INTERNATIONAL SUBCOMMISSION ON JURASSIC STRATIGRAPHY

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December 1979

N E W S L E T T E R No. 4

Since our last newsletter H. TINTANT and G. PAVIA have accepted to attend the Subcommission as correspondents. Unfortunately, H. HOELDER refused to attend because he is retiring from his university work next spring and therefore he does not want to have further official duties.

The work of creating a project for the three working groups are in progress. The 8th November the Chairman and the Secretary met in Frankfurt to discuss this matter and other ones (as the meeting in Paris next year, - see below). At that time we had not yet received all the individual propositions for the project. We intend to include all the work in one project which we hope will be accepted as an IGCP project. We suppose to be ready with the description of the project in January 1980.

Not all contributions to the List of Jurassic Stratigraphic Workers neither all national/regional reports have reached us yet. We are asking the members to promote this work. - The received reports are attached to the newsletter. A first list of Jurassic workers will be compiled and distributed within short time.

As mentioned above we plan to arrange a business meeting during the Congress in Paris 1980. Our plans are for the moment to meet two days in the afternoon within the period 8th - 11th July. One afternoon will probably be a meeting with the Lower and Middle Jurassic Working Groups. The other afternoon will be a meeting with the Upper Jurassic Working Group and a business meeting of the Subcommission.

During the business meeting an election of officers and members shall take place, but further information will be presented in the next newsletter (April 1980). We suggest reelection of all members and officers for the next four years because of the very short time the present Subcommission has been in work. Everybody has to consider his own situation concerning reelection in

the light of the following which is a quatation from a letter from the chairman and the secretary of the Commission:

"Officers and memberships in the Commission bodies are not nominal positions but are intended for completion of specific scientific and administrative tasks in stratigraphical standard-making and in the coordinated research that is always associated with international standardization in science". "A member may be dropped if he fails to participate in the work of the Subcommission" (Statutes, Article 7.1)".

You are asked to inform us as soon as possible (deadline 1st March) about your participation in the meeting in Paris and if you are willing to be reelected for the next four years period. Ple a s e fill in the formula below and return it in due time.

We have found it valuable to inform about activities of general interest, e.g. other newsletters which are not a part of the Commission. Therefore you are asked to send to us information on such matters so we can publish it. - The following two newsletters may be of interest.

Cepalopod Newsletter (ed. Dr. John R. Senior, Univ. of Durham, 32 Old Elvet, Durham DH1 3JB, England).

The Ostrcodologist, newsletter for ostracod workers (ed. Dr. Ephraim Gerry; publ . by The Israel Inst. of Petroleum and Energy, 61170 Tel Aviv, Ramat Aviv, P.O.B. 17081).

We wish you all a Happy New Year and remain,

Arnold Zeiss Olaf Michelsen

FORMULA

for preparing the meetings in Paris during the Congress 1980. Two meetings (for the three working groups and the Subcommission) will be held in the period 8th – 11th July 1980.

I plan to participate ..... .
I will not participate ..... .
I am willing to be reeelcted .....
I am not willing to be reelected ....

Your name: .....

Please return this formula to the secretary before 1st March 1980

NTERNATIONAL SUBCOMMISSION ON JURASSIC STRATIGRAPHY

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ENCLOSURE 1
for Newsletter No. 4

Addition to the list of members etc. given in enclosure 1 for Newsletter No. 3:

Correspondents:

Dr. Giulio Pavia
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Palazzo Carignano
10123 Torino
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Prof., Dr. Henri Tintant
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INTERNATIONAL SUBCOMMISSION ON JURASSIC STRATIGRAPHY

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APPENDIX
for Newsletter No. 4

Regional (or national) reports on activities within Jurassic research work

Compiled December 1979

Report No. l

From A.C. Riccardi: SOUTH AMERICA (first report)

This report covers the activities of the South American specialists during the last 1-2 years. It was cotnpiled from information I has come to know during my own studies on the Jurassic of the areas. Therefore, no direct Information has been reques-ted to, or provided by, my colleagues, except for those working in the La Plata Museum. More precise facts will, hopefully, be included in my next report. Notice that this information is mostly restricted to specialists that are currently working on Jurassic matters, thus excluding many of those listed on Encl . 2 -Newsletter 3 of the ISJS.

General Activities: In South America does not exist any type of Jurassic Working Group. In Argentina a Jurassic Subcommission was formed (1969) under the Argentinian Committee on Stratigra-phic Nomenclature. But it seems that this Subcommission has been unable to operate. During the Second Argentinian Paleontological Congress (and First South-American) (Buenos Aires 1978) a Symposium was organized on the Jurassic-Cretaceous boundary. As an outcome of it a provisional committee was established in order to coordinate the study of the South American Jurassic and Cretaceous. At about the same time G.E.G. Westermann (McMaster University, Canada) organized a Circum Pacific Jurassic Research Group. Therefore, some time must elapse before there is a well established group to take care of the Jurassic of South America.

Plantae: S. Archangelsky (CIRGEO, Argentina) published a pa-per (Ameghiniana XIII: 114-158, 1977) on the U. Jurassic mega-flora of the Springhill Formation, Patagonia, and a review on the Fossil Megaflora - Jurassic included - of Neuquen Province, Argentina (1978, Relatorio Septimo Congr. Geol . Arg.). A. Baldoni (CIRGEO", Argentina) is currently working in the palynology of some U. Jurassic beds of Patagonia. R. Herbst (Corrientes, Argentina) has described a fossil megaflora from the Sinemurian of San Juan, Argentina (1978, Segundo Congr. Paleont. Argent.). T. Petriella and 0. Arrondo (Museo La Plata, Argentina) just began to study some early Lower Jurassic Pteridophyta and Gymno-spermae from southern Neuquen, Argentina. W. Volkheimer (Museo B. Rivadavia, Argentina) has reviewed the fossil microflora of Neuquen, Argentina (1978, Relatorio Septimo Congr. Geol. Arg.)

and has published, in coauthorship, two papers on the biostratigraphy of the Lower Jurassic of southern San Juan, Argentina (1978, Rev. Asoc. Geol . Arg. 32: 300-11; 1978, Münster Forsch. Geol. Paläont. 44/45: 205-235). He is currently working in Jurassic and L. Cretaceous palynology.

Invertebrata: L. Biro (Univ. ConcepciÖn, Chile) delivered a paper on the ammonites of the Jurassic-Cretaceous boundary of Lo Valdes Fm., Central Chile, during the Second Argentinien Paleontological Congr. (1978). G. Blasco (Serv. Geol. Nac., Argentina) has described, in coauthorship, some Toarcian ammonites from Central Patagonia (1978, Segundo Congr. Paleont. Arg., 1978, Septimo Congr. Geol. Arg.) and has just finished a paper on some Tithonian ammonites and bivalves from southern Patagonia. V. Covacevich and F. Escobar (Inst. Inv. Geol., Chile) delivered a paper on early Jurassic Otapiria Marwich (Bivalvia) from Chile during the Second Geol. Congr. of Chile (Arica 1979). S. lamborenea (Museo La Plata, Argentina), working in Lower Jurassic bivalves, has published a paper, in coauthorship, on the geographic and stratigraphic distribution of Weyla (Bivalvia) (Palaeogeography, Palaeoclimatology and Palaeoecology, 1979), and has submitted another on early Jurassic Otapiria (Bivalvia) to the Fifth Condwana Symposium (New Zealand 1980). Hillebrandt A. (Technische Universität, Berlin) has published a paper on Bajocian ammonites (Stephanoceratidae) from Chile (1977, Bayer. Staatssamml . Paläontolo. Hist. Geol., Mitt. 17: 35-69) and, in coauthorship with R. Schmidt-Effing has com-pleted a study on the dactylioceratid (ammonoidea) from Chile. Last summer he visited several institutions and sections in Argentina and Chile. M. Hünicken (Univ. Nac. Cordoba, Argentina) i s working on the Tithonian "Vi rgatosphi nctes" (ammonoidea) from Western Argentina. Leanza H. (Serv. Geol. Nac., Argentina) has published, in coauthorship, a paper on the Tithonian-Berriasian ammonite succession of Western Argentina (1978, Rev. Asoc. Geol. Arg. 32: 248-264). He is now at Tübingen (W. Germany) with an Humboldt Fellowship. M. Mancenido (Museo La Plata, Argentina) has finished (1978) his Ph.D. Thesis (University of Wales, Swansea) on Early Jurassic Brachiopoda and their distribution with special reference to Argentina. E. Perez (Inst. Inv. Geol., Chile) and R. Reyes (Univ. Chile, Valparaiso) have published a summary of the Jurassic trigoniids from Chile (1977, Bol. Inst. Inv. Geol. Chile 30: 5-58). Westermann G. (McMaster University, Canada) and A. Riccardi (Museo La Plata, Argentina) have published Pt. II

(Bajocian Stephanocerataceae) of their monograph on the M. Jurassic Ammonoid Fauna and Biochronology of the Argentine-Chilean Andes (Palaeontographica A164, 1979). They have just completed a paper on some ammonites of the early Middle Jurassic of Mendoza, Argentina (to be published in Pacific Geology) and another on the presence of the U. Bajocian ammonite Strenoceras in Chile. They have almost completed Pt. III (Bathonian and Callovian Stephanocerataceae) of the above mentioned monograph and, in coauthorship with 0. Palacios and C. Rangel (INGEMMET, Peru), a biostratigraphic review of the M. Jurassic of Peru. J. Wiedmann (Tübingen, W. Germany) delivered a paper on the Jurassic-Cretaceous boundary - with special emphasis on S. America - during the Second Argentinian Paleont. Congr. (1978).

Vertebrata: G. Arratia (Inst. Cienc. Forest., Chile) has just delivered a paper, in coauthorship, on Jurassic pisces of northern Chile, during the Second Chilean Geol . Congr. (Arica 1979). A. Bocchino (Museo La Plata, Argentina) is currently working on a general review of fossil pisces from Argentina - including the Jurassic ones. A. Cione (Museo La Plata, Argentina) has just ini-tiated a study on U. Jurassic-L. Cretaceous Pisces. J. Bonaparte (Museo B. Rivadavia, Argentina) is currently working on M. & U. Jurassic Dinosaurs from Central Patagonia. Last year (1978) he published a book about the Mesozoic tetrapods of South America (Opera Lilloana 26: 1-596). Z. Gasparini (Museo La Plata, Argentina) continues her studies on crocodils, ichthyosaurs and turt-les of the M. & U. Jurassic of Argentina and Chile. She has just presented a synthesis on the Mesozoic Vertebrata of Chile during the Second Geol. Congr. of Chile (1979). J. Leonardi (Brazil) gave a report on some U. Jurassic dinosaur tracks from Brazil during the Second Argentinian Paleontol. Congress (1978).

Synthesis: A general synthesis on the Jurassic of Argentina and Chile has been prepared by A.C. Riccardi (Museo La Plata, Argentina) and will be published in MOULLADE M. & NAIRN A.E.M. (editors), The Phanerozoic Geology of the World, II, Mesozoic B.

Summary

The best known (marine) Jurassic in South America is represented in Argentina and Chile. Nevertheless, even there most regional studies have only been devoted to l ithostratigraphy, although in the last years several palaeogeographic and biostratigraphic papers have been published in which new paleontological Information has also

been used. Much, however, remains to be done in (bio- and litho-) facial analysis. The existing knowledge being also unbalanced from a geographic point of view, with some areas relatively better known than others.

The same lack of balance is seen in the knowledge of the different fossil groups. Only in Argentina has the megaflora been studied in some detail, while the microflora is mostly known from Neuquen province, Argentina. Most studies of Jurassic inverte-brates (generally restricted to ammonites and/or bivalves) were done on Argentine material from Neuquen and Mendoza provinces. The Lower Jurassic invertebrates are poorly known (specially the ammonites). At the moment the best known fauna, geographically and stratigraphically, is represented by the ammonites of the M. Jurassic. thanks to new research that has been done in the last 10-15 years. Within the U. Jurassic the Oxfordian (and Kim-meridgian) invertebrates are poorly known. A great deal of work has comparatively been done on the Tithonian and L. Cretaceous fauna, but needs to be reviewed on a regional scale. The knowledge on the Jurassic microfauna is restricted to some findings in M. Jurassic beds. The Jurassic vertebrates need more extensive studies. The fish record will surely be modefied in the near f u -ture due to new research being carried out on both, Argentinian and Chilean material. Terrestrial reptiles, which were dominant in Argentina, are reliable known only with one sauropod, the evidence for other dinosaurs being based on scarce material and tracks. The record of marine reptiles is more abundant in Chile, but like the Argentinian, it has not been studied.

Report No. 2

From W. Brochwicz-LewInski: Report on the activities of the Geolog ical Survey of Poland

In Poland, the Stratigraphic Commission of the Committee of Geological Sciences/=Natl. IUGS Committee/ of the Polish Academy of Sciences is carrying out systematization of stratigraphy of epicontinental Permian and Mesozoic deposits. This programme, over seen by doc.dr.hab.R.Dadlez of the Geological Institute/ the adress äs mine/ is aimed at creation of a System of formal stratigraphic/mainly lithostratigraphic/ units in accordance with the rules of Polish code of stratigraphic classification, terminology and nomenclature. Its organization and aims are discussed in the enclosed paper by R.Dadlez/Systematization of the stratigraphy of the epicontinental Permian and Mesozoic deposits in Poland, Kwart.Geol.,vol.22,no.2.p.3o3-3o7,1 978/.

The works on the Jurassic, connected with this programme, are carried out by, three working groups leaded by, respectively:R. Dadlez/Lower Jurassic/, J. Kopik/Middle Jurassic/ and L.Malinowska/ Upper Jurassic/. The results are being successively publishes in Kwartalnik Geologiczny. Progress report of the Upper Jurassic working group is enclosed /L.Malinowska, Biostratigraphic subdi-visions of Upper Jurassic of extra-Carpathian Poland, Kwart.Geol., vol.22,no.2, p.3o9-321/, and that of the Lower Jurassic group should appear in the March/R.Dadlez. The state of linthostratigraphy of the epicontinental Lower Jurassic in Poland and proposals for its systematization, Kwart,Geol.,vol.22,no.4, p.773-790, 1979 for 1978. I will keep you informed about subsequent publications and events.

I hope that our colleague may be also interested in recently published Geological Map of Poland without Cenozoic and Cretaceous formations, in the scale 1:5oo,ooo/E.Rühle. Editor-in-Chief/, Instytut Geologiczny, 1978, which shows the present extent of Jurassic strata and their facies. The map is obtainable from the Geological Institute.

Report No. 3

From R.H. Bäte, A.R. Lord: Micropalaeontological Activity on British Jurassic

Foraminifera - Dr. B. Johnson (British National Oil Corporation) and Dr. P. Copestake (Nature Conservancy) have been working on the Lower Jurassic of the Mochras Borehole and a large report has been submitted for publication by the Institute of Geological Sciences (I.G.S.). Mrs. B. Coleman (I.G.S.) has been working on M. Jurassic borehole material. Dr. A.J. .Lloyd (University College London) continues his detailed study of the type Kimmeridgian. These 4 workers are jointly involved in the Jurassic part of 'A stratigraphical index of British Foraminifera[1] to be published by the British Micropalaeontoloqical Society. Dr. A. Medd (I.G.S.) and Dr. D.J. Shipp (Robertson Research International) have been working with British Upper Jurassic material.

Ostracoda - Dr. F.W. Anderson (formerly I.G.S.) has completed a large monographic paper which reillustrates the material (including Rhaetic and Purbeck-Wealden) he has worked with in the past and which is to be published by I.G.S.. Drs. Lord (University College London), Bäte (British Museum (Natural History)) and Kilenyi (City of London Polytechnic) contributed Lower, Middle and Upper Jurassic sections to 'A stratigraphical index of British Ostracoda[1] (British Micropalaeontological Society, 1978). Dr. Bäte continues his Middle Jurassic work in co-operation with Miss L.M. Sheppard. Dr. R.C. Whatley (University College Aberystwyth) maintains his interest in the Upper Jurassic. Dr. Lord is preparing a report comparing the micropalaeontology of the type Volgian with sequences in western Europe (see below).

Palynology - work at the University of Sheffield, led by Professor C. Downie and Dr. R. Neves continues and has been concerned with Middle and Upper Jurassic palynomorphs and microplankton from onshore sites and the Brent Field, with recent publications on the type Kimmeridgian and the Jurassic of Brora, Scotland.

Calcareous Nannofossils - Dr. G. Hamilton (Robertson Research International) has been working on material from Britain and Portugal and also the type Volgian (see above); she is preparing a Jurassic chapter in conjunction with Professor T. Barnard (University College London) for 'A stratigraphical index of British Calcareous Nannofossils' (British Micro-, palaeontological Society).

Report No. 4

From G. Stevens

ANTARCTICA

The British Antarctic Survey continues to Sponsor research projects of relevance to Jurassic stratigraphy and palaeontology. Dr M.R.A. Thomson of B.A.S. is currently working on Mesozoic Mollusca and has recently published a most useful annotated bibliography of the palaeontology of West Antractica (N.Z. Jl Geol. Geophys 20: 865-904). Field work under the auspices of B.A.S. continues in areas of Jurassic - Cretaceous rocks in the Antarctic Peninsula.

Drs R.W. Imlay and E.G. Kauffman have a U.S. Geological Survey Professional Paper in press on Jurassic bivalves and ammonites from the Lassiter Coast (Palmer Land). Dr G.R. Stevens is studying belemnites from the same region.

Dr P.G. Quilty is continuing his studies of Jurassic fossils from Ellsworth Land (see N.Z. Jl Geol. Geophys 20: 1033-80 and reference list).

U.S. Geological Survey field parties continue to investigate the stratigraphy and palaeontology of Jurassic sequences exposed in the Orville and Lassiter Coasts and Ellsworth Land (principal investigators: P.L. Williams, D.L. Schmidt, P.D. Rowley, T.S. Laudon).

Jurassic rocks of the Scotia Are and adjacent South American regions continue to be investigated by field parties from the Lamont-Doherty Geological Observatory, New York (I.W.D. Dalziel

et al.) .

In Eastern Antarctica, Dr Rosemary Askin is studying the palynology of sequences that extend up into the early Jurassic,

NEW ZEALAND

Studies pertinent to Jurassic stratigraphy and palaeontology are äs follows: Auckland University:

J.A. Grant-Mackie (palaeontology and stratigraphy);

P.F. Ballance (sedimentology of uppermost Jurassic);

K.B. Sporli (regional geology and tectonics).

F. Hasibuan is currently carrying out a Student mapping project involving Jurassic stratigraphy. Similar projects have been recently completed by D. Francis and D. MacFarlane.

Canterbury University:

J.D. Bradshaw (regional geology and tectonics).

Otago University:

J.D. Campbell and D. MacFarlane (palaeontology and stratigraphy. R.M. Carter (sedimentology of middle Jurassic).

N. Z. Geological Survey:

G.R. Stevens (palaeontology, stratigraphy, biogeography);

J.I. Raine (palynology), G. Wilson (Dinoflagellates),

A.R. Edwards (Coccoliths), B.C. Waterhouse (regional geology)

Other:

A.B. Challinor is continuing his belemnite studies.

Although companies have been active in New Zealand offshore

regions little o£ this work has involved Jurassic strata as strata of late Mesozoic - early Cenozoic age constitute the most prospective horizons.

NEW CALEDONIA

Although the Jurassic sequences of New Caledonia received some treatment in the pioneering works of Piroutet (1917), Avias (1953) and Routhier (1953) , the main effort has come from the geological mapping programme of the Bureau de Recherches Geologiques et Minieres, carried out in 1970-1976. This Programme resulted in the appearance of a number of publications dealing with aspects of Jurassic palaeontology and stratigraphy viz :

(1) 1:50 000 mapping sheets authored by J. Arene, B. Guerange, R. Lilie, J. Lozes & J.-P. Paris and published by BRGM and Service des Mines, Noumea (Paéoua, Ponérihouen, Houailou-Baie Lebris, Me Maoya-Thio, Moindou, Canala-La Foa mapping sheets).

(2) "Geologie de la Nouvelle-Caledonie: resultats et hypotheses en 1976". Bulletin du Bureau de Recherches Geologiques et Minieres, Serie 2, Sect. 4, No.l, 1977.

(3) "Symposium International, Geodynamique du Sud-Ouest Pacifique[1] Editions Technip, Paris, 1976.

(4) 1:250 000 geological synthesis of New Caledonia (in press).

Considerable Stimulus has also been provided by Project 8 of the International Geological Correlation Programme ("Mesozoic

Chronostratigraphy, New Zealand - New Caledonia) which has sponsored a series of geological exchanges between New Zealand and New Caledonia (summarized in five reports and a number of papers). Research under the auspices of IGCP is continuing at Auckland, Canterbury and Otago Universities and the N.Z. Geological Survey, Lower Hutt.

Auckland University has had a continuing interest in New Caledonian geology over many years and a number of topics involving Jurassic rocks have been the subject of staff and Student research. M.Sc. theses by C. Pharo and H.J. Campbell are of particular relevance to Jurassic straitgraphy and palaeontology.

AUSTRALIA

Although their primary research interests lie elsewhere, P.G. Quilty and V. Scheibnerova retain an interest in Jurassic foraminiferal studies. S.K. Skwarko has a continuing interest in Jurassic Mollusca, although he is currently committed to the joint Australian/Indonesian Irian Jaya Geological Mapping Project and is now resident in Bandung.

Although very little has been published it: must be femembered that considerable stratigraphic and palaeontological effort is being expended by petroleum exploration companies in evaluating the lithostratigraphy and Chronostratigraphy of offshore sequences, many of which include Sediments of Jurassic age.

The exploration companies involved are West Australian Petroleum Pty Ltd, Esso Exploration (Aust.) Pty Ltd, Shell

Development (Aust.) Pty Ltd, Hematite Petroleum Pty Ltd, B.P. Petroleum Development (Aust.) Pty Ltd, Woodside Petroleum Development Pty Ltd, Phillips Australian Oil Co., and Hudbay Oil (Aust.) Ltd. The main prospective areas involving Jurassic Sediments lie in the northern Carnarvon Basin, Canning Basin, Browse Basin, Bonaparte Gulf Basin and the Arafura Basin.

PAPUA NEW GUINEA

Field work by the Australian Bureau of Mineral Resources extending over many years has resulted in a number of studies pertinent to Jurassic stratigraphy and palaeontology. Workers who have published such studies include S.K. Skwarko, D.B. Dow and R.R. Ryburn.

Palaeontological collections made by the PNG/BMR field parties are being studied by S.K. Skwarko, J.A. Jeletzky, G.R. Stevens and G.E.G. Westerman.

Since the independence of PNG a number of the BMR personnel formerly involved in the PNG mapping projects have been transferred to Bandung to participate in the Irian Jaya project (see below).

INDONESIA

Although the outlines of the geology of West Irian are known, and it has been shown to be virtually a continuation of the geology of Papua New Guinea (e.g. Visser § Hermes, 1962), little is known in detail. It is against this background, and the

availability of experienced mapping teams from BMR projects in Papua New Guinea, that the joint Australian/Indonesian Irian Jaya Geological Mapping Project was initiated under the auspices of the Colombo Plan.

BMR staff seconded to the project include the Mesozoic palaeontologist S.K. Skwarko. It is inticipated that such a project will generate substantial advances in the Mesozoic stratigraphy and palaeontology of this region. Short papers on Jurassic fossils from Irian Jaya have been recently published by Gerth (1965), Westermann & Getty (1970) and Helmcke, Barthel & von Hillebrandt (1978).

Elsewhere in Indonesia an expedition consisting of G.E.G. Westermann, T. Sato, S.K. Skwarko and F. Hasibuan has re-examined the Jurassic biostratigraphy of the Sula Islands, a preliminary report of which has been published (Bull. Geol. Surv. Indonesia 4: 1-28). Palaeontological collections obtained by the expedition are currently being studied by Westermann (ammonites), Skwarko (bivalves) and Challinor (belemnites).

As already noted in the context of Australia, in Indonesia petroleum exploration companies are actively involved in a major programme of geological exploration of off-shore areas, many of which include Sediments of Jurassic age.

THE PHILIPPINES ISLANDS

Note the following reference to recent work:

Fontaine, H. 1978. Note on the Jurassic in the Philippines CCOP Newsletter 5(5): 9-11.

THAILAND

Note the following reference to recent work: von Braun, E.; Jordan, R. 1976. The Stratigraphy and Paleontology of the Mesozoic Sequence in the Mae Sot Area in Western Thailand. Geol. Jb. B21: 5-51.

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Helmcke, K.; Barthel, K.W.; von Hillebrandt, A. 1978: Über Jura und Unterkreide aus dem Zentralgebirge Irian Jayas (Indonesian). N. Jb. Geol. Palaont. Mh. 1978 (11): 674-684.

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Visser, W.A.; Hermes, J.J. 1962. Geological results of the exploration for oil in Netherlands New Guinea. Verhandelingen van het Koninkligk Nederlands geologisch mijnbouwkundig genootschap, Geologische Serie 20.

Westermann, G.E.G.; Getty, T.A. 1970. New middle Jurassic Ammonoidea from New Guinea. Bull. Amer. Paleont. 57: 227-321.