser Diamantfelder. In: **Kayser E.**: Die Diamantenwüste Südwestafrikas. II, pp 88–106, 4 Taf.; Berlin.

1926 and the following years: Anthozoa fossilia. In: Nomenclator animalium generum et subgenerum. (Edited by Preußische Akademie der Wissenschaften, Berlin).

1927. Die Umbildung der Rugosen in Hexakorallen. *Sitzungsberichte der Preußischen Geologischen Landesanstalt* **2**, pp 1–17; Berlin.

1927. Neues über Tabulaten, Hydrozoen und eine Hexakoralle aus dem Tertiär der Bogenfelser Diamantfelder. In: **Kayser, E.**; Die Diamantwüste Südwestafrikas 2, p. 88.

1928. Die Korallen des deutschen Muschelkalkes II, Oberer

Muschelkalk. *Jahrbuch der Preußischen Geologischen Landeanstalt* **49**, pp 224–238, 2 Taf.; Berlin.
1935. Über ein Kieselgestein mit *Lithostrotion junceum* aus Thüringen. *Zeitschrift der Deutschen Geologischen Gesellschaft* **87**, pp 115–119, 2 Taf.
1935. Zwei Korallen aus dem Karbon Nordspaniens. *Zeitschrift der Deutschen Geologischen Gesellschaft* **87**, pp 274–278, 1 Taf.
1936. Aus der Form- und Stammesgeschichte der Korallen. *Sitzungsberichte der Gesellschaft naturforschender Freunde*, pp 219–244, Berlin.
1936. Über die Artabgrenzung bei paläozoischen Korallen. *Paläontologische Zeitschrift* **19**, pp 4–10.
1937. Cölenterata. *Fortschritte der Paläontologie* **1**, pp 84–96; Berlin.
1938. Eine altpaläozoische Korallenfauna von Chios. *Zeitschrift der Deutschen Geologischen Gesellschaft* **90**, pp 65–74, 1 Taf.
1939. Die Korallen des thüringischen Devons. 1. Korallen aus dem Oberdevon im westlichen Schiefergebirge Thüringens. *Jahrbuch der Preußischen Geologischen Landeanstalt* **59**, pp 355–369, 1 Taf.; Berlin.
1939. Neue Beiträge zur Kenntnis der Geologie, Paläontologie und Petrographie der Umgegend von Konstantinopel. 3. Obersilurische und devonische Korallen, Stromatoporen und Treptostome von der Prinzeninsel Antirovitha und aus Bithynien. *Abhandlungen der Preußischen Geologischen Landeanstalt, N. F.* **190**, pp 1–131, 15 Taf.; Berlin.
1939. Cölenterata. *Fortschritte der Paläontologie* **2**, pp 93–105; Berlin.
1941. Korallen aus dem Unterdevon des östlichen und westlichen Schiefergebirges Thüringens. (Die Korallen des thüringischen Devons 2). *Zeitschrift der Deutschen Geologischen Gesellschaft* **93**, pp 163–212, 3 Taf.
1942. Favositen aus schieferigem Mittel- und Unterdevon im Rheinischen Schiefergebirge. *Senckenbergiana* **23**, pp 177–182, Frankfurt a. M.
1943. Korallen aus meist kalkigem Oberdevon Ost-Thüringens (Korallen aus dem thüringischen Devon III. Teil). *Zeitschrift der Deutschen Geologischen Gesellschaft* **95**, pp 1–11, 1 Taf.
1943. Korallen von der Silur-Devon-Grenze aus West- und

Mitteldeutschland. *Zeitschrift der Deutschen Geologischen Gesellschaft* **95**, pp 13–32, 2 Taf.
1943. Rezension der Publikation **Schindewolf, O. H., 1942**: Zur Kenntnis der Polycoelien und Plerophyllen. Eine Studie über den Bau der "Tetrakorallen" und ihre Beziehungen zu den Madreporarien. *Abh. Reichsamt Bodenforschung, N.F.* **204**, pp 1–324, 155 Abb., 36 Taf.; Berlin. *Zentralblatt für Mineralogie, Geologie und Paläontologie* Teil IV, Paläontologie **18** (1), pp 91–99; Berlin.
1943. In eigener Sache. *Berichte des Reichsamtes für Bodenforschung* **1943** (7), pp 110–112; Wien.

Websites with living and fossil Cnidaria and Porifera

1) Living Anthozoa are presented by German zoologist **Vreni Häussermann** at **http://www.anthozoa.com/** – last updated 18.02.2005.
2) Genomic databases of the Cnidaria of the Boston University at **cnidbase.bu.edu** – updated 14.12.2005, problems with access in December 2006.
3) News on research on Fossil Cnidaria & Porifera are provided at **http://kse.wnoz.us.edu.pl/iascp.htm** – updated 04.12.2006 and new updates coming, with your help, Dear Readers!
4) Oxford University Museum – among other groups also fossil corals can be found at **http://www.oum.ox.ac.uk/** – geological collections listed from 30.11.2006.
5) Official page of the International Association for the Study of Fossil Cnidaria and Porifera is **http://cnidaria.cn/** in China – update not specified, judging from actual dates it must be November 2004.
6) German site with useful data on research on fossil corals and sponges is **http://www.iasfcp.de/** – last updated 01.02.2004.
7) Austrian site with data on 9th Symposium in Graz, August 2004, is at **http://www.paleoweb.net/cnidaria/** – problems with access in December 2006.
8) Wirtual paleontological museum, Sosnowiec, Poland: **http://www.rugosa.wnoz.us.edu.pl/** – no exact date given, in "calendar" most recent date is 07.03.2006.

9) Data on the genus *Hexagonaria* from the Holy Cross Mts Devonian – formerly at **http://www.koralowce.gorowski.com/baza/** – now they are incorporated into 8) above.
10) Bibliography on extant corals (1758–2002), with about 9000 annotated entries, is presented by Hannes Loeser at **www.scleractinia.de**; last updated 20.11.2006.

Can you recommend any other site?

ANNOUNCEMENTS

W. A. Oliver Jr. Memorial – a Session on Coral Paleobiology / by Fedorowski & Sorauf

As many of you know, our friend and colleague **Bill Oliver** died in October of last fall as the result of a tragic traffic accident. We are honoring his memory, his personality and his professional legacy with a session on the paleobiology of fossil corals at the upcoming Tenth Symposium on Fossil Corals and Sponges, to be held in August of 2007 in St. Petersburg, Russia. The official name of this session will be the "**W. A. Oliver Jr. Memorial; A Session on Coral Paleobiology**".

The session will have several brief introductory talks devoted to memorializing personal interelationships and the professional contributions of Bill Oliver. The main part of the session (or sessions) will consist of papers on various topics regarding the paleobiology of fossil corals. These should focus on a number of topics, and we suggest concentrating on the following:
1) skeleton as a reflection of polyp body morphology,
2) morphogenesis and function of specialized structures (ex. aulos, columella),
3) ontogenetic changes in skeleton as a reflection of polyp development,
4) skeletal pathologies resulting from disease, attack or commensalism,
5) skeletal modifications as reflections of life style or environment,

6) other indications of particular biological or genetic makeup, and
7) paleobiology as it leads to understanding relationships between major groups of fossil corals (e.g. Rugosa and Scleractinia).

This list is intended to focus the nature of contributions but not to stifle creativity or exclude any topic dealing with paleobiology of fossil corals. We especially wish to extend the opportunity for paleontologists to submit volunteered papers for this session, in large part because Bill Oliver had such a wide circle of friends that we may inadvertently fail to invite someone formally, but do not wish to exclude any. This preliminary invitation is being printed in the Second Notice of the St. Petersburg meeting to insure communication to everyone.

We will happily send a hard copy of a personalized invitation to any or all needing it to aid in obtaining financial aid to attend the symposium.

Speakers should indicate their availability to participate, along with an approximate topic by June 1, 2006. The date for submission of abstracts will be the same as the date for submission of abstracts for the Tenth Symposium on Fossil Corals and Sponges in St. Petersburg, Russia, August 12-16, 2007. Authors should send a duplicate abstract to either J. Fedorowski or J. Sorauf at that time. All authors will be expected (required) to submit a paper suitable for publication in the symposium volume at the time of the meeting.

We specifically request that contributors contact one or both of us if they wish to participate in the Oliver Memorial Session. This will allow us to organize speakers and talks at the St. Petersburg meeting.

Very sincerely yours,
Jerzy Fedorowski (jerzy@amu.edu.pl)
Jim Sorauf (jsorauf@binghamton.edu) [April 10, 2006]

Revision of volume F of the Treatise on Invertebrate Paleontology: Scleractinia / Jarosław Stolarski, Stephen D. Cairns, Ann F. Budd, George D. Stanley, Jr. (coordinating authors) / 1st circular / January 2006

Despite four recent noble attempts to synthesize knowledge about the higher classification of the Scleractinia (the French Traite de Zoologie, authored by Jean-Pierre Chevalier in 1987; the International Working Group on Scleractinian Corals led by Hannes Löser; the steering group for the revision of the Treatise of Invertebrate Paleontology led by Brian Rosen; and Charlie Veron's 3 volume book Corals of the World published in 2000) the higher classification and generic definitions of the Scleractinia remain in chaos. Many still consult the old 1956 "Part F Coelenterata" Treatise, a work, which is 50 years out of date, that includes the small chapter on Scleractinia by Wells. In this time of rapid advances in molecular biology, the discovery of new microstructural characters, and an increasing effort to collect both fossil and especially deep-sea Recent corals, it is imperative that a sound, current and easily accessible classification of Scleractinia be available to research scientists, educators and the lay public. To this end, four of us whose names are affixed to the bottom of this notice, have petitioned the board of the Treatise of Invertebrate Paleontology (TIP) to revise the scleractinian section of the Coelenterate volume F and have been given permission to proceed. The new scleractinian Treatise now is underway. Our plan envisages publication of two separate volumes of the revised scleractinian Treatise:

(1) The first volume will generally serve as a reference guide of terminology, morphology and higher level classification for the authors of the second volume on Systematic Revision. In addition to presentation of phylogenetic hypotheses concerning all Mesozoic and Cenozoic genera (and higher level taxa), a general consensus will need to be adopted about the evolutionary position of Scleractinia with reference to related groups of cnidarians, including anemone-like forms and very ancient, pre-Mesozoic taxa. Hence, specialists on scleractiniamorphs, actiniarians, zoanthiniarians, corallimorpharians and other Recent and fossil groups will be encouraged to join the TIP team.

(2) The second volume will contain revision of ca. 1600 nominal Recent and fossil scleractinian genera. In the most ideal situation this volume will use photographs of type species (or where unavailable the specimen most similar to the type species) as the "icons" of the genera. Numerous line drawings and artistic sketches that are envisaged for this volume, will be restricted to reconstructions and interpretative schemes (e.g., different microstructural patterns, budding types, scheme of coral biomineralization). Submission of the generic entries is planned on the web-based platform.

Information for a genus will be considered as a brief "article" that will include nomenclature information, type species, synonyms, diagnosis, description, geographic and stratigraphic distributions, illustrations (with captions), and the names of contributors. On a specially designed website for the revision, each genus will be shown as a single page with each type of information under a subheading. Contributors will have different roles associated with each article. Roles include reader (one who can only read published articles -no password is required), author (whose responsibility is for writing and revising a single article), reviewer (self-selected from the entire working group), and editor (team leader). Authors and reviewers will be members of the "working groups", and membership will be determined by the editors. Details of the work flow and informatics-related issues are currently being discussed among the coordinating authors and team leaders and are to be announced in the second newsletter.

Unlike the recently published Porifera volumes (Part E, revised; http://www.ku.edu/~paleo/volumes.html), which featured three volumes, 1500 pages, and three authors, we hope to spread the responsibility of writing this volume among enough contributors to adequately reflect the consensus of the paleontological community of researchers. Principally those will be specialists who study both modern and fossil corals as well as some closely related taxa. This, we hope, will accelerate the process and provide a better check on the quality of the results.

The infrastructure of our plan is to have four coordinating authors,: Jarosław Stolarski (main coordinator), and Stephen D. Cairns, Ann F. Budd, and George D. Stanley, Jr. (co-coordinators). Each of us has participated in the previous TIP steering committee, in writing the

proposal accepted by the editor of the Treatise series (Roger Kaesler), and will have a major role in coordinating the final text as team leaders and contributors. Kenneth Johnson is appointed web platform coordinator of the project.

The next level of organization is team leader, who will write a major section of text or assemble a team to help in the writing the text. The team members will be called contributors. We have positive responses from the team leaders (Jean-Pierre Cuif, Daphne Fautin, Brian Rosen) invited to participate in preparation of the 1st TIP volume. Currently, we have invited team leaders of the 2nd TIP volume who will lead stratigraphically-oriented working groups, i.e., Triassic (Ewa Roniewicz), Jurassic (Bernard Lathuiliere), Cretaceous (Rosemarie Baron-Szabo), Paleogene-Neogene and Recent (Stephen D. Cairns and Ann F. Budd). Until a revised phylogenetic scheme is proposed, a stratigraphic ("horizontal") organization of the working groups seems to reflect the natural inclination of most coral specialists to work on fauna from certain geological periods. However, since taxonomy adopted in the 2nd volume of the Treatise will strictly reflect an accepted global phylogenetic scheme ("vertical"), the stratigraphically-oriented working groups are provisional and the leaders of these groups will ultimately be responsible for writing stratigraphic chapters that will precede the main taxonomic revision (similar to stratigraphic chapters in Wells 1956: F354–362). Authorship of the taxonomic parts will be ascribed to the taxonomic units that leaders/contributors actually revise (authorship for such contributions ultimately will be attributed to very small sections). Writing a part of the Treatise is not an easy matter for many reasons including the complexity of the subject matter, the vastness of the literature, the difficulty of coordinating with many people, and the difficulty in taking time to contribute to a project that may not be published for years to come. Because of the extensive amount of new knowledge on the subject and the logistics involved, we project a time scale for completion of three to four years. Nonetheless, we must start as soon as possible while the knowledgeable experts are available. Thus we invite expressions of interest as well as a firm commitments from potential contributors (to be invited by the team leaders), reviewers, and critical readers of various parts of this large project. We expect to

operate as much as possible in an electronic, web-based format that will be successively available and continually revised online.
Jarosław Stolarski, Stephen D. Cairns, Ann F. Budd, George D. Stanley, Jr.

Xth Symposium Fossil Cnidaria & Porifera

The Symposium will be held in St Petersburg, Russia in August 2007. The organizers issued the 1st circular which is available online at **http://www.vsegei.ru/etc/first_circular_last.doc**. Have a look, please, and "see you in St Petersburg!" – or, possibly, on occasion of numerous field trips?

Paleozoic corals' research in Manitoba (Canada) / Graham Young

Bob Elias (University of Manitoba) and **Graham Young** (Manitoba Museum, adjunct professor at U of M) welcome inquiries and applications from students interested in graduate studies (http://www.umanitoba.ca/science/geological sciences/people/faculty/elias/elias.html). M.Sc. and Ph.D. projects are available on all aspects and applications of Paleozoic corals. There are also interesting projects related to Lower Paleozoic paleoecology and stratigraphy.

SYNTHESYS – EU grants for research in natural sciences

This grant aims to create an integrated European infrastructure for researchers in the natural sciences; see **http://www.synthesys.info/index.htm**! Current deadline for applications is March 18th, next one is September 16th 2005.

NEW ADDRESSES

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