

INA NEWSLETTER

proceedings of the
INTERNATIONAL NANNOPLANKTON ASSOCIATION

volume 1 number 1 1979

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CONTENTS

	page
<u>NON SCIENTIFIC INFORMATION</u>	
Founding a nanoplankton association	1
Presenting the International Nanoplankton Association Meeting on Lower and Middle Cretaceous nanoplankton, Rijswijk, The Netherlands, 21st to 24th November, 1977	2-5 6-7
<u>BIBLIOGRAPHY AND TAXA</u>	
Introduction	AB I - AB V
Bibliography	A1 - A12
Taxa	B1 - B27
Taxonomical Notes	C1 - C2
Gartner, S.: Validation of <u>Helicopontosphaera inversa</u>	C2
Okada, H. & McIntyre, A.: Validation of <u>Florisphaera</u> <u>profunda</u> var. <u>elongata</u>	C2
<u>SCIENTIFIC CONTRIBUTIONS</u>	
Short Notes, introduction	N1
Prins, B.: Notes on Nannology - 1. <u>Clausicoccus</u> , a new genus of fossil coccolithophorids	N2 - N4
Heck, S.E. van : Nanoplankton contents of the Type-Maastrichtian	N5 - N6
Manivit, H. et al.: Calcareous nanofossil events in the Lower and Middle Cretaceous	N7
<u>ADDRESSES</u>	

INTERNATIONAL NANNOPLANKTON ASSOCIATION

Open to all who are interested in the
Dissemination of Knowledge about Calcareous Nannoplankton

YOU GET

1. INA Newsletter - a newsletter to be published in May and November of each year, each issue totalling about 40 printed pages. Each issue includes a "Bibliography and Taxa of Calcareous Nannoplankton", short articles, and announcements on meetings and events. Free to members, the Newsletter provides a service many colleagues have asked for.
2. Other Activities - meetings or working sessions to be scheduled at the will of the members. Ideas promoting fellowship and co-operation among nannoplankton specialists are open to suggestion.

SUBSCRIPTION, to be paid in Dutch guilders.

	<u>1979</u>	<u>1980</u>	<u>1981</u>
Members	df1 10,-	df1 20,-	df1 20,-

*Note: If the subscription dues for 1980 are received before November ~~1980~~, there is no charge of df1 10,- for the year 1979.

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APPLICATION FORM:

I/we wish to become ordinary collective member(s) of INA

Name:

Mailing Address:

Telephone

(office)

(home)

FOUNDING A NANNOPLANKTON ASSOCIATION

The founding of a nannoplankton association was triggered by a letter circulated by J. Rosato and D.D. Reimers to prospective members of such an association in the U.S.A. and by the realisation, in October 1977 after a short visit at their home in Los Angeles, that the Loeblich & Tappan "Annotated Index and Bibliography of the Calcareous Nannoplankton" would definitely be discontinued.

Discussions with many colleagues convinced me, that something had to be done as soon as possible, to continue the "Index". The same discussions also made it clear, that "no-one" wanted to take on the task her/himself. At the meeting of the Mid Cretaceous Events coccolith Working Group in November 1977 in The Hague the matter was discussed and, since nothing definitive seemed to have evolved from the American initiative earlier that year, the participants of that meeting decided to go ahead and found the International Nannoplankton Association (INA). The well organized Dutch nannoplankton Working Group took it on themselves to prepare a constitution, organize an election of a first Council and prepare the first INA Newsletter. Without the Dutch nannoplankton Working Group, the International Nannoplankton Association would probably have died of neglect by its mothers and fathers before it had learned to walk or talk...

An earlier attempt for the foundation of an "International Nannoplankton Association" during the "Round Table on calcareous nannoplankton" at the Planktonic Conference in Kiel 1974 was not successful, because nobody volunteered to do any work and there was no immediate common need for a Newsletter of the type planned now. We then still all hoped, the "Index" would continue forever.... As the first president of The International Nannoplankton Association I would like to thank Helen Tappan and Al Loeblich for the efforts and time they dedicated to the "Index" for the benefit of all of us; but I would also like to thank the Dutch Nannoplankton Working Group, who served as the first Council of the International Nannoplankton Association and started on the continuation of the "Index" which will hopefully now go on "forever".

Katherina Perch-Nielsen

PRESENTING THE INTERNATIONAL NANNOPLANKTON ASSOCIATION

INTRODUCTION

Between 1966 and 1973 we, nanoplankton workers, were in an ideal situation with the excellent service of A.R. Loeblich and H. Tappan. During this period they provided us regularly with the often consulted issues of their "Annotated Index and Bibliography of Calcareous Nanoplankton". Unfortunately, they had to stop this "Index and Bibliography" for various reasons in 1973, leaving behind a reference system updated to 1971.

Although the sudden end of this reference system was deeply regretted by many of us, nobody could find the courage to take over the job of Loeblich and Tappan. Evidently, the difficulties connected to such an enterprise are too great for an individual person to guarantee a continuous flow of data over a long period of time. Consequently, from then onward we were forced to scan through all kinds of periodicals ourselves, in search of nanoplankton publications: a cumbersome and time-consuming piece of work.

However, the meeting on Middle Cretaceous Nanoplankton held in Rijswijk, November 1977, which has been organized by the Dutch Nanoplankton Working Group, a branch of the Earth Science Research Foundation, The Netherlands, may represent a historical turning point. According to the participants of this meeting, problems like the continuation of the "Index and Bibliography" could only be solved collectively, in other words by a kind of society, in which most persons interested in nanoplankton would be united and, ideally, would co-operate.

On the initiative of Katherina Perch-Nielsen the participants of the Rijswijk meeting decided to found such a society on the meeting itself. This decision meant the birth of the International Nanoplankton Association (I.N.A.). One of the main targets of this new Association should be the distribution of a periodical, the INA Newsletter, in which new taxa and new combinations of taxa, and titles of new publications will be listed in a way comparable with the "Index and Bibliography" of Loeblich and Tappan.

The Dutch Nanoplankton Working Group accepted the responsibility to guide the just born Association during the first period of its existence. The results of this guardianship are presented in the first issue of the INA Newsletter, laying in front of you. It has been sent free of charge to all persons of whom we thought that they might be interested somehow in calcareous nanoplankton. This has been made possible thanks to the generosity of Prof. Dr. C.W. Drooger of the State University of Utrecht, who offered us the financial support needed to cover the costs of printing of this first issue. The costs of postage have been paid by Shell.

The backbone of this issue consists of lists of titles and taxa, most of them being published in the last few years. For the time being, they have been based largely on the literature documentation system of the Shell Internationale Petroleum Mij, The Netherlands. It is intended that in the forthcoming issues of the Newsletter bit by bit the gap will be filled between the present and 1971, the date of the end of the "Index and Bibliography" of Loeblich and Tappan.

But the INA Newsletter will not be confined to titles and taxa only. You also will get the opportunity to publish in the Newsletter short articles on nanoplankton, or information and requests, difficult to publish elsewhere, such as preliminary results, comments on or additional remarks to recent nanoplankton publications, requests for sample material or for rare papers, and so on.

It will be clear that becoming a member of the International Nanoplankton Association offers attractive possibilities for many of you. Therefore, return your application form as soon as possible to the Secretary / Treasurer of the Association.

MORE ABOUT THE ASSOCIATION

Its Council

The first Council of the Association represents a kind of "Council-ad-Interim". Its members have accepted their tasks on request of the Dutch Nanoplankton Working Group. The first official election will be held in 1981.

The Council consists of the following five officers:

President: Katherina Perch-Nielsen, Geological Institute of the Eidg. Technische Hochschule, Sonneggstrasse 5, CH 8097 Zürich, Switzerland.

Vice-President: David D. Reimers, Tenneco Oil Co., PO Box 51345 OCS La Fayette, Louisiana 70505, U.S.A.
He is one of the persons who, together with J. Rosato, investigated the possibility to found an American nannofossil society.

Secretary / Treasurer: A.J.T. (Ton) Romein, Geological Intitute of the State University of Utrecht, Oude Gracht 320, Utrecht, The Netherlands.

1st Ordinary Officer: Hélène Manivit, Bureau de Recherches Géologiques et Minières, B.P. 6009, 45018 Orléans Cedex, France.
Organiser of the Meeting on Lower Cretaceous Nanoplankton in Orléans, France, May 1979.

2nd Ordinary Officer: Alan W. Medd, Institute of Geological Sciences, Ring Road Halton, LS15 8TQ Leeds, Great Britain.
Representative of the Council in the Editorial Committee.

The Annual Dues

The annual dues are dfl 20,- for all members of the Association, to be paid to the Treasurer of the Association in Dutch Guilders, to avoid extra costs of collection, before 1st of March of each year.

Payment of the annual dues for 1980 before 1st of November of this year, gives extra profit: receipt of the second issue of the INA Newsletter free of charge. The same issue will cost dfl 10,- when the annual dues for 1980 are received after this date.

The money should be made payable to:

A.J.T. Romein, Secretary / Treasurer of the Intern. Nanopl. Assoc.

Bank: Algemene Bank Nederland (ABN)

Bank account: 55.53.90.101 ; Postal account (post giro) 4198913

Further Information

- The Association is a non-profit making organization.
- Its Objectives are:
 - a. The dissemination of knowledge about nanoplankton, recent and fossil.
 - b. The promotion of fellowship and co-operation between individual nanoplankton specialists, interested Societies and Institutions.
- Membership is open to individuals (ordinary members) and societies and institutions (collective members). Only ordinary members have the right of voting.
- Members of the Association will receive its proceedings, the INA Newsletter, provided that they have paid their annual dues. Back numbers are also available on sale to non-members.
- Regional activities within the Association may be developed and guided by Regional Committees, appointed by ordinary members from that region. Regional Committees have the authority to create their own organization, finance, publications etc. However, their activities must be restricted to members of the Association.

MORE ABOUT THE INA NEWSLETTER

The Editorial Committee

The Editorial Committee consists of the following editors:

- Alan W. Medd, Institute of Geological Sciences, Ring Road Halton, LS15 8TQ Leeds, Great Britain. Representative of the Council.
- Shirley E. van Heck, Dierenselaan 10, 2573 KH Den Haag, The Netherlands. She is responsible for the compilation of the lists of titles and taxa.

IMPORTANT: To keep the lists of publications up-to-date and to extract from them new taxa and new combinations, Shirley van Heck is very much dependant on your willingness to co-operate. She will be grateful, therefore, to receive from you a reprint of all your future publications.

Further Information

- The INA Newsletter is the official periodical of the International Nanoplankton Association. The way, in which it is reproduced and distributed, satisfies the rules of the International Code of Botanical Nomenclature. Hence, all new taxa and combinations, introduced in the INA Newsletter have full validity, if otherwise in accordance with the ICBN.
- The INA Newsletter will be distributed twice a year. Each issue will comprise about 40 pages.
- The INA Newsletter has been subdivided into three parts which are numbered independantly.
 - part 1. News from the Council and Editorial Committee. This part contains information received from the officers of the Council, and reports on meetings etc. No scientific data are included.
 - part 2. Literature and Taxa. This part consists of lists with titles of publications and with taxa, and of taxonomical notes.

The page numbers of the lists continue from one volume to the next. This facilitates detection of missing pages, and reference to specific titles or taxa.

part 3. Scientific Contributions.

Here you will find Short Notes, and depending on money and your co-operation, a limited number of leading articles in the future.

- Short notes dealing with any aspect of calcareous nannoplankton and written by members of the Association will be published in the INA Newsletter. A Short Note is not to exceed three pages, illustrations and tables included. Depending on the opinion of the members and the financial consequences, this number of pages may be extended in the future.
- All parts of the INA Newsletter are allowed to be reproduced for scientific purposes. The source and authors should be clearly mentioned in case of non-private use.

B. Prins and S.E. van Heck, on behalf of:

The Dutch Nannoplankton Working Group,

members: Shirley E. van Heck, Dierenselaan 10, The Hague
Ben Prins, Shell Internationale Petroleum Mij, Rijswijk
Ton J.T. Romein, State University of Utrecht, Utrecht
Ron R. Schmidt, State University of Utrecht, Utrecht
Joost A. Verbeek, State Geological Survey, Haarlem

MEETING ON LOWER AND MIDDLE CRETACEOUS NANNOPLANKTON,
RIJSWIJK, THE NETHERLANDS, 21st to 24th NOVEMBER, 1977

In the beginning of 1977 the Dutch Nannoplankton Working Group, being a branch of the Earth Science Research Foundation of the Netherlands, took the initiative to organize a meeting, mainly devoted to Middle Cretaceous nannoplankton. This meeting has been held at the Shell Research Laboratory (K.S.E.P.L.) in Rijswijk, the Netherlands, from 21 to 24 November, 1977.

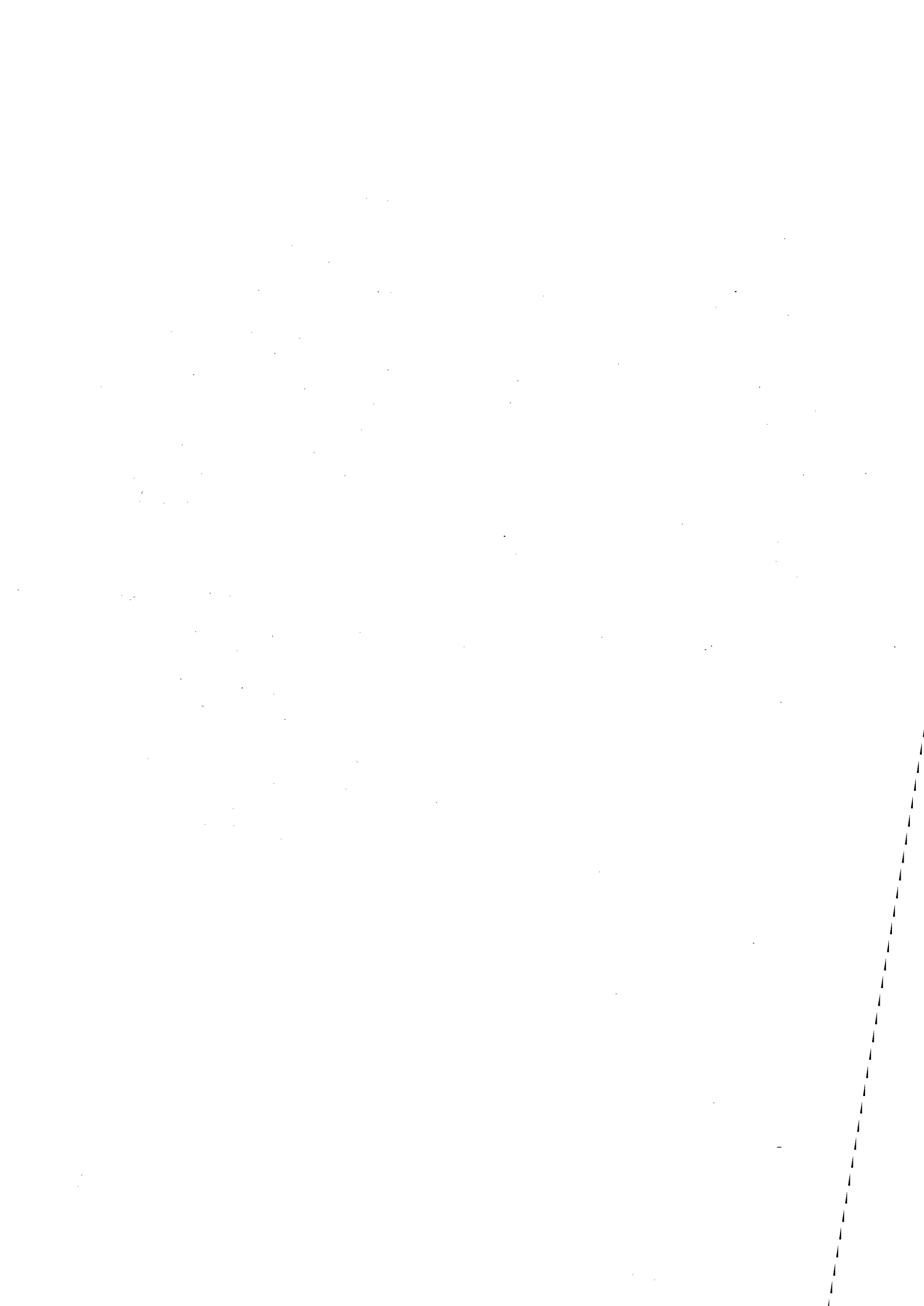
From the about forty invited nannoplankton workers eighteen specialists, active in several countries of Western Europe, attended the Rijswijk meeting: A. Afejuku, M. Hojjatzadeh, C. Kapellos, A.W. Medd and R. Taylor, England; P. Cepek, Federal Republic of Germany; F. Deres, H. Manivit, and D. Noël, France; W. Grün and H. Stradner, Austria; K. Perch-Nielsen, Switzerland; P. Doeve, S.E. van Heck, B. Prins, A.J.T. Romein, R.R. Schmidt and J.W. Verbeek, The Netherlands. Regrettably, no specialists from East European countries or the U.S.A. were able to take part of the Rijswijk meeting.

The most important subjects treated during the meeting were:

- a. Species definitions - It was realized that the species concept of some taxa, applied for the Middle Cretaceous nannoplankton zonation, differed from specialist to specialist. To standardize nannoplankton datings, some of the marker species had to be re-defined. The solution of a number of taxonomical problems was greatly facilitated by H. Stradner, who showed under the light microscope holotypes of species described by him from the Cretaceous.
- b. Evolutionary trends - Species definitions in many groups of nannofossils may become greatly improved by a better understanding of their evolution. For this reason members of the Dutch Nannoplankton Working Group presented their views on a few lineages: the Eiffellithus and Lithraphidites lineages by J.W. Verbeek, the Prediscosphaera lineage by S.E. van Heck, and the Lithastrinus - Quadrum - Micula lineage by B. Prins. A very interesting lecture was given by F. Deres on the development of Nannoconus assemblages in the Lower and Middle Cretaceous. The evolutionary trends in a few species groups and their stratigraphical implications will be subject of future studies.
- c. Range chart - A range chart has been compiled for approximately fifty species. It was remarkable that the opinions of the participants about the stratigraphical distribution of these species hardly deviated. This may be an indication that the range chart has a high degree of reliability, even taking into account that the study of this interval is still in its infancy.
- d. Biozonation - The zonation agreed upon during the meeting is essentially the same as the one proposed on the nannoplankton session of the Meeting on Mid-Cretaceous Events, held in Nice, France, in September 1976 (see MANIVIT, H., PERCH-NIELSEN, K., PRINS, B. & VERBEEK, J.W., 1977., Mid Cretaceous calcareous nannofossil biostratigraphy. -Kon. Nederl. Akad. Wetensch., Proc. Ser. B, vol. 80(3), pp. 169-181). Only a few modifications were necessary for up-dating species names and for re-definitions of some zonal boundaries. The Lower Aptian to lowermost Coniacian comprises seven zones. In the interval of the Middle Aptian to Upper Cenomanian nine subzones have been recognized.

- e. Data bank - The amount of published and unpublished data on taxonomy, stratigraphical and geographical distribution of species, etc. can no longer be handled by the individual nannoplankton specialist. A computer storage and retrieval system was seen as the only solution to this problem. However, existing systems are either inaccessible, e.g. commercially owned, or only designed for restricted applications. During the discussions it turned out that the West German Geological Survey, Hannover, is developing suitable programs for data entry and retrieval. These programs are being tested now with help of the data contained in the Initial Reports of the Deep Sea Drilling Project. On request of the participants of the meeting P. Cepek, who is responsible for the handling of the nannoplankton data at the Survey in Hannover, promised to investigate the possibility to produce regularly a list of new publications and taxa, to be published in the forthcoming issues of the INA Newsletter. If feasible, they might serve as a continuation of the 'Annotated Index and Bibliography of the Calcareous Nannoplankton', the often consulted series of publications composed by Loeblich and Tappan, which regrettably came to an end in 1973. For the time being the nannoplankton specialists of the Shell Internationale Petroleum Maatschappij, the Hague, will provide the INA Newsletter with their data on literature and taxa.
- f. International Nannoplankton Association - The participants of the Rijswijk meeting unanimously adopted the suggestion of K. Perch-Nielsen and the Dutch Nannoplankton Working Group to found at the meeting an international association of nannoplankton specialists. The main targets of the association, named the International Nannoplankton Association (I.N.A.), were considered to be:
- promotion of nannoplankton as a stratigraphical tool;
 - distribution of INA Newsletters, listing primarily new publications and taxa, as well as short notes by members at a later date;
 - organization of work sessions, similar to the Rijswijk meeting;
 - promotion of courses on nannoplankton in general and on special topics.
- g. First Work Session of INA - The first work session to be organized by the European branch of INA will be held in 1979 at the Bureau de Recherche Géologie et Minières in Orléans, France. The main topic for this meeting will be the Lower Cretaceous Nannoplankton, a topic hardly touched upon during the Rijswijk meeting.

B. Prins.



BIBLIOGRAPHY AND TAXA OF CALCAREOUS NANNOPLANKTON

Compiled by Shirley E. van Heck*

1 - Introduction

On the following pages titles of publications on calcareous nannoplankton and the new taxa and combinations they contain, have been listed. The order in which the titles and taxa have been arranged, is entirely depending on the date on which the publications came to my notice. They have neither been re-arranged alphabetically, nor chronologically to avoid unnecessary loss of time.

All publications mentioned are coded and checked for the presence of new taxa or new combinations. Consequently, only those papers could be included that were available either as original publication, or as reprint or copy. It will be highly appreciated therefore, to receive REPRINTS OF ALL YOUR RECENT PUBLICATIONS NOT MENTIONED IN THIS LIST, AND YOUR FUTURE PUBLICATIONS ABOUT CALCAREOUS NANNOPLANKTON, RECENT AND FOSSIL, to keep the lists of references and taxa as complete as possible. Moreover, if you may come across any mistake in these lists, please take the trouble of informing me.

2 - Bibliography of publications about calcareous nannoplankton

References of papers dealing with calcareous nannoplankton have been listed on pages which are subdivided into three columns.

2.1 - first column: The Publication Reference Number.

The letter A indicates that all pages of the INA Newsletter with this letter contain titles of publications only. It is directly followed by the page number and the number of the title. This combined number is the Publication Reference number (e.g. A1-1). In case an error or omission in a title should be corrected, mere reference to its Publication Reference Number is sufficient to find back the title.

2.2 - second column: The Complete Reference.

The width adopted for this column is such, that each reference can be easily attached to most system cards (see example). It is advised to use copies for this purpose and to preserve the original sheets of the INA Newsletter as a masterfile. The sheets are allowed to be copied without permission of the Editorial Committee of the INA Newsletter, or of the Council of the International Nannoplankton Association.

2.3 - third column: The Subject Code.

Each reference has been provided of a code indicating the main subjects treated in the publication. This subject code is meant to facilitate the retrieval of titles dealing with a specific topic (see paragraph 4 for codes used).

* Please send your reprints and correspondence to:
The Editorial Committee of the INA Newsletter
c/o S.E. van Heck, Dierenselaan 10, 2573KH Den Haag, The Netherlands

A1
1

WISE, S.W. & WIND, F.H.

1976

Mesozoic and Cenozoic calcareous nannofossils recovered by DSDP Leg 36 drilling on the Falkland Plateau, southwest Atlantic sector of the southern ocean.

-In: Barker, P.F., Dalziel, I.W.D. et al., Init. Rep. DSDP, vol. 36, pp. 269-491, 89 pls., 3 figs., 7 tbs.

strat. syst.
JURA. U. CRET.
TERT. QUAT.
Atlantic S.

WISE, S.W. & WIND, F.H.

1976

Mesozoic and Cenozoic calcareous nannofossils recovered by DSDP Leg 36 drilling on the Falkland Plateau, southwest Atlantic sector of the southern ocean.

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strat. syst. / JURA. U. CRET. TERT. QUAT. / Atlantic S.
12 new genera; 33 new species; 21 new combinations

A1-1
reprint

example

3 - Names of taxa of calcareous nannoplankton and their re-combinations

The names of new taxa and new combinations, published in the papers listed in this issue of the INA Newsletter, are collected on pages with the same subdivision as has been applied for the lists with publications. Each page has been subdivided into three columns.

3.1 - first column: The Taxon Page number.

The letter B indicates that all pages of the INA Newsletter with this letter contain names of taxa and their re-combinations only. It is followed by the number of the page. In case it may turn out that an error in the reference should be corrected, mere reference to its taxon reference number is sufficient to find the page with the particular taxon.

3.2 - second column: The Name of the Taxon.

The width adopted for this column is such that each reference can be easily attached to most system cards (see example). It is advised to use copies for this purpose and to preserve the original sheets of the INA Newsletter as a masterfile. These sheets are also allowed to be copied without permission of the Editorial Committee of the INA Newsletter, or of the Council of the International Nannoplankton Association. If a taxon has not been published in accordance with the ICBN, this has been indicated in this column. More extensive discussions on the validity of names or combinations of names, or on spelling, are given in separate contributions (see Taxonomical Notes).

3.3 - third column: The Publication Reference Number.

This column contains the number referring to the complete reference of the publication in which the new taxon or the new combination has been introduced (the A pages).

B-4	<u>Lapideacassis cornuta</u> (FORCHHEIMER & STRADNER 1973) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., pp.300,301 (ex <u>Scampanella</u>).	A1-1
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<p><u>Lapideacassis cornuta</u> (FORCHHEIMER & STRADNER 1973) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., pp.300,301 (ex <u>Scampanella</u>).</p> <p>= <u>Scampanella cornuta</u> FORCHHEIMER & STRADNER 1973</p> <p style="text-align: right;">A1-1 B-4</p>

example

4 - List of codes

The following key words and abbreviations have been applied; any suggestions for improvement are welcome. Since the system is still developing, some inconsistencies may occur.

strat.	= stratigraphy
syst.	= systematics
PREJURA	= Pre-Jurassic
JURA	= Jurassic (Hettangian - Tithonian)
JURA.L.	= Lower Jurassic (Hettangian - Aalenian)
JURA.M.	= Middle Jurassic (Bajocian - Callovian)
JURA.U.	= Upper Jurassic (Oxfordian - Tithonian)
CRET	= Cretaceous (Berriasian - Maastrichtian)
CRET.L.	= Lower Cretaceous (Berriasian - Barremian)
CRET.M.	= Middle Cretaceous (Aptian - Turonian)
CRET.U.	= Upper Cretaceous (Coniacian - Maastrichtian)
TERT	= Tertiary (Paleocene - Pliocene)
TERT.L.	= Lower Tertiary (Paleocene - Oligocene)
TERT.U.	= Upper Tertiary (Miocene - Pliocene)
QUAT	= Quaternary (Pleistocene - Holocene), data from sea bottom samples included.

- RECENT = data concerning living calcareous nannoplankton.
- Africa.N. = African countries bordering the Mediterranean Sea; Malta and Egypt east of the Suez Canal and of Gulf of Suez included.
- Africa.CS. = other African countries; Canary Islands, Cape Verde Islands, Malagasy Republic (Madagascar) included.
- America.N. = North America; Canada, USA; Greenland included.
- America.C. = Central America; countries between Colombia and the USA, and those situated in the Caribbean and the Gulf of Mexico; Bahamas included, Trinidad excluded.
- America.S. = South America; Falkland Plateau, Galapagos Islands and Trinidad included.
- Asia.SW. = South-west Asia; all countries of Asia south of Russia and west of Pakistan; Cyprus included.
- Asia.E. = East Asia; other countries of Asia, Papua and Russia excluded.
- Australasia = Australia, Melanesian Archipelago, New Zealand and Papua.
- Europe.E. = Eastern Europe; Albania, Bulgaria, Czechoslovakia, Finland, Greece, Hungary, Poland, Rumania, Yugoslavia; Crete included, Russia excluded.
- Europe.W. = Western Europe; all European countries west of those mentioned before; Balearic Islands, Corsica, Ibiza, Sardinia and Sicily included.
- Russia = Asian and European states of the USSR.

remark: data from the seabottom and subsurface of continental shelves receive the code of the country to which the shelf belongs.

- Atlantic.N. = Northern Atlantic Ocean; area north of 30°N; Baffin Bay, Norwegian Sea, and for recent organisms also the Baltic and North Sea included.
- Atlantic.C. = Central Atlantic Ocean; area between 30°N and 20°S, Caribbean and Gulf of Mexico included.
- Atlantic.S. = Southern Atlantic Ocean; area south of 20°S, bordering part of the Southern (Antarctic) Ocean included.
- Indian.Oc. = Indian Ocean, Persian / Arabian Gulf, Red Sea and the bordering part of the Southern (Antarctic) Ocean included.
- Mediterr. = Mediterranean Sea, Black Sea included.
- Pacific.N. = Northern Pacific Ocean; area north of 20°N; Bering Sea, Sea of Japan, Sea of Okhotsk, and for recent organisms the Yellow Sea included.
- Pacific.C. = Central Pacific Ocean; area between 20°N and 20°S; Banda Sea, Celebes Sea, South China Sea, and for recent organisms also the Java Sea included.
- Pacific.S. = Southern Pacific Ocean; area south of 20°S; Coralline Sea, Tasman Sea, and the bordering part of the Southern (Antarctic) Ocean included.
- N.Hemisph. = Northern Hemisphere; localities distributed over several continents and/or oceans north of the Equator.
- S.Hemisph. = Southern Hemisphere; localities distributed over several continents and/or oceans south of the Equator.
- Worldwide = localities distributed over several continents and/or oceans north and south of the Equator.
- BIOL. = Biology; data on anatomy, biochemistry, coccolith formation, culture experiments, life history.
- DIAG. = Diagenesis of pelagic carbonates only.
- ECOL. = Ecology; data on climate, global, regional and vertical distribution, light dependence, temperature preference, water chemistry.

MORPH. = Morphology and terminology of the mineralized skeletal parts.
 SEDIM. = Sedimentation, transport; processes acting on the skeletal elements before burial.
 TECH. = Techniques.
 TECH.prep. = preparation techniques of samples or slides.
 TECH.obs. = observation methods.
 TECH.count. = counting procedures.
 OVERVIEW = Paper contains data on many subjects, being an introduction to calcareous nanoplankton or giving an overview.
 abstr. = Publication consists of an abstract only.

ATTENTION: Some last-minute additions:

syst. = systematics, with new taxa or new combinations.
 (syst) = pictures of nannofossils, without descriptions.
strat. = introduction and re-definition of new zones or subzones.
 (strat) = correlation between nannofossil zonation and subdivisions based on other techniques.

In some cases titles may be added, under the heading 'other titles', which either do not contain information on nannofossils, but may be useful to our readers, or which do contain data on nanoplankton, but are not officially published, such as theses etc.



A1

- 1 WISE, S.W. & WIND, F.H. 1976 strat. syst.
 Mesozoic and Cenozoic calcareous nannofossils recovered
 by DSDP Leg 36 drilling on the Falkland Plateau, south-
 west Atlantic sector of the southern ocean.
 -In: Barker, P.F., Dalziel, I.W.D. et al., Init. Rep. DSDP,
 vol.36, pp.269-491, 89 pls., 3 figs., 7 tbs. JURA.U.CRET.
 TERT.QUAT.
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- Striatomarginis veterna (PRINS 1969 ex ROOD ET AL. 1973) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.306 (ex Palaeopontosphaera). A1-1
- veterna, Striatomarginis (PRINS 1969 ex ROOD ET AL. 1973) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.306 (ex Palaeopontosphaera). A1-1
- Teichorhabdus WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.306; type species: Teichorhabdus ethmos WIND & WISE 1976. A1-1

- Teichorhabdus ethmos WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., pp.306,307, pl.44, fig.6, Falkland Plateau (Atlantic.S.), Maastrichtian; type species of Teichorhabdus. A1-1
- ethmos, Teichorhabdus WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., pp.306,307, pl.44, fig.6, Falkland Plateau (Atlantic.S.), Maastrichtian; type species of Teichorhabdus. A1-1
- Tetrapodorhabdus decorus (DEFLANDRE & FERT 1954) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.307 (ex Rhabdolithus). A1-1
- decorus, Tetrapodorhabdus (DEFLANDRE & FERT 1954) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.307 (ex Rhabdolithus). A1-1
- Vekshinella aachena (BUKRY 1969) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.307 (ex Vagalapilla). A1-1
- aachena, Vekshinella (BUKRY 1969) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.307 (ex Vagalapilla). A1-1
- Vekshinella? parma WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.307, pl.42, fig.2, Falkland Plateau (Atlantic.S.), Maastrichtian. A1-1
- parma, Vekshinella? WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.307, pl.42, fig.2, Falkland Plateau (Atlantic.S.), Maastrichtian. A1-1
- Watznaueria supracretacea (REINHARDT 1965) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.308 (ex Coccolithines). A1-1
- supracretacea, Watznaueria (REINHARDT 1965) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.308 (ex Coccolithines). A1-1
- Zygodiscus anthophorus (DEFLANDRE 1959) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., pp.308,309 (ex Rhabdolithus). A1-1
- anthophorus, Zygodiscus (DEFLANDRE 1959) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., pp.308,309 (ex Rhabdolithus). A1-1
- Zygodiscus bicrescenticus (STOVER 1966) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.309 (ex Discolithus). A1-1
- bicrescenticus, Zygodiscus (STOVER 1966) WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.309 (ex Discolithus). A1-1
- Braarudosphaera gartneri FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310, pl.74, fig.4, Falkland Plateau (Atlantic.S.), Albian. A1-1

- gartneri, Braarudosphaera FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310, pl.74, fig.4, Falkland Plateau (Atlantic.S.), Albian. A1-1
- Braarudosphaera minuta FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310, pl.73, fig.1, Falkland Plateau (Atlantic.S.), Albian. A1-1
- minuta, Braarudosphaera FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310, pl.73, fig.1, Falkland Plateau (Atlantic.S.), Albian. A1-1
- Corollithion perch-nielseniae FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310, pl.63, fig.3, Falkland Plateau (Atlantic.S.), Aptian.
nomen corr. pro C. perch-nielsen acc. ICBN Art.73c + Art.73 note 3. A1-1
- perch-nielseniae, Corollithion FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310, pl.63, fig.3, Falkland Plateau (Atlantic.S.), Aptian.
nomen corr. pro C. perch-nielsen acc. ICBN Art.73c + Art.73 note 3. A1-1
- Corollithion silvaradion FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310, pl.62, fig.6, Falkland Plateau (Atlantic.S.), Aptian. A1-1
- silvaradion, Corollithion FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310, pl.62, fig.6, Falkland Plateau (Atlantic.S.), Aptian. A1-1
- Seribiscutum FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310; type species: Seribiscutum bijugum FILEWICZ, WIND & WISE 1976. A1-1
- Seribiscutum bijugum FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310, pl.66, fig.2, Falkland Plateau (Atlantic.S.), Aptian; type species of Seribiscutum. A1-1
- bijugum, Seribiscutum FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.310, pl.66, fig.2, Falkland Plateau (Atlantic.S.), Aptian; type species of Seribiscutum. A1-1
- Seribiscutum primitivum (THIERSTEIN 1974) FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.311 (ex Cribrosphaerella). A1-1
- primitivum, Seribiscutum (THIERSTEIN 1974) FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.311 (ex Cribrosphaerella). A1-1

- Sollasites falklandensis FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.311, pl.64, fig.3, Falkland Plateau (Atlantic.S.), Albian. A1-1
- falklandensis, Sollasites FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.311, pl.64, fig.3, Falkland Plateau (Atlantic.S.), Albian. A1-1
- Sollasites thiersteinii FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.311, pl.64, figs.5,6, Falkland Plateau (Atlantic.S.), Aptian. A1-1
- thiersteinii, Sollasites FILEWICZ, WIND & WISE 1976; In: Wise, S.W. & Wind, F.H., p.311, pl.64, figs.5,6, Falkland Plateau (Atlantic.S.), Aptian. A1-1
- Rhabdosphaera sicca (STRADNER 1963) FUCHS & STRADNER 1977; p.29 (ex Rhabdolithus). A1-4
- sicca, Rhabdosphaera (STRADNER 1963) FUCHS & STRADNER 1977; p.29 (ex Rhabdolithus). A1-4
- Lithraphidites acutum VERBEEK & MANIVIT 1977; In: Manivit, H. et al., p.176, holotype: Thierstein, H.R., 1974, pl.3, figs.5-7, 9-11; Indian O., Cenomanian. A1-5
- acutum, Lithraphidites VERBEEK & MANIVIT 1977; In: Manivit, H. et al., p.176, holotype: Thierstein, H.R., 1974, pl.3, figs.5-7, 9-11; Indian O., Cenomanian. A1-5
- Quadrum PRINS & PERCH-NIELSEN 1977; In: Manivit, H. et al., p.177; type species: Quadrum gartneri PRINS & PERCH-NIELSEN 1977. A1-5
- Quadrum gartneri PRINS & PERCH-NIELSEN 1977; In: Manivit, H. et al., pp.177,178, holotype: Thierstein, H.R., 1974, pl.12, figs.4-8; Indian O., Coniacian. A1-5
- gartneri, Quadrum PRINS & PERCH-NIELSEN 1977; In: Manivit, H. et al., pp.177,178, holotype: Thierstein, H.R., 1974, pl.12, figs.4-8; Indian O., Coniacian. A1-5
- Quadrum gothicum (DEFLANDRE 1959) PRINS & PERCH-NIELSEN 1977; In: Manivit, H. et al., p.178 (ex Tetralithus). A1-5
- gothicum, Quadrum (DEFLANDRE 1959) PRINS & PERCH-NIELSEN 1977; In: Manivit, H. et al., p.178 (ex Tetralithus). A1-5
- Quadrum nitidum (MARTINI 1961) PRINS & PERCH-NIELSEN 1977; In: Manivit, H. et al., p.178 (ex Tetralithus). A1-5
- nitidum, Quadrum (MARTINI 1961) PRINS & PERCH-NIELSEN 1977; In: Manivit, H. et al., p.178 (ex Tetralithus). A1-5
- Quadrum trifidum (STRADNER 1961) PRINS & PERCH-NIELSEN 1977; In: Manivit, H. et al., pp.178,179 (ex Tetralithus). A1-5

- trifidum, Quadrum (STRADNER 1961) PRINS & PERCH-NIELSEN 1977; In: Manivit, H. et al., pp.178,179 (ex Tetralithus). A1-5
- Microrhabdulus? spiralis MARTINI 1976; p.395, pl.13, figs.4-6, Manihiki Plateau (Pacific.C.), Eocene. A2-1
- spiralis, Microrhabdulus? MARTINI 1976; p.395, pl.13, figs.4-6, Manihiki Plateau (Pacific.C.), Eocene. A2-1
- Sphenolithus conspicuus MARTINI 1976; p.395, pl.13, figs. 1-3, Manihiki Plateau (Pacific.C.), Eocene. A2-1
- conspicuus, Sphenolithus MARTINI 1976; p.395, pl.13, figs. 1-3, Manihiki Plateau (Pacific.C.), Eocene. A2-1
- Sphenolithus intercalaris MARTINI 1976; p.395, pl.6, fig.9, Manihiki Plateau (Pacific.C.), Eocene. A2-1
- intercalaris, Sphenolithus MARTINI 1976; p.395, pl.6, fig.9, Manihiki Plateau (Pacific.C.), Eocene. A2-1
- Discoaster andamanensis SINGH & VIMAL 1976; p.38, pl.1, fig.1, Neill Island (Asia.E.) Late Miocene - Early Pliocene. A2-8
- andamanensis, Discoaster SINGH & VIMAL 1976; p.38, pl.1, fig.1, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- Discoaster archipelagoensis SINGH & VIMAL 1976; pp.38,39, pl.2, fig.11, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- archipelagoensis, Discoaster SINGH & VIMAL 1976; pp.38,39, pl.2, fig.11, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- Discoaster challengerii BRAMLETTE & RIEDEL 1954 subsp. nellensis SINGH & VIMAL 1976; pp.39,40, pl.4, fig.3, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- challengerii, Discoaster BRAMLETTE & RIEDEL 1954 subsp. nellensis SINGH & VIMAL 1976; pp.39,40, pl.4, fig.3, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- nellensis (subsp.) SINGH & VIMAL 1976, Discoaster challengerii BRAMLETTE & RIEDEL 1954; pp.39,40, pl.4, fig.3, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- Discoaster indica SINGH & VIMAL 1976; pp.41,42, pl.4, fig.1, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- indica, Discoaster SINGH & VIMAL 1976; pp.41,42, pl.4, fig.1, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8

- Discoaster raoi SINGH & VIMAL 1976; pp.42,43, pl.2, figs. 4,5, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- raoi, Discoaster SINGH & VIMAL 1976; pp.42,43, pl.2, figs. 4,5, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- Discoaster variabilis MARTINI & BRAMLETTE 1963 subsp. sastrii SINGH & VIMAL 1976; pp.43,44, pl.3, fig.3, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- variabilis, Discoaster MARTINI & BRAMLETTE 1963, subsp. sastrii SINGH & VIMAL 1976; pp.43,44, pl.3, fig.3, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- sastrii (subsp.) SINGH & VIMAL 1976, Discoaster variabilis MARTINI & BRAMLETTE 1963; pp.43,44, pl.3, fig.3, Neill Island (Asia.E.), Late Miocene - Early Pliocene. A2-8
- Cyclagelosphaera perforata (PERCH-NIELSEN 1973) VERBEEK 1977; p.82 (ex Markalius). A3-4
- perforata, Cyclagelosphaera (PERCH-NIELSEN 1973) VERBEEK 1977; p.82 (ex Markalius). A3-4
- Ahmuellerella regularis (GORKA 1957) VERBEEK 1977; pp.86, 87 (ex Tremalithus). A3-4
- regularis, Ahmuellerella (GORKA 1957) VERBEEK 1977; pp.86, 87 (ex Tremalithus). A3-4
- Discolithina spiralis (PIENAAR 1968) VERBEEK 1977; p.88 (ex Discolithus). A3-4
- spiralis, Discolithina (PIENAAR 1968) VERBEEK 1977; p.88 (ex Discolithus). A3-4
- Helicolithus trabeculatus (GORKA 1957) VERBEEK 1977; p.90 (ex Discolithus). A3-4
- trabeculatus, Helicolithus (GORKA 1957) VERBEEK 1977; p.90 (ex Discolithus). A3-4
- Vekshinella angusta (STOVER 1966) VERBEEK 1977; p.96 (ex Zycolithus). A3-4
- angusta, Vekshinella (STOVER 1966) VERBEEK 1977; p.96 (ex Zycolithus). A3-4
- Reinhardtites miniporus (REINHARDT & GORKA 1967) VERBEEK 1977; p.92 (ex Nephrolithus). A3-4
- miniporus, Reinhardtites (REINHARDT & GORKA 1967) VERBEEK 1977; p.92 (ex Nephrolithus). A3-4

B12	<u>Reinhardtites brooksii</u> (BUKRY 1969) VERBEEK 1977; p.92 (ex <u>Amphizygus</u>). Remark: nov. comb. acc. Verbeek, but this comb. was published earlier by Reinhardt (1971).	A3-4
	<u>brooksii</u> , <u>Reinhardtites</u> (BUKRY 1969) VERBEEK 1977; p.92 (ex <u>Amphizygus</u>). Remark: nov. comb. acc. Verbeek, but this comb. was published earlier by Reinhardt (1971)	A3-4
	<u>Rhagodiscus splendens</u> (DEFLANDRE 1953) VERBEEK 1977; p.94 (ex <u>Rhabdolithus</u>).	A3-4
	<u>splendens</u> , <u>Rhagodiscus</u> (DEFLANDRE 1953) VERBEEK 1977; p.94 (ex <u>Rhabdolithus</u>).	A3-4
	<u>Vekshinella bochotnicae</u> (GORKA 1957) VERBEEK 1977; p.96 (ex <u>Discolithus</u>).	A3-4
	<u>bochotnicae</u> , <u>Vekshinella</u> (GORKA 1957) VERBEEK 1977; p.96 (ex <u>Discolithus</u>).	A3-4
	<u>Cribrosphaerella circula</u> (RISATTI 1973) VERBEEK 1977; p.103 (ex <u>Cribrosphaera</u>).	A3-4
	<u>circula</u> , <u>Cribrosphaerella</u> (RISATTI 1973) VERBEEK 1977; p.103 (ex <u>Cribrosphaera</u>).	A3-4
	<u>Prediscosphaera quadripunctata</u> (GORKA 1957) VERBEEK 1977; (ex <u>Tremalithus</u>).	A3-4
	<u>quadripunctata</u> , <u>Prediscosphaera</u> (GORKA 1957) VERBEEK 1977; (ex <u>Tremalithus</u>).	A3-4
	<u>Lucianorhabdus scotus</u> (RISATTI 1973) VERBEEK 1977; p.117 (ex <u>Eurhabdus</u>).	A3-4
	<u>scotus</u> , <u>Lucianorhabdus</u> (RISATTI 1973) VERBEEK 1977; p.117 (ex <u>Eurhabdus</u>).	A3-4
	<u>Quadrum quadratum</u> (STRADNER 1961) VERBEEK 1977; p.122 (ex <u>Tetralithus</u>).	A3-4
	<u>quadratum</u> , <u>Quadrum</u> (STRADNER 1961) VERBEEK 1977; p.122 (ex <u>Tetralithus</u>).	A3-4
	<u>Discoaster rugosus</u> HOJJATZADEH 1978; p.8, pl.2, fig.7, Gozo (Mediterranean), Middle Miocene.	A3-5
	<u>rugosus</u> , <u>Discoaster</u> HOJJATZADEH 1978; p.8, pl.2, fig.7, Gozo (Mediterranean), Middle Miocene.	A3-5
	<u>Discoaster pugnosa</u> HOJJATZADEH 1978; pp.8,9, pl.2, fig.9, Gozo (Mediterranean), Middle Miocene.	A3-5

- pugnosa, Discoaster HOJJATZADEH 1978; pp.8,9, pl.2, fig.9, A3-5
Gozo (Mediterranean), Middle Miocene.
- Discoaster minutus HOJJATZADEH 1978; p.9, pl.2, fig.11, A3-5
Gozo (Mediterranean), Middle Miocene.
- minutus, Discoaster HOJJATZADEH 1978; p.9, pl.2, fig.11, A3-5
Gozo (Mediterranean), Middle Miocene.
- Discoaster melitensis HOJJATZADEH 1978; pp.9,10, pl.3, A3-5
fig.1, Gozo (Mediterranean), Middle Miocene.
- melitensis, Discoaster HOJJATZADEH 1978; pp.9,10, pl.3, A3-5
fig.1, Gozo (Mediterranean), Middle Miocene.
- Discoaster gozoensis HOJJATZADEH 1978; p.10, pl.3, fig.2, A3-5
Gozo (Mediterranean), Middle Miocene.
- gozoensis, Discoaster HOJJATZADEH 1978; p.10, pl.3, fig.2, A3-5
Gozo (Mediterranean), Middle Miocene.
- Discoaster zammitmaepeli HOJJATZADEH 1978; p.10, pl.3, A3-5
fig.4, Gozo (Mediterranean), Middle Miocene.
- zammitmaepeli, Discoaster HOJJATZADEH 1978; p.10, pl.3, A3-5
fig.4, Gozo (Mediterranean), Middle Miocene.
- Discoaster prismatica HOJJATZADEH 1978; p.11, pl.3, fig.6, A3-5
Gozo (Mediterranean), Middle Miocene.
- prismatica, Discoaster HOJJATZADEH 1978; p.11, pl.3, fig.6, A3-5
Gozo (Mediterranean), Middle Miocene.
- Discoaster chambrayensis HOJJATZADEH 1978; p.11, pl.3, A3-5
fig.8, Gozo (Mediterranean), Middle Miocene.
- chambrayensis, Discoaster HOJJATZADEH 1978; p.11, pl.3, A3-5
fig.8, Gozo (Mediterranean), Middle Miocene.
- Discoaster rhomboida HOJJATZADEH 1978; pp.11,12, pl.3, A3-5
fig.12, Gozo (Mediterranean), Middle Miocene.
- rhomboida, Discoaster HOJJATZADEH 1978; pp.11,12, pl.3, A3-5
fig.12, Gozo (Mediterranean), Middle Miocene.
- Crepidolithus fossus ROMEIN 1977; p.273, pl.1, fig.8b,c, A3-6
Caravaca (Spain), Lower Paleocene.
- fossus, Crepidolithus ROMEIN 1977; p.273, pl.1, fig.8b,c, A3-6
Caravaca (Spain), Lower Paleocene.
- Cyclagelosphaera reinhardtii (PERCH-NIELSEN 1968) ROMEIN A3-6
1977; p.274 (ex Markalius).
- reinhardtii, Cyclagelosphaera (PERCH-NIELSEN 1968) ROMEIN A3-6
1977; p.274 (ex Markalius).

- Cylindralithus stradneri (PERCH-NIELSEN 1973) ROMEIN 1977; A3-6
p.276 (ex Lithastrinus).
- stradneri, Cylindralithus (PERCH-NIELSEN 1973) ROMEIN 1977; A3-6
p.276 (ex Lithastrinus).
- Palaeopontosphaera salebrosa (BLACK 1971) PRINS & SISSINGH A3-7
1977; In: Sissingh, W., p.59 (ex Cruciplacolithus).
- salebrosa, Palaeopontosphaera (BLACK 1971) PRINS & SISSINGH A3-7
1977; In: Sissingh, W., p.59 (ex Cruciplacolithus).
- Bukryaster hayi (BUKRY 1969) PRINS & SISSINGH 1977; In: A3-7
Sissingh, W., p.60 (ex Discoaster).
- hayi, Bukryaster (BUKRY 1969) PRINS & SISSINGH 1977; In: A3-7
Sissingh, W., p.60 (ex Discoaster).
- Calculites PRINS & SISSINGH 1977; In: Sissingh, W., p.60; A3-7
type species: Tetralithus obscurus DEFLANDRE 1959.
- Calculites obscurus (DEFLANDRE 1959) PRINS & SISSINGH 1977; A3-7
In: Sissingh, W., p.60 (ex Tetralithus); type species of
Calculites.
- obscurus, Calculites (DEFLANDRE 1959) PRINS & SISSINGH 1977; A3-7
In: Sissingh, W., p.60 (ex Tetralithus); type species of
Calculites.
- Calculites ovalis (STRADNER 1963) PRINS & SISSINGH 1977; A3-7
In: Sissingh, W., p.60 (ex Tetralithus).
- ovalis, Calculites (STRADNER 1963) PRINS & SISSINGH 1977; A3-7
In: Sissingh, W., p.60 (ex Tetralithus).
- Ceratolithoides aculeus (STRADNER 1961) PRINS & SISSINGH A3-7
1977; In: Sissingh, W., p.60 (ex Tetralithus).
- aculeus, Ceratolithoides (STRADNER 1961) PRINS & SISSINGH A3-7
1977; In: Sissingh, W., p.60 (ex Tetralithus).
- Ceratolithoides arcuatus PRINS & SISSINGH 1977; In: A3-7
Sissingh, W., p.60, pl.1, fig.6a-d, Tunisia, Campanian.
- arcuatus, Ceratolithoides PRINS & SISSINGH 1977; In: A3-7
Sissingh, W., p.60, pl.1, fig.6a-d, Tunisia, Campanian.
- Lucianorhabdus compactus (VERBEEK 1976) PRINS & SISSINGH A3-7
1977; In: Sissingh, W., p.61 (ex Isocrystallithus).
- compactus, Lucianorhabdus (VERBEEK 1976) PRINS & SISSINGH A3-7
1977; In: Sissingh, W., p.61 (ex Isocrystallithus).
- Reinhardtites levis PRINS & SISSINGH 1977; In: Sissingh, W., A3-7
p.61, pl.1, fig.1, Tunisia, Maastrichtian.

- levis, Reinhardtites PRINS & SISSINGH 1977; In: Sissingh, W., p.61, pl.1, fig.1, Tunisia, Maastrichtian. A3-7
- Helicopontosphaera colombiana GARTNER 1977; p.22, pl.2, fig.5a-c, Caribbean, Pleistocene. A5-2
- colombiana, Helicopontosphaera GARTNER 1977; p.22, pl.2, fig.5a-c, Caribbean, Pleistocene. A5-2
- Helicopontosphaera neogranulata GARTNER 1977; pp.22,23, pl.2, fig.2a,b, Tasman Sea, Pleistocene. A5-2
- neogranulata, Helicopontosphaera GARTNER 1977; pp.22,23, pl.2, fig.2a,b, Tasman Sea, Pleistocene. A5-2
- Helicopontosphaera inversa GARTNER 1977; p.23, pl.1, figs. 4,5, Equatorial Pacific, Tasman Sea, Pleistocene. Invalid ICBN Art.37. A5-2
- inversa, Helicopontosphaera GARTNER 1977; p.23, pl.1, figs.4,5, Equatorial Pacific, Tasman Sea, Pleistocene. Invalid ICBN Art.37. A5-2
- Crenalithus parvulus OKADA & McINTYRE 1977; pp.6,7, pl.2, fig.2, Central Pacific, recent. A5-8
- parvulus, Crenalithus OKADA & McINTYRE 1977; pp.6,7, pl.2, fig.2, Central Pacific, recent. A5-8
- Crenalithus parvulus OKADA & McINTYRE 1977 subsp. tecticentrum OKADA & McINTYRE 1977; p.7, pl.2, fig.3, Central Pacific, recent. A5-8
- parvulus, Crenalithus OKADA & McINTYRE 1977 subsp. tecticentrum OKADA & McINTYRE 1977; p.7, pl.2, fig.3, Central Pacific, recent. A5-8
- tecticentrum (subsp.) OKADA & McINTYRE 1977, Crenalithus parvulus OKADA & McINTYRE 1977; p.7, pl.2, fig.3, Central Pacific, recent. A5-8
- Crenalithus punctatus OKADA & McINTYRE 1977; pp.7,8, pl.2, fig.8, Central Pacific, recent. A5-8
- punctatus, Crenalithus OKADA & McINTYRE 1977; pp.7,8, pl.2, fig.8, Central Pacific, recent. A5-8
- Emiliana huxleyi (LOHMANN 1902) HAY & MOHLER 1967 subsp. corona OKADA & McINTYRE 1977; p.9, pl.1, fig.4, Central Pacific, recent. A5-8
- huxleyi, Emiliana (LOHMANN 1902) HAY & MOHLER 1967 subsp. corona OKADA & McINTYRE 1977; p.9, pl.1, fig.4, Central Pacific, recent. A5-8

- corona (subsp.) OKADA & McINTYRE 1977, Emiliana huxleyi (LOHMANN 1902) HAY & MOHLER 1967; p.9, pl.1, fig.4, Central Pacific, recent. A5-8
- Oolithotus fragilis (LOHMANN 1912) OKADA & McINTYRE 1977; p.11 (ex Coccolithophora). A5-8
- fragilis, Oolithotus (LOHMANN 1912) OKADA & McINTYRE 1977; p.11 (ex Coccolithophora). A5-8
- Oolithotus fragilis (LOHMANN 1912) OKADA & McINTYRE 1977 subsp. cavum OKADA & McINTYRE 1977; pp.11,12, pl.4, fig.4, Central Pacific, recent. A5-8
- fragilis, Oolithotus (LOHMANN 1912) OKADA & McINTYRE 1977 subsp. cavum OKADA & McINTYRE 1977; pp.11,12, pl.4, fig.4, Central Pacific, recent. A5-8
- cavum (subsp.) OKADA & McINTYRE 1977, Oolithotus fragilis (LOHMANN 1912) OKADA & McINTYRE 1977; pp.11,12, pl.4, fig.4, Central Pacific, recent. A5-8
- Crenolithus sessilis (LOHMANN 1912) OKADA & McINTYRE 1977; p.8 (ex Pontosphaera). A5-8
- sessilis, Crenolithus (LOHMANN 1912) OKADA & McINTYRE 1977; p.8 (ex Pontosphaera). A5-8
- Umbilicosphaera angustiforamen OKADA & McINTYRE 1977; p.12, pl.3, fig.10, North Atlantic, recent. A5-8
- angustiforamen, Umbilicosphaera OKADA & McINTYRE 1977; p.12, pl.3, fig.10, North Atlantic, recent. A5-8
- Umbilicosphaera maceria OKADA & McINTYRE 1977; pp.12,13, pl.1, fig.8, Central Pacific, recent. A5-8
- maceria, Umbilicosphaera OKADA & McINTYRE 1977; pp.12,13, pl.1, fig.8, Central Pacific, recent. A5-8
- Umbilicosphaera sibogae (WEBER-VAN BOSSE 1901) GAARDER 1970 var. foliosa (KAMPTNER 1963) OKADA & McINTYRE 1977; pp.13,14 (ex Cycloplacolithus). A5-8
- sibogae, Umbilicosphaera (WEBER-VAN BOSSE 1901) GAARDER 1970 var. foliosa (KAMPTNER 1963) OKADA & McINTYRE 1977; pp.13,14 (ex Cycloplacolithus). A5-8
- foliosa (var.) (KAMPTNER 1963) OKADA & McINTYRE 1977, Umbilicosphaera sibogae (WEBER-VAN BOSSE 1901) GAARDER 1970; pp.13,14 (ex Cycloplacolithus). A5-8
- Helicosphaera pavementum OKADA & McINTYRE 1977; p.14, pl.4, fig.6, North Atlantic, recent. A5-8

- pavimentum, Helicosphaera OKADA & McINTYRE 1977; p.14, pl.4, fig.6, North Atlantic, recent. A5-8
- Helicosphaera wallichii (LOHMANN 1902) OKADA & McINTYRE 1977; pp.14,15 (ex Coccolithophora). A5-8
- wallichii, Helicosphaera (LOHMANN 1902) OKADA & McINTYRE 1977; pp.14,15 (ex Coccolithophora). A5-8
- Cricosphaera quadrilaminata OKADA & McINTYRE 1977; p.15, pl.6, fig.5, Central Pacific, recent. A5-8
- quadrilaminata, Cricosphaera OKADA & McINTYRE 1977; p.15, pl.6, fig.5, Central Pacific, recent. A5-8
- Alisphaera unicornis OKADA & McINTYRE 1977; p.18, pl.6, fig.7, Central Pacific, recent. A5-8
- unicornis, Alisphaera OKADA & McINTYRE 1977; p.18, pl.6, fig.7, Central Pacific, recent. A5-8
- Calciosolenia? bimurata OKADA & McINTYRE 1977; pp.18,19, pl.7, fig.1, Central Pacific, recent. A5-8
- bimurata, Calciosolenia? OKADA & McINTYRE 1977; pp.18,19, pl.7, fig.1, Central Pacific, recent. A5-8
- Syracosphaera ampliora OKADA & McINTYRE 1977; pp.19,20, pl.7, fig.9, North Atlantic, recent. A5-8
- ampliora, Syracosphaera OKADA & McINTYRE 1977; pp.19,20, pl.7, fig.9, North Atlantic, recent. A5-8
- Syracosphaera borealis OKADA & McINTYRE 1977; p.20, pl.10, fig.8, North Atlantic, recent. A5-8
- borealis, Syracosphaera OKADA & McINTYRE 1977; p.20, pl.10, fig.8, North Atlantic, recent. A5-8
- Syracosphaera epigrosa OKADA & McINTYRE 1977; pp.20,21, pl.7, fig.5, North Pacific, recent. A5-8
- epigrosa, Syracosphaera OKADA & McINTYRE 1977; pp.20,21, pl.7, fig.5, North Pacific, recent. A5-8
- Syracosphaera exigua OKADA & McINTYRE 1977; p.21, pl.8, fig.10, Central Pacific, recent. A5-8
- exigua, Syracosphaera OKADA & McINTYRE 1977; p.21, pl.8, fig.10, Central Pacific, recent. A5-8
- Syracosphaera corrugis OKADA & McINTYRE 1977; pp.21,22, pl.8, fig.6, North Pacific, recent. A5-8
- corrugis, Syracosphaera OKADA & McINTYRE 1977; pp.21,22, pl.8, fig.6, North Pacific, recent. A5-8

- Syracosphaera nana (KAMPTNER 1941) OKADA & McINTYRE 1977; pp.24,25 (ex Pontosphaera). A5-8
- nana, Syracosphaera (KAMPTNER 1941) OKADA & McINTYRE 1977; pp.24,25 (ex Pontosphaera). A5-8
- Syracosphaera orbiculus OKADA & McINTYRE 1977; p.25, pl.9, fig.4, North Atlantic, recent. A5-8
- orbiculus, Syracosphaera OKADA & McINTYRE 1977; p.25, pl.9, fig.4, North Atlantic, recent. A5-8
- Syracosphaera protrudens OKADA & McINTYRE 1977; pp.26,27, pl.10, fig.3, North Atlantic, recent. A5-8
- protrudens, Syracosphaera OKADA & McINTYRE 1977; pp.26,27, pl.10, fig.3, North Atlantic, recent. A5-8
- Syracosphaera rotula OKADA & McINTYRE 1977; p.27, pl.9, fig.12, North Pacific, recent. A5-8
- rotula, Syracosphaera OKADA & McINTYRE 1977; p.27, pl.9, fig.12, North Pacific, recent. A5-8
- Syracosphaera variabilis (HALLDAL & MARKALI 1955) OKADA & McINTYRE 1977; p.27 (ex Pontosphaera). A5-8
- variabilis, Syracosphaera (HALLDAL & MARKALI 1955) OKADA & McINTYRE 1977; p.27 (ex Pontosphaera). A5-8
- Helladosphaera dalmatica (KAMPTNER 1927) OKADA & McINTYRE 1977; pp.28,29 (ex Syracosphaera). A5-8
- dalmatica, Helladosphaera (KAMPTNER 1927) OKADA & McINTYRE 1977; pp.28,29 (ex Syracosphaera). A5-8
- Helladosphaera fastigata OKADA & McINTYRE 1977; pp.29,30, pl.11, fig.8, Central Pacific, recent. A5-8
- fastigata, Helladosphaera OKADA & McINTYRE 1977; pp.29,30, pl.11, fig.8, Central Pacific, recent. A5-8
- Homozygosphaera schilleri (KAMPTNER 1927) OKADA & McINTYRE 1977; p.32 (ex Syracosphaera). A5-8
- schilleri, Homozygosphaera (KAMPTNER 1927) OKADA & McINTYRE 1977; p.32 (ex Syracosphaera). A5-8
- Florisphaera profunda OKADA & HONJO 1973 var. elongata OKADA & McINTYRE 1977; pp.36,38, Pacific, recent. Invalid ICBN Art.37. A5-8
- profunda, Florisphaera OKADA & HONJO 1973 var. elongata OKADA & McINTYRE 1977; pp.36,38, Pacific, recent. Invalid ICBN Art.37. A5-8

- elongata (var.) OKADA & McINTYRE 1977; Florisphaera profunda OKADA & HONJO 1973; pp.36,38, Pacific, recent. Invalid ICBN Art.37. A5-8
- Gephyrocapsa crassipons OKADA & McINTYRE 1977; p.10, pl.2, fig.5, Central Pacific, recent. A5-8
- crassipons, Gephyrocapsa OKADA & McINTYRE 1977; p.10, pl.2, fig.5, Central Pacific, recent. A5-8
- Lapideacassis multispinata PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.852, pl.4, figs.4-6,9, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- multispinata, Lapideacassis PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.852, figs.4-6,9, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- Lapideacassis blackii PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.850, pl.2, fig.7, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- blackii, Lapideacassis PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.850, pl.2, fig.7, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- Lapideacassis trispina PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.852, pl.4, figs.1-3, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- trispina, Lapideacassis PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.852, pl.4, figs.1-3, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- Scampanella asymmetrica PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.853, pl.2, figs.9,10, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- asymmetrica, Scampanella PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.853, pl.2, figs.9,10, Sao Paulo Plateau Plateau (Atlantic.S.), Paleocene. A6-4
- Scampanella bispinosa PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.853, pl.3, figs.4-7, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- bispinosa, Scampanella PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.853, pl.3, figs.4-7, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- Scampanella magnifica PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.853, pl.1, figs.1-4, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- magnifica, Scampanella PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.853, pl.1, figs.1-4, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4

- Scampanella wisei PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.853, pl.5, figs.2,5,8, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- wisei, Scampanella PERCH-NIELSEN 1977; In: Perch-Nielsen, K. & Franz, H.E., p.853, pl.5, figs.2,5,8, Sao Paulo Plateau (Atlantic.S.), Paleocene. A6-4
- Amaurolithus ninae PERCH-NIELSEN 1977; p.745, pl.4, figs. 3,7, Ceará Rise (Atlantic.W.), Miocene. A6-6
- ninae, Amaurolithus PERCH-NIELSEN 1977; p.745, pl.4, figs. 3,7, Ceará Rise (Atlantic.W.), Miocene. A6-6
- Ceratolithus atlanticus PERCH-NIELSEN 1977; pp.745,746, pl.3, figs.2,5, Ceará Rise (Atlantic.W.), Miocene. A6-6
- atlanticus, Ceratolithus PERCH-NIELSEN 1977; pp.745,746, pl.3, figs.2,5, Ceará Rise (Atlantic.W.), Miocene. A6-6
- Chiasmolithus frequens PERCH-NIELSEN 1977; p.746, pl.19, fig.3, Ceará Rise (Atlantic.W.), Paleocene. A6-6
- frequens, Chiasmolithus PERCH-NIELSEN 1977; p.746, pl.19, fig.3, Ceará Rise (Atlantic.W.), Paleocene. A6-6
- Cruciplacolithus notus PERCH-NIELSEN 1977; p.746, pl.17, fig.4, Rio Grande Rise (Atlantic.W.), Paleocene. A6-6
- notus, Cruciplacolithus PERCH-NIELSEN 1977; p.746, pl.17, fig.4, Rio Grande Rise (Atlantic.W.), Paleocene. A6-6
- Cruciplacolithus primus PERCH-NIELSEN 1977; p.746, pl.17, fig.8, Sao Paulo Plateau (Atlantic.W.), Paleocene. A6-6
- primus, Cruciplacolithus PERCH-NIELSEN 1977; p.746, pl.17, fig.8, Sao Paulo Plateau (Atlantic.W.), Paleocene. A6-6
- Markalius variabilis PERCH-NIELSEN 1977; p.747, pl.13, fig.20, Ceará Rise (Atlantic.W.), Paleocene. A6-6
- variabilis, Markalius PERCH-NIELSEN 1977; p.747, pl.13, fig.20, Ceará Rise (Atlantic.W.), Paleocene. A6-6
- Triquetrorhabdulus challengerii PERCH-NIELSEN 1977; p.749, pl.36, fig.3, Sao Paulo Plateau (Atlantic.W.), Miocene. A6-6
- challengerii, Triquetrorhabdulus PERCH-NIELSEN 1977; p.749, pl.36, fig.3, Sao Paulo Plateau (Atlantic.W.), Miocene. A6-6
- Neochiastozygus cearae PERCH-NIELSEN 1977; p.749, pl.40, fig.6, Ceará Rise (Atlantic.W.), Paleocene. A6-6
- cearae, Neochiastozygus PERCH-NIELSEN 1977; p.749, pl.40, fig.6, Ceará Rise (Atlantic.W.), Paleocene. A6-6

- Ellipsolithus bollii PERCH-NIELSEN 1977; pp.749-750, pl.43, fig.3, Sao Paulo Plateau (Atlantic.W.), Paleocene. A6-6
- bollii, Ellipsolithus PERCH-NIELSEN 1977; pp.749-750, pl.43, fig.3, Sao Paulo Plateau (Atlantic.W.), Paleocene. A6-6
- Hornibrookina edwardsii PERCH-NIELSEN 1977; p.750, pl.46, fig.6, Sao Paulo Plateau (Atlantic.W.), Paleocene. A6-6
- edwardsii, Hornibrookina PERCH-NIELSEN 1977; p.750, pl.46, fig.6, Sao Paulo Plateau (Atlantic.W.), Paleocene. A6-6
- Thoracosphaera eichstaettensis KEUPP 1978; pp.88,89, fig.1, Frankenalb (Germany), Tithonian. A6-8
- eichstaettensis, Thoracosphaera KEUPP 1978; pp.88,89, fig.1, Frankenalb (Germany), Tithonian. A6-8
- Fasciculithus merloti PAVSIC 1977; pp.43,44, pl.7, fig.1, Podsabotin (Yugoslavia), Paleocene. A7-2
- merloti, Fasciculithus PAVSIC 1977; pp.43,44, pl.7, fig.1, Podsabotin (Yugoslavia), Paleocene. A7-2
- Calyptosphaera cialdii BORSETTI & CATI 1976; pp.210,211, pl.12, figs.3-5, Tyrrhenian Sea (Mediterr.), recent. A7-7
- cialdii, Calyptosphaera BORSETTI & CATI 1976; pp.210,211, pl.12, figs.3-5, Tyrrhenian Sea (Mediterr.), recent. A7-7
- Sphaerocalyptra bannockii BORSETTI & CATI 1976; p.212, pl.13, figs.4,6, Tyrrhenian Sea (Mediterr.), recent. A7-7
- bannockii, Sphaerocalyptra BORSETTI & CATI 1976; p.212, pl.13, figs.4,6, Tyrrhenian Sea (Mediterr.), recent. A7-7
- Sphaerocalyptra marsilii BORSETTI & CATI 1976; pp.212,213, pl.13, figs.7-10, Tyrrhenian Sea (Mediterr.), recent. A7-7
- marsilii, Sphaerocalyptra BORSETTI & CATI 1976; pp.212,213, pl.13, figs.7-10, Tyrrhenian Sea (Mediterr.), recent. A7-7
- Syracosphaera duomura (OKADA & McINTYRE 1976) BORSETTI & CATI 1976; pp.214,215 (ex Calciosolenia). A7-7
- duomura, Syracosphaera (OKADA & McINTYRE 1976) BORSETTI & CATI 1976; pp.214,215 (ex Calciosolenia). A7-7
- Helladosphaera gaarderi BORSETTI & CATI 1976; pp.218-220, pl.15, fig.12, Tyrrhenian Sea (Mediterr.), recent. A7-7
- gaarderi, Helladosphaera BORSETTI & CATI 1976; pp.218-229, pl.15, fig.12, Tyrrhenian Sea (Mediterr.), recent. A7-7
- Helladosphaera isselii BORSETTI & CATI 1976; pp.220,221, pl.16, figs.1-3, Tyrrhenian Sea (Mediterr.), recent. A7-7

- isselii, Helladosphaera BORSETTI & CATI 1976; pp.220,221, A7-7
pl.16, figs.1-3, Tyrrhenian Sea (Mediterr.), recent.
- Helladosphaera magnaghii BORSETTI & CATI 1976; pp.221,222, A7-7
pl.16, fig.4, Tyrrhenian Sea (Mediterr.), recent.
- magnaghii, Helladosphaera BORSETTI & CATI 1976; pp.221,222, A7-7
pl.16, fig.4, Tyrrhenian Sea (Mediterr.), recent.
- Homozygosphaera vavilovii BORSETTI & CATI 1976; pp.222,223, A7-7
pl.16, fig.11, Tyrrhenian Sea (Mediterr.), recent.
- vavilovii, Homozygosphaera BORSETTI & CATI 1976; pp.222,223, A7-7
pl.16, fig.11, Tyrrhenian Sea (Mediterr.), recent.
- Biscutum martellum BURNS 1976; p.281, pl.1, fig.6, A8-2
England, Cenomanian.
- martellum, Biscutum BURNS 1976; p.281, pl.1, fig.6, A8-2
England, Cenomanian.
- Cenorbiculus BURNS 1976; p.282; type species: Cenorbiculus A8-2
centriperforatus BURNS 1976.
- Cenorbiculus centriperforatus BURNS 1976; pp.282,283, A8-2
pl.1, fig.8, England, Cenomanian; type species of
Cenorbiculus.
- centriperforatus, Cenorbiculus BURNS 1976; pp.282,283, A8-2
pl.1, fig.8, England, Cenomanian; type species of
Cenorbiculus.
- Cretarhabdus glomarus BURNS 1976; p.285, pl.3, fig.3, A8-2
England, Cenomanian.
- glomarus, Cretarhabdus BURNS 1976; p.285, pl.3, fig.3, A8-2
England, Cenomanian.
- Dictyococcites parvidentata (DEFLANDRE & FERT 1954) BURNS A8-2
1976; pp.285, 286 (ex Discolithus).
- parvidentata, Dictyococcites (DEFLANDRE & FERT 1954) BURNS A8-2
1976; pp.285,286 (ex Discolithus).
- Tranolithus deflandrei (BUKRY 1969) BURNS 1976; pp.297,298, A8-2
(ex Zygodiscus).
- deflandrei, Tranolithus (BUKRY 1969) BURNS 1976; pp.297, A8-2
298 (ex Zygodiscus).
- Dictyococcites antarcticus HAQ 1976; p.561, pl.3, fig.3, A9-1
Pacific.S., Oligocene - Miocene.
- antarcticus, Dictyococcites HAQ 1976; p.561, pl.3, fig.3, A9-1
Pacific.S., Oligocene - Miocene.

- Fasciculithus rotundus HAQ & LOHMANN 1976; pp.182,183, pl.4, fig.8, Nicaragua Rise (Caribbean), Paleocene. A9-2
- rotundus, Fasciculithus HAQ & LOHMANN 1976; pp.182,183, pl.4, fig.8, Nicaragua Rise (Caribbean), Paleocene. A9-2
- Neochiastozygus imbriei HAQ & LOHMANN 1976; p.183, pl.4, fig.3, Gulf of Mexico, Paleocene. A9-2
- imbriei, Neochiastozygus HAQ & LOHMANN 1976; p.183, pl.4, fig.3, Gulf of Mexico, Paleocene. A9-2
- Thoracosphaera atlantica HAQ & LOHMANN 1976; p.183, pl.3, fig.12, Denmark, Paleocene. A9-2
- atlantica, Thoracosphaera HAQ & LOHMANN 1976; p.183, pl.3, fig.12, Denmark, Paleocene. A9-2
- Cyclococcolithus protoannulus (GARTNER 1971) HAQ & LOHMANN 1976; p.183 (ex Cyclococcolithina). A9-2
- protoannulus, Cyclococcolithus (GARTNER 1971) HAQ & LOHMANN 1976; p.183 (ex Cyclococcolithina). A9-2
- Cyclolithella bramlettei (HAY & TOWE 1962) HAQ & LOHMANN 1976; p.183 (ex Cyclolithus). A9-2
- bramlettei, Cyclolithella (HAY & TOWE 1962) HAQ & LOHMANN 1976; p.183 (ex Cyclolithus). A9-2
- Dictyococcites hesslandii (HAQ 1966) HAQ & LOHMANN 1976; p.183 (ex Ericsonia). A9-2
- hesslandii, Dictyococcites (HAQ 1966) HAQ & LOHMANN 1976; p.183 (ex Ericsonia). A9-2
- Nannotetrina alata (MARTINI 1969) HAQ & LOHMANN 1976; p.183 (ex Nannotetraster). A9-2
- alata, Nannotetrina (MARTINI 1969) HAQ & LOHMANN 1976; p.183 (ex Nannotetraster). A9-2
- Braarudosphaera quinquecostata HILL 1976; p.125, pl.2, figs.22-25, Texas (USA), Albian. A9-3
- quinquecostata Braarudosphaera HILL 1976; p.125, pl.2, figs.22-25, Texas (USA), Albian. A9-3
- Braarudosphaera stenorhetha HILL 1976; pp.125,126, pl.2, figs.26-29, Texas (USA), Albian. A9-3
- stenorhetha, Braarudosphaera HILL 1976; pp.125,126, pl.2, figs.26-29, Texas (USA), Albian. A9-3
- Broinsonia gammation HILL 1976; pp.126,127, pl.2, figs. 32-37, Texas (USA), Albian. A9-3

- gammation, Broinsonia HILL 1976; pp.126,127, pl.2, figs. 32-37, Texas (USA), Albian. A9-3
- Broinsonia kontakaina HILL 1976; p.127, pl.3, figs.7-12, Texas (USA), Albian. A9-3
- kontakaina, Broinsonia HILL 1976; p.127, pl.3, figs.7-12, Texas (USA), Albian. A9-3
- Broinsonia stenostaurion HILL 1976; pp.127,128, pl.3, figs. 21-24, Texas (USA), Albian. A9-3
- stenostaurion, Broinsonia HILL 1976; pp.127,128, pl.3, figs.21-24, Texas (USA), Albian. A9-3
- Chiastozygus platyrhethum HILL 1976; p.129, pl.4, figs. 4-6, Texas (USA), Albian. A9-3
- platyrhethum, Chiastozygus HILL 1976; p.129, pl.4, figs. 4-6, Texas (USA), Albian. A9-3
- Chiastozygus tetragonothyurus HILL 1976; p.129, holotype: the specimen figured by BUKRY 1969, p.49, pl.26, fig.8. A9-3
- tetragonothyurus, Chiastozygus HILL 1976; p.129, holotype: the specimen figured by BUKRY 1969, p.49, pl.26, fig.8. A9-3
- Cretarhabdus dikrorhethete HILL 1976; pp.133,134, pl.12, figs.47-48, Texas (USA), Albian. A9-3
- dikrorhethete, Cretarhabdus HILL 1976; pp.133,134, pl.12, figs.47-48, Texas (USA), Albian. A9-3
- Discorhabdus ignotus (GORKA 1957) PERCH-NIELSEN 1968 subsp. bellis (NOEL 1970) HILL 1976; p.138 (=Discorhabdus bellis NOEL 1970). A9-3
- ignotus, Discorhabdus (GORKA 1957) PERCH-NIELSEN 1968 subsp. bellis (NOEL 1970) HILL 1976; p.138 (=Discorhabdus bellis NOEL 1970). A9-3
- bellis (subsp.) (NOEL 1970) HILL 1976, Discorhabdus ignotus (GORKA 1957) PERCH-NIELSEN 1968, p.138 (=Discorhabdus bellis NOEL 1970). A9-3
- Discorhabdus ignotus (GORKA 1957) PERCH-NIELSEN 1968 subsp. cruciatus (BUKRY 1969) HILL 1976; p.138 (=Bidiscus cruciatus cruciatus BURKY 1969). A9-3
- ignotus, Discorhabdus (GORKA 1957) PERCH-NIELSEN 1968 subsp. cruciatus (BUKRY 1969) HILL 1976; p.138 (=Bidiscus cruciatus cruciatus BUKRY 1969). A9-3
- cruciatus (subsp.) (BUKRY 1969) HILL 1976, Discorhabdus ignotus (GORKA 1957) PERCH-NIELSEN 1968; p.138 (=Bidiscus cruciatus cruciatus BUKRY 1969). A9-3

- Discorhabdus ignotus (GORKA 1957) PERCH-NIELSEN 1968 A9-3
 subsp. rotatorius (BUKRY 1969) HILL 1976; p.138
 (= Bidiscus rotatorius BUKRY 1969)
- ignotus, Discorhabdus (GORKA 1957) PERCH-NIELSEN 1968 A9-3
 subsp. rotatorius (BUKRY 1969) HILL 1976; p.138
 (= Bidiscus rotatorius BUKRY 1969).
- rotatorius (subsp.) (BUKRY 1969) HILL 1976, Discorhabdus A9-3
ignotus (GORKA 1957) PERCH-NIELSEN 1968; p.138
 (= Bidiscus rotatorius BUKRY 1969).
- Gephyrorhabdus HILL 1976; p.141; type species: Cretarhabdus A9-3
coronadventis REINHARDT 1966.
- Gephyrorhabdus coronadventis (REINHARDT 1966) HILL 1976; A9-3
 pp.141,142 (ex Cretarhabdus); type species of
Gephyrorhabdus.
- coronadventis, Gephyrorhabdus (REINHARDT 1966) HILL 1976; A9-3
 pp.141,142 (ex Cretarhabdus); type species of
Gephyrorhabdus.
- Gephyrorhabdus decorus (DEFLANDRE & FERT 1954) HILL 1976; A9-3
 p.142 (ex Rhabdolithus).
- decorus, Gephyrorhabdus (DEFLANDRE & FERT 1954) HILL 1976; A9-3
 p.142 (ex Rhabdolithus).
- Manivitella solida (STOVER 1966) HILL 1976; pp.144,145 A9-3
 (ex Cyclolithus).
- solida, Manivitella (STOVER 1966) HILL 1976; pp.144,145 A9-3
 (ex Cyclolithus).
- Parhabdolithus achlyostaurion HILL 1976; pp.145,146, pl.9, A9-3
 figs.27-29, Texas (USA), Albian.
- achlyostaurion, Parhabdolithus HILL 1976; pp.145,146, pl.9, A9-3
 figs.27-29, Texas (USA), Albian.
- Parhabdolithus embergeri (NOEL 1959) STRADNER 1963 ex HILL A9-3
 1976; pp.147,148.
- embergeri, Parhabdolithus (NOEL 1959) STRADNER 1963 ex A9-3
 HILL 1976; pp.147,148.
- Parhabdolithus melanoarachnion HILL 1976; p.148, pl.10, A9-3
 figs.16-18, Texas (USA), Albian.
- melanoarachnion, Parhabdolithus HILL 1976; p.148, pl.10, A9-3
 figs.16-18, Texas (USA), Albian.
- Prediscosphaera cretacea (ARKHANGELSKI 1912) GARTNER 1968 A9-3
 subsp. columnata (STOVER 1966) HILL 1976; pp.151,152
 (= Deflandrius columnatus STOVER 1966).

- cretacea, Prediscosphaera (ARKHANGELSKI 1912) GARTNER 1968 A9-3
 subsp. columnata (STOVER 1966) HILL 1976; pp.151,152
 (=Deflandrius columnatus STOVER 1966).
- columnata (subsp.) (STOVER 1966) HILL 1976; Prediscosphaera A9-3
cretacea (ARKHANGELSKI 1912) GARTNER 1968; pp.151,152
 (=Deflandrius columnatus STOVER 1966).
- Rhabdolekiskus HILL 1976; p.153; type species: Rhabdolithus A9-3
aquitanicus MANIVIT 1971.
- Rhabdolekiskus aquitanicus (MANIVIT 1971) HILL 1976; p.153 A9-3
 (ex Rhabdolithus); type species of Rhabdolekiskus.
- aquitanicus, Rhabdolekiskus (MANIVIT 1971) HILL 1976; p.153 A9-3
 (ex Rhabdolithus); type species of Rhabdolekiskus.
- Vagalapilla gausorhethium HILL 1976; p.157, pl.3, figs. A9-3
 25-30, Oklahoma (USA), Albian.
- gausorhethium, Vagalapilla HILL 1976; p.157, pl.3, figs. A9-3
 25-30, Oklahoma (USA), Albian.
- Zygodiscus xenotus (STOVER 1966) HILL 1976; p.163 (ex A9-3
Zygolithus).
- xenotus, Zygodiscus (STOVER 1966) HILL 1976; p.163 (ex A9-3
Zygolithus).
- Pseudolithraphidites KEUPP 1976; p.374; type species: A9-9
Pseudolithraphidites quattuorbacillatus KEUPP 1976.
- Pseudolithraphidites quattuorbacillatus KEUPP 1976; p.376, A9-9
 figs.26,27, Frankenalb (Germany), Tithonian; type species
 of Pseudolithraphidites.
- quattuorbacillatus, Pseudolithraphidites KEUPP 1976; p.376, A9-9
 figs.26,27, Frankenalb (Germany), Tithonian; type species
 of Pseudolithraphidites.
- Pseudolithraphidites multibacillatus KEUPP 1976; p.376, A9-9
 fig.24, Frankenalb (Germany), Tithonian.
- multibacillatus, Pseudolithraphidites KEUPP 1976; p.376, A9-9
 fig.24, Frankenalb (Germany), Tithonian.
- Bukryaster ozanensis KRANCER 1976; pp.166,168, pl.1, fig.1, A9-10
 Oklahoma (USA), Campanian.
- ozanensis, Bukryaster KRANCER 1976; pp.166,168, pl.1, A9-10
 fig.1, Oklahoma (USA), Campanian.
- Bipodorhabdus colligatus (BLACK 1971) THIERSTEIN 1976; A10-1
 p.350 (ex Speetonia).
- colligatus, Bipodorhabdus (BLACK 1971) THIERSTEIN 1976; A10-1
 p.350 (ex Speetonia).

B27

Watznaueria crucicentralis (MEDD 1971) THIERSTEIN 1976;
p.351 (ex Ellipsagelosphaera).

A10-1

crucicentralis, Watznaueria (MEDD 1971) THIERSTEIN 1976;
p.351 (ex Ellipsagelosphaera).

A10-1

Hayesites radiatus (WORSLEY 1971) THIERSTEIN 1976; p.352
(ex Rucinolithus).

A10-1

radiatus, Hayesites (WORSLEY 1971) THIERSTEIN 1976; p.352
(ex Rucinolithus).

A10-1

TAXONOMICAL NOTES

by Shirley E. van Heck

In this section some remarks are made about the lists of publications and taxa. These remarks are meant to draw your attention to possible errors in the publications, to clarify why certain names are invalid, or anything else that may need explanation. The reference numbers used correspond to the Publication Reference Number or Taxon Page Number of the publication or taxon under discussion.

A1-1, A3-9 and A7-1

In the Initial Reports of the DSDP vol.36, the official reference of the book gives as its date 1976, which is also the date given on the reprints. Contrary to this, the printing date at the bottom of the first page of the volume reads January 1977. This may lead to the assumption that 1977 should be regarded as the correct date. However, according to the ICBN Art. 30, the date on the reprint should be regarded as the correct date. ("When separates from periodicals or other works placed on sale are issued in advance, the date on the separate is accepted as the date of effective publication, unless there is evidence that it is erroneous.").

Therefore, 1976 is the correct date for vol.36, and, following the same reasoning, 1977 is the correct date for vol.41.

B-8 (A1-1): Corollithion perch-nielseniae

The authors have introduced this name as C. perch-nielsenii. This is not in accordance with ICBN Art.73c, because an epithet formed from the name of a woman should have a feminine termination. The wrong use of a termination is to be treated as an orthographic error, and bears no consequences for the validity. The hyphen is allowed.

B-14 (A3-7): Calculites

The genus Calculites PRINS & SISSINGH 1977 is a junior synonym of Phanulithus WIND & WISE 1976, both having the same holotype. Thus, the combinations with Calculites are junior synonyms as well.

B-15 (A5-2): Helicosphaera colombiana, H. neogranulata, H. inversa

For none of these three species a holotype was designated. However, only one specimen was figured of H. colombiana and of H. neogranulata and they are therefore automatically the holotypes (ICBN Art.7, note 6). Two specimens are figured of H. inversa, and therefore according to the ICBN Art.37 this species is not validly published. This was pointed out to the author, and he has validated the species according to ICBN Art.7 note 3 in this issue of the INA Newsletter (see page C-2).

B-15 (A5-8): Crenalithus parvulus

In the text, the authors refer to pl.2, fig.2 as being the holotype of Crenalithus parvulus, but in the plate explanation fig.1 is indicated as the holotype. Although this is confusing, the number of the negative with the holotype is mentioned, and therefore one holotype has been indicated, and the name is valid. Inquiry with the authors revealed that the text was correct, and thus fig.2 is the holotype.

B18 (A5-8): Florisphaera profunda var. elongata

No holotype was indicated for Florisphaera profunda var. elongata. The authors refer to a previous paper, in which the variety was described as Florisphaera profunda var. B. They introduce the name elongata, because 'var. B' is an illegitimate name. Unfortunately, they seem to have overlooked that in the previous publication no holotype was indicated, and the description was accompanied by two figures of different specimens. Therefore, according to the ICBN Art.37 this name is not valid. This was pointed out to the authors, and the taxon is validated according to ICBN Art.7 note 3 in this issue of the INA Newsletter (see below).

B-25 (A9-3): Parhabdolithus embergeri

The author claims the species not being valid, because a holotype was neither indicated in the original publication by NOEL, nor thereafter by anyone else. He therefore validates the species by selecting a lectotype according to ICBN Art.7. However, the species was originally described following the zoological nomenclature, and according to the ICBN Art.45, if algae are published validly under the zoological rules, they must be accepted as having been published validly under the ICBN. Thus the question remains whether the publication meets the provisions of the ICZN.

Although the ICZN (recommendation 73A) states that a holotype should be designated, this is only a recommendation, and there is no rule that a name is invalid if no holotype was designated. Therefore, the original publication must be regarded as valid, and although the designation of a lectotype is useful, the validation is superfluous.

VALIDATION OF HELICOPONTOSPHAERA INVERSA

by S. Gartner

It has been brought to my attention by Mr. B. Prins and Miss S.E. van Heck that the name Helicopontosphaera inversa GARTNER is invalid because no type designation was made. The specimen illustrated on Plate 1, Figure 5a,b,c is herewith designated type specimen for Helicopontosphaera inversa.

Ref.

Gartner, S., 1977. Calcareous nannofossil biostratigraphy and revised zonation of the Pleistocene. Marine Micropaleontology, v. 2, p.1-25.

VALIDATION OF FLORISPHAERA PROFUNDA VAR. ELONGATA

by H. Okada and A McIntyre

In our recent publication (Okada and McIntyre, 1977), we failed to establish the holotype of Florisphaera profunda var. elongata. We hereby designate the specimen which was illustrated in Plate 2, No. 6 in Okada and Honjo (1973) as Florisphaera profunda var. B as the holotype of Florisphaera profunda var. elongata.

Ref.

Okada, H. & Honjo, S., 1973., The distribution of oceanic coccolithophorids in the Pacific. -Deep-Sea Res., vol.20, pp.355-374.

Okada, H. & McIntyre, A., 1977., Modern coccolithophores of the Pacific and North Atlantic Oceans. - Micropal., vol.2(3), pp.1-55.

SHORT NOTES

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NOTES ON NANNOLOGY -1. CLAUSICOCCUS, A NEW GENUS OF FOSSIL COCCOLITHOPHORIDS.

By B. Prins.

The systematical position of a number of Paleogene species related to Discolithus fenestratus DEFLANDRE & FERT 1954 is still a matter of controversy. An increasing number of authors tend to place these species, all having a perforated central plate, in the genus Ericsonia BLACK 1964. However, the type species of this genus, E. occidentalis BLACK 1964, appears to be a species with a fairly large open centre, which represents in my opinion the proximal side of Coccolithus crassus BRAMLETTE & SULLIVAN 1961. The peculiar orientation of the crystals in wall and proximal shield, on which Black based his genus Ericsonia, can be found in most genera of the Coccolithaceae. For this reason I consider the genus Ericsonia to be a junior synonym of Coccolithus SCHWARZ 1894. A new genus, Clausicoccus, is introduced herewith to accomodate Discolithus fenestratus and allied species.

Genus Clausicoccus, new genus

Generotypus: Discolithus fenestratus DEFLANDRE & FERT 1955

Diagnosis: Elliptical coccoliths with a narrow wall, connecting two fairly broad shields, of which the proximal one consists of two layers (cycles). The wall, of which the extinction lines between crossed nicols curve counterclock-wise, surrounds a perforated central plate.

Description: The coccoliths have a broadly elliptical outline.

The marginal area consists of two fairly broad shields. The distal shield is single layered; the proximal one is composed of two layers (cycles) with opposite inclinations of their crystal elements. Between crossed nicols the distal shield has a weak birefringence. The birefringence of the proximal shield is much stronger, being visible through the distal shield.

The wall is narrow. Between crossed nicols it is well visible, with extinction lines curving in a counterclock-wise direction when viewed from the distal side. The areas of birefringence border those of the proximal shield. In older species the distal surface of the wall is well exposed. In younger species the wall is overlain ('engulfed') by the distal shield.

A perforated plate fills the entire central area between wall or distal shield, the number of its perforations depending on the species. In crossed polarized light with the nicols parallel to the axes of the coccolith the plate becomes subdivided into four segments: two polar ones and two along the long sides of the coccolith. Their orientation and, with the gypsum plate added, also their colour distribution, is equal to those of the cross-structure in the genus Cruciplacolithus HAY & MOHLER 1967. The colours of the central plate oppose for the greater part those of the bordering parts of wall and proximal shield.

Discussion: The genus Clausicoccus differs from the genus Cruciplacolithus, from which it evidently evolved, in having an elliptical central plate with perforations, instead of an imperforated central cross. It differs from the genus Coccolithus SCHWARZ 1894 in having a central plate with, between crossed nicols and the gypsum plate, colours opposing those of a narrow wall, instead of having a broad wall, occasionally enclosing a vary reduced central cross.

Stratigraphical distribution: Early Eocene (NP 10) to Early Miocene (NN 2).

New combinations

Clausicococcus bireticulatus (ROTH 1970) nov. comb.

Basionym: Ericsonia bireticulata ROTH 1970; Eclog. Geol. Helv., vol.63(3), p.840,841, pl.1, figs.4,5.

Clausicococcus cribellum (BRAMLETTE & SULLIVAN 1961) nov. comb.

Basionym: Coccolithites cribellum BRAMLETTE & SULLIVAN 1961; Micropal., vol.7(2), p.151, pl.7, figs.5,6.

Clausicococcus fenestratus (DEFLANDRE & FERT 1955) nov. comb.

Basionym: Discolithus fenestratus DEFLANDRE & FERT 1955; Ann. Paléont., vol.40, p.139, pl.11, fig.15, text fig.52.

Clausicococcus obrutus (PERCH-NIELSEN 1971) nov. comb.

Basionym: Ericsonia obruta PERCH-NIELSEN 1971; Kongl. Danske Vidensk. Selsk., Biol. Skr., vol.18(3), p.14, pl.4, figs.4-7, pl.8, figs.5-6.

Clausicococcus pauciperforatus (ROTH 1970) nov. comb.

Basionym: Ericsonia pauciperforata ROTH 1970; Eclog. Geol. Helv., vol.63(3), p.842, pl.2, fig.1.

Clausicococcus singularis (PERCH-NIELSEN 1971) nov. comb.

Basionym: Ericsonia? singularis PERCH-NIELSEN 1971; Kongl. Danske Vidensk. Selsk., Biol. Skr., vol.18(3), p.15, pl.7, figs.1-3,5.

Clausicococcus subdistichus (ROTH & HAY 1967) nov. comb.

Basionym: Ellipsolithus subdistichus ROTH & HAY 1967; Trans. Gulf Coast Ass. Geol. Soc., vol.17, p.446,447, pl.6, fig.7.

Clausicococcus tasmaniae (EDWARDS & PERCH-NIELSEN 1975) nov. comb.

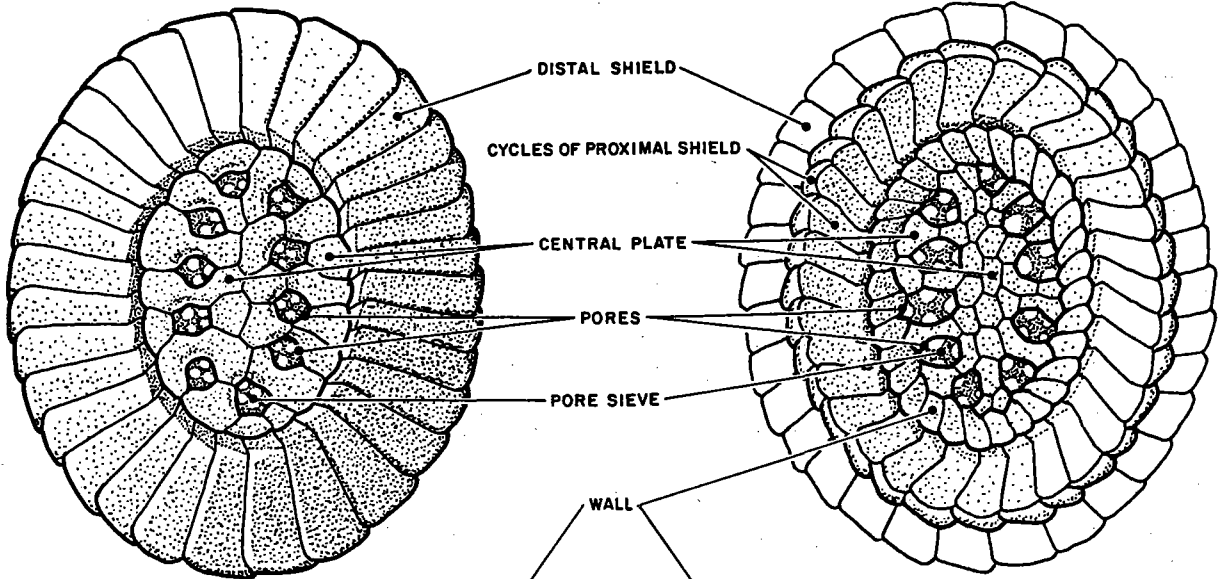
Basionym: Ericsonia tasmaniae EDWARDS & PERCH-NIELSEN 1975; Init. Rep. DSDP, vol.29, p.481,482, pl.20, figs.5-12, pl.21, figs.2-6.

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- PERCH-NIELSEN, K., 1971; Elektronenmikroskopische Untersuchungen an Coccolithen und verwandten Formen aus dem Eozän von Dänemark. - Biol. Skr. Dan. Vid. Selsk., vol.18(3), pp.1-76, 61 pls., 2 figs., 1 tb.
- ROTH, P.H., 1970; Oligocene calcareous nannoplankton stratigraphy. - Eclog. Geol. Helv., vol.63(3), pp.799-881, 14 pls., 17 figs.

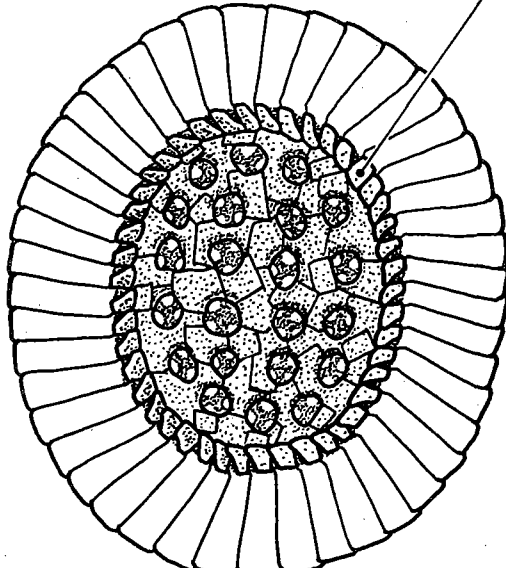
Plate 1 - The genus Clausicococcus n.gen.; Fig.5: optical behaviour;
A and B: X-nicols with gypsum plate; cross-hatched: blue; blank: yellow;
C: X-nicols only.

PLATE 1

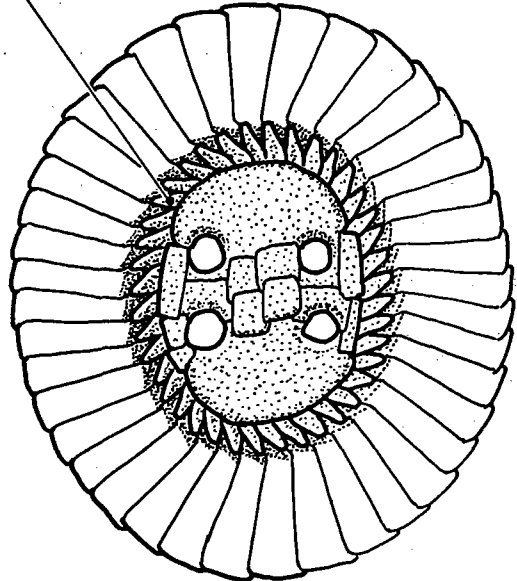


1 *C. subdistichus* (distal view)

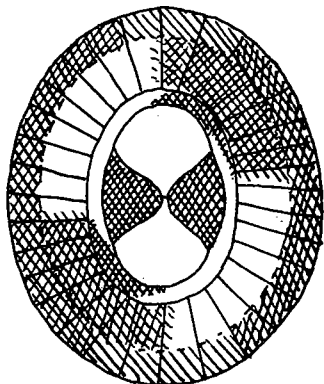
2 *C. subdistichus* (proximal view)



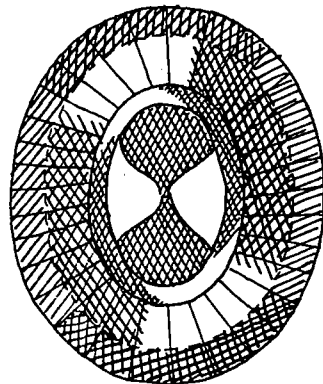
3 *C. fenestratus* (distal view)



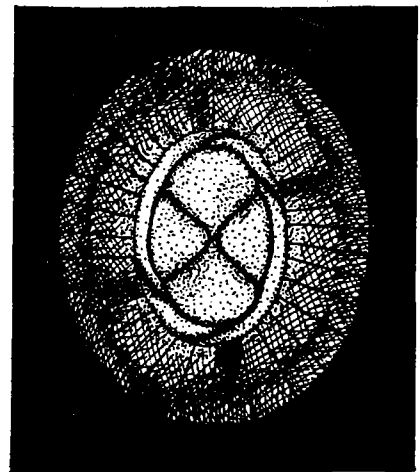
4 *C. obrutus* (distal view)



5A distal view



5B proximal view



5C distal view

NANNOPLANKTON CONTENTS OF THE TYPE-MAASTRICHTIAN

a note by Shirley E. van Heck

Following the current views, the type-Maastrichtian at the ENCI-Quarry near Maastricht can be subdivided into two lithological units: the Gulpen Chalk and the Maastricht Chalk, separated by a coprolite layer (ROMEIN, 1962). This subdivision is in accordance with an earlier, more refined lithological subdivision by UHLENBROEK (1912), and correlates as follows:

		Md (+ 15 m.)	
	Maastricht Chalk	Mc (+ 10 m.)	
ROMEIN:		Mb (+ 20 m.)	UHLENBROEK
	Coprolite layer	Ma (5 - 10 cm.)	
	Gulpen Chalk	Cr 4 (3.5 m.)	

Nineteen samples from the type-Maastrichtian have been studied on their nannoplankton contents by SISSINGH (1977). Thorough reinvestigation of these samples (10 cm. per slide, 1200 X magn.) revealed some deviations, which gave reason for this note.

In total 142 species were recognised, several of which have not been described as yet. A selection of 56 species is presented on the distribution chart. To avoid any taxonomical descriptions, only published combinations have been used. The upper six samples (15.00 m. - 33.25 m.) were too poor for a quantitative analysis.

A most interesting result is, that Nephrolithus frequens appears far lower than reported by other authors, be it in very low number. This implies that most of the type-Maastrichtian belongs to the N. frequens Zone. Micula murus was also found, and several of the species described by PERCH-NIELSEN (1973) from the Maastrichtian of Madagascar, e.g. Cribracorona gallica, Eiffellithus parallelus, Markalius perforatus, Prediscosphaera majungae, Rhagodiscus reniformis, Stephanolithion munitum. Moreover, it appears that in many samples reworking is present as is demonstrated by the occurrence of Angulofenestrellithus snyderi, Aspidolithus parvus, Corollithion signum, Eiffellithus eximius and Tranolithus phacelosus from the Campanian, and of Reinhardtites levis from the Lower Maastrichtian.

The limited space in this Newsletter does not allow to elaborate on these results.

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		LITHOLOGICAL UNITS																
		UNLEHROCK, 1912																
		SAMPLES																
Cr 4	Mg	Mb	Mc	Md					p	a	r	e	n					
				33.25 m	27.00 m	22.00 m	20.00 m	17.00 m						15.00 m	12.00 m			
0.25 m	3.00 m	5.520	5.521	6.25 m	9.50 m	12.25 m	0.00 m	3.00 m	5.00 m	7.00 m	12.00 m	15.00 m	17.00 m	20.00 m	22.00 m	27.00 m	33.25 m	
																	X	Actinozygus regularis
																		Ahmuellerella octoradiata
																		Angulofenestrellithus snyderi
																		Arkhangelskiella cymbiformis
																		Arkhangelskiella specillata
																		Bidiscus rotatorius
																		Biscutum castrorum
																		Biscutum melaniae
																		Biscutum panis
																		Braarudosphaera bigelowi
																		Braarudosphaera imbricata
																		Broinsonia dentata
																		Chiastozygus amphipons
																		Chiastozygus inturratus
																		Chiastozygus plicatus
																		Corollithion exiguum
																		Corollithion signum
																		Cretarhabdus conicus
																		Cretarhabdus crenulatus
																		Cretarhabdus limbicrassus
																		Cribracorona gallica
																		Cribrosphaerella ehrenbergii
																		Cribrosphaerella linea
																		Cribrosphaerella pelta
																		Cyclagelosphaera margereli
																		Cyclagelosphaera reinhardtii
																		Diadorhombus rhombicus
																		Discolithus hallii
																		Eiffellithus disgregatus
																		Eiffellithus eximius
																		Eiffellithus parallellus
																		Eiffellithus turriseiffeli
																		Goniolithus fluckigeri
																		Kamptnerius magnificus
																		Lithraphidites carniolensis
																		Lithraphidites quadratus
																		Lucianorhabdus cayeuxii
																		Microrhabdulus decoratus
																		Microrhabdulus stradneri
																		Micula decussata
																		Micula murus
																		Nephrolithus frequens
																		Palaeopontosphaera spp.
																		Placozygus spiralis
																		Prediscosphaera cretacea
																		Prediscosphaera spinosa
																		Prediscosphaera stoveri
																		Reinhardtites levis
																		Reinhardtites mirabilis
																		Rhagodiscus angustus
																		Stephanolithion laffittei
																		Stephanolithion munitum
																		Tranolithus phacelosus
																		Vekshinella elliptica
																		Vekshinella spp.
																		Watznaueria barnesae

X present
 / < 1%
 O 1-5%
 □ 6-10%
 ● 11-25%
 ■ 25%

Fig.1 - Species distribution within the type - Maastrichtian

CALCAREOUS NANNOFOSSIL EVENTS IN THE LOWER AND MIDDLE CRETACEOUS

Compiled by H.Manivit

Contributors: Bick, Breheret, Crux, Deres, van Heck, Kapellos, Medd, Noël, Perch-Nielsen, Prins, Proto-Decima

A meeting of nannofossil workers interested in the Lower and Middle Cretaceous was held at B.R.G.M., Orléans, France on 2-5 May, 1979. A summary of the nannofossil events for the Lower and Middle Cretaceous considered to be important by those present is given below. It represents the current opinion on the relative position of calcareous nannofossil events. Both boreal and tethyan species, including the nannoconids, were discussed and are included in the table.

It is proposed to publish this table together with comments as a calcareous nannofossil contribution to the International Geological Congress, Paris, 1980. It is important, therefore, that any errors, ambiguities, or revised opinions on the relative positions of these species events, should be corrected before this paper is completed.

All such comments, revised opinions etc. should be sent to K. Perch-Nielsen, Geological Institute ETH (prior to 1. okt. 1979) Sonneggstr. 5, CH-8006 Zürich, Switzerland

NANNOCONUS EVENTS	Nannoconus Zones (Deres & Acher., 1972)	CHRONO-STRATIGRAPHIC UNITS	Nannofossil Zones (Sissingh, 1977)	NANNOFOSSIL EVENTS
N. multicaudus N. minutus, N. truittii	7	CONIACIAN	13	Lithastrinus septenarius
		TURONIAN	12	Marthasterites furcatus
N.sp. 92 & 93 ** N.sp. 92 & 93 ** N. dauvillieri	6	CENOMANIAN	11	Eiffellithus eximius
			10 B	Quadrum gartneri
			10 A	Crucellipsis chiastia
N.sp. 92 & 93 ** N. dauvillieri	5	ALBIAN	9 C	Lithraphidites acutum, Microrhabdulus decoratus
			9 B	Corollithion completum, Prediscosphaera ponticola
N.sp. 92 & 93 ** N. boletus, N. calpidomorphus, N. quadriangulus	4	ALBIAN	8 A	Hayesites albiensis, Crucicribrum anglicum
			8 B	Eiffellithus turriseiffeli s.l.
N. wassallii	3	APTIAN	7 B	Tranolithus phacelosus
			7 A	Prediscosphaera columnata
N. boletus, N. calpidomorphus, N. quadriangulus N. borealis*, N. bucheri, N. kampt, N. bermudezii, N. colomii, N. globulus, N. steinmannii	2	APTIAN	6	Braarudosphaera africana
			5	Conusphaera mexicana, Micrantholithus obtusus
N. truittii N. abundans	1	BARREMIAN	4	Eprolithus antiquus*
			3	Eprolithus floralis, Rhagodiscus angustus
N. abundans, N. borealis*, N. bucheri, N. elongatus, N. wassallii	0	HAUTERIVIAN	2	Chiastozygus platyrhethus, Rucinolithus irregularis
			1	Chiastozygus striatus
N. minutus N. brönnimannii	0	VALANGINIAN	6	Calcicalathina oblongata
			5	Lithraphidites bollii
N. bermudezii, N. colomii, N. kamptneri	A	BERRIASIAN	4	Crucellipsis cuvillieri, Speetonia colligata
			3	Lithraphidites bollii
N. globulus N. brönnimannii, N. steinmannii Nannoconus spp.		TITHONIAN	2	Eprolithus antiquus*
			1	Chiastozygus striatus

└ FIRST OCCURRENCE, ┘ LAST OCCURRENCE; * nomen nudum (see Perch-Nielsen, in print), ** Deres & Acheriteguy 1972

ADDRESSES

On the following pages the addresses are listed of all persons to whom this first issue of the INA Newsletter has been mailed. Since we should like to send this issue to all persons who might be interested in the activities of the International Nannoplankton Association, we have added also a list of persons of whom no address or only an incorrect address is available. We will be grateful to you if you can provide us with their present addresses and -if possible- with the addresses of persons not mentioned on these lists and interested in the INA Newsletter.

In the future, changes of address, received by the secretary of INA, shall be published in the Newsletter.

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